Macro-Corridor Study

Hampton - Rochester - La Crosse 345kV
Transmission System Improvement Project

Prepared For:

Prepared By:

DAIRYLAND POWER
COOPERATIVE

EDAW | AECOM

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Acronyms and Abbreviations

AES	Alternative Evaluation Study
C.F.R.	Code of Federal Regulations
CapX2020	CapX2020 Transmission Expansion Initiative
CEQ	Council on Environmental Quality
CON	Certificate of Need
Dairyland	Dairyland Power Cooperative
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
GIS	geographic information system
GP	General Permit
I-35	Interstate 35
I-90	Interstate 90
kV	Kilovolt
LOP	Letter of Permission
MAPP	Mid-Continent Area Power Pool
MISO	Midwest Independent Transmission System Operator, Inc.
MN DNR	Minnesota Department of Natural Resources
MN PUC	Minnesota Public Utilities Commission
Mn/DOT	Minnesota Department of Transportation
MN-56	Minnesota State Highway 56
MVA	Megavolt-Amperes
MW	Megawatt
MWEX	Minnesota-Wisconsin Export Interface
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NESC	National Electric Safety Code
NLCD	National Land Cover Dataset
NRHP	National Register of Historic Places
NSPM	Northern States Power Company, a Minnesota Corporation
NSPW	Northern States Power Company, a Wisconsin Corporation
OES	Minnesota Office of Energy Security
Proposal	Hampton–Rochester–La Crosse 345 kV Transmission System Improvement Project
PSCW	Public Service Commission of Wisconsin
RES	Renewable Energy Standard
RJD State Forest	Richard J. Dorer Memorial Hardwood Forest
RPS	Renewable Portfolio Standard
RPU	Rochester Public Utilities

RUS	Rural Utilities Service
SMMPA	Southern Minnesota Municipal Power Agency
U.S.C.	United States Code
US-14	U.S. Highway 14
US-52	U.S. Highway 52
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
Utilities	Dairyland; Xcel Energy Inc. operating companies Northern States Power Company, a Minnesota corporation, and Northern States Power Company, a Wisconsin Corporation (collectively, Xcel Energy); Southern Minnesota Municipal Power Agency; Rochester Public Utilities; and WPPI Energy, Inc.
WI-93	Wisconsin State Highway
WDNR	Wisconsin Department of Natural Resources
WisDOT	Wisconsin Department of Transportation
WPPI	WPPI Energy, Inc.

1.0 Introduction

1.1 Environmental Review Requirements

Dairyland Power Cooperative (Dairyland or DPC), Northern States Power Company, a Minnesota corporation (NSPM), and Northern States Power Company, a Wisconsin Corporation (NSPW) (collectively, Xcel Energy), Southern Minnesota Municipal Power Agency (SMMPA), Rochester Public Utilities (RPU) and WPPI Energy, Inc. (WPPI) (collectively, Utilities) propose to construct a 345 kilovolt (kV) line project between Hampton, Minnesota (southeast of the Twin Cities) and La Crosse, Wisconsin. The CapX2020 Hampton-Rochester-La Crosse 345 kV Transmission System Improvement Project (Proposal) is needed to maintain reliable community service, improve regional electrical system reliability and support generation development.

This Macro-Corridor Study (MCS) was prepared by Dairyland and its consultant, EDAW | AECOM. Dairyland has requested financial assistance from the Rural Utilities Service (RUS), an agency which administers the U.S. Department of Agriculture's Rural Utilities Programs, for its anticipated 11 percent ownership interest in the Proposal. RUS has determined that its funding of Dairyland's ownership interest in the Proposal would be a federal action and therefore subject to National Environmental Policy Act (NEPA), 42 U.S.C. § 4321, review. See 7 C.F.R. § 1794.3.

The MCS and Alternative Evaluation Study (AES) are the two preliminary documents that RUS requires when conducting an environmental review for proposed transmission lines. This MCS was developed in accordance with the requirements of 7 C.F.R. § 1794.51 and RUS Bulletin 1794A-603, *Scoping Guide for RUS Funded Projects Requiring Environmental Assessments with Scoping and Environmental Impact Statements* (Feb. 2002).

Dairyland also anticipates that RUS financing will be used to rebuild its Genoa–Alma 161 kV line (Q-1) which is located in the Proposal area. If the new 345 kV line can be co-located with a portion of the Q-1 on the existing route, the costs of rebuilding the Q-1 will be included in the Proposal costs. If the facilities are not co-located, Dairyland will seek additional RUS financing for the Q-1 rebuild in 2012.

This document would also support preparation of an Environmental Impact Statement (EIS) required for the construction of the transmission facilities pursuant to 7 C.F.R. § 1794. According to RUS guidance § 1794.24(b)(1) the Proposal requires an Environmental Assessment with scoping. However, due to the potential for significant impacts, RUS is requiring that an EIS for this Proposal be prepared prior to granting Dairyland's request for ownership interest funding.

The environmental analysis document for the Proposal will be developed to comply with NEPA, Council on Environmental Quality Regulations (40 C.F.R. §§ 1500–1508), and RUS's Environmental Policies and Procedures for Electric and Telephone Borrowers (7 C.F.R. § 1794). Agency and public input will be accepted throughout the process. RUS and the other federal agencies involved in the NEPA review will jointly prepare the EIS. Then each federal agency will independently develop its own decision document. Each step in this process provides an opportunity for public review and comment. The Utilities will develop documents for the RUS environmental review considering the application requirements for state transmission facilities permits in Minnesota and Wisconsin.

1.2 The Utilities

Dairyland is a generation and transmission cooperative headquartered in La Crosse, Wisconsin, that provides the wholesale electrical requirements and other services for 25 electric distribution cooperatives and 19 municipal utilities in the Upper Midwest. In turn, these cooperatives and municipals deliver the electricity to consumers—meeting the energy needs of more than 500,000 people. Today, Dairyland's generating stations (coal, hydro, natural gas, landfill gas, and animal waste-to-energy) have more than 1,100 MW of capacity. Dairyland delivers electricity via more than 3,100 miles of transmission lines and nearly 300 substations located throughout the system's 44,500-square-mile service area. The Dairyland service area encompasses 62 counties in Wisconsin, Minnesota, Iowa, and Illinois.

NSPM provides electricity services to approximately 1.2 million customers and natural gas services to 425,000 residential, commercial, and industrial customers in the state of Minnesota. NSPW provides electricity services to approximately 246,000 customers and natural gas services to 102,000 residential, commercial, and industrial customers in the state of Wisconsin.

RPU, a division of the city of Rochester, is Minnesota's largest municipal utility. RPU serves more than 45,000 electric customers and more than 34,000 water customers and has revenues nearing $100 million annually. Power production stations include a coal-fired generation plant, a hydro station, and two combustion turbines fired by natural gas or fuel oil.

SMMPA was created by its members as a joint-action agency in 1977. SMMPA generates and sells reliable wholesale electricity to its 18 non-profit, municipally owned member utilities and develops innovative products and services to help them deliver value to its customers. Though SMMPA member utilities are located throughout the state, most are in southern Minnesota. SMMPA members serve more than 93,000 residential customers and more than 11,000 commercial and industrial customers. SMMPA's main source of electricity is its 41 percent share of the 884 MW Sherco 3 coal-fired generator near Becker, Minnesota. SMMPA also relies on an array of other generation sources, including biodiesel-fueled engines and its own wind turbines located at member communities.

WPPI is a regional power company serving 49 customer-owned electric utilities. Through WPPI, these public power utilities share resources and own generation facilities to provide reliable, affordable electricity to more than 190,000 homes and businesses in Wisconsin, Upper Michigan, and Iowa.

Table 1-1 lists the potential ownership portions for the Utilities in the Hampton–Rochester–La Crosse Proposal.

Table 1-1:
Hampton–Rochester–La Crosse Proposal Potential/Non-Binding Ownership Breakdown[1]

Utility	Potential/Non-Binding Ownership Percentage
Dairyland Power Cooperative	11%
Rochester Public Utilities	9%
Southern Minnesota Municipal Power Agency	13%
WPPI Energy	3%
Xcel Energy	64%

1.3 The Environmental Review Process

Prior to making a decision about whether to loan funds, guarantee a loan, or award a grant for a proposed project, RUS is required to conduct an environmental review under the National Environmental Policy Act (NEPA) 42 United States Code (U.S.C.) § 4321, pursuant to Council on Environmental Quality (CEQ) regulations found in 40 Code of Federal Regulations (C.F.R.) §§1500–1508. As the lead federal agency RUS will conduct the review in accordance with RUS regulations outlined in 7 C.F.R. § 1794 *et seq.* The RUS NEPA process will consider a broad range of environmental issues as well as potential impacts to farmland, threatened and endangered species, wetlands, and cultural and historic resources. It will also consider socioeconomic and environmental justice issues.

The U.S. Fish and Wildlife Service (USFWS) will also participate as a cooperating agency in the NEPA review for this Proposal. The transmission line will cross a national wildlife refuge, and a Special Use Permit from USFWS may be required (50 C.F.R. 25 *et seq*.). In addition, USFWS will also consider potential impacts of the Proposal under Section 7 of the Endangered Species Act (16 U.S.C. § 1531 *et seq*.), the Migratory Bird Treaty Act of 1918 (16 U.S.CC. 703–712 and 50 C.F.R. 25 *et seq.*), and Bald and Golden Eagle Protection Act of 1972 (16 U.S.C. § 668). Permits will also be required from the U.S. Army Corps of Engineers (USACE) under Sections 401 and 404 of the Clean Water Act (33 U.S.C. § 1344) and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403). In addition, impact of the Proposal on prehistoric and historic properties must be considered under the National Historic Preservation Act of 1966 (16 U.S.C. § 470 *et seq.* and 36 C.F.R. § 800).

The USACE regulatory authority would apply under Section 404 of the Clean Water Act, which requires a permit for the discharge of dredged or fill material into waters of the U.S. Early in 2000, the St. Paul District replaced all Section 404 nationwide permits across Minnesota and Wisconsin with a combination of statewide regional general permits (GPs) and letter-of-permission (LOP) evaluation procedures (initially referred to as GP/LOP-98).

1 Once all critical permits are obtained for the Proposal, the final ownership percentages will be determined by agreement.

Figure 1-1 illustrates the steps in the RUS NEPA process for developing an EIS. The scoping process includes a notice in the Federal Register, public scoping meetings and agency consultation. In preparation for scoping, RUS requires borrowers (Dairyland) to prepare an AES and a MCS. The AES identifies the electrical problem and identifies and evaluates the best solutions for meeting the electrical need. The MCS identifies corridor alternatives for routing the Proposal. It provides information on environmental, social, and cultural resources for the alternatives within the study area. Based on information included in these studies, and input that RUS receives from the public scoping process, RUS will determine the scope for the EIS.

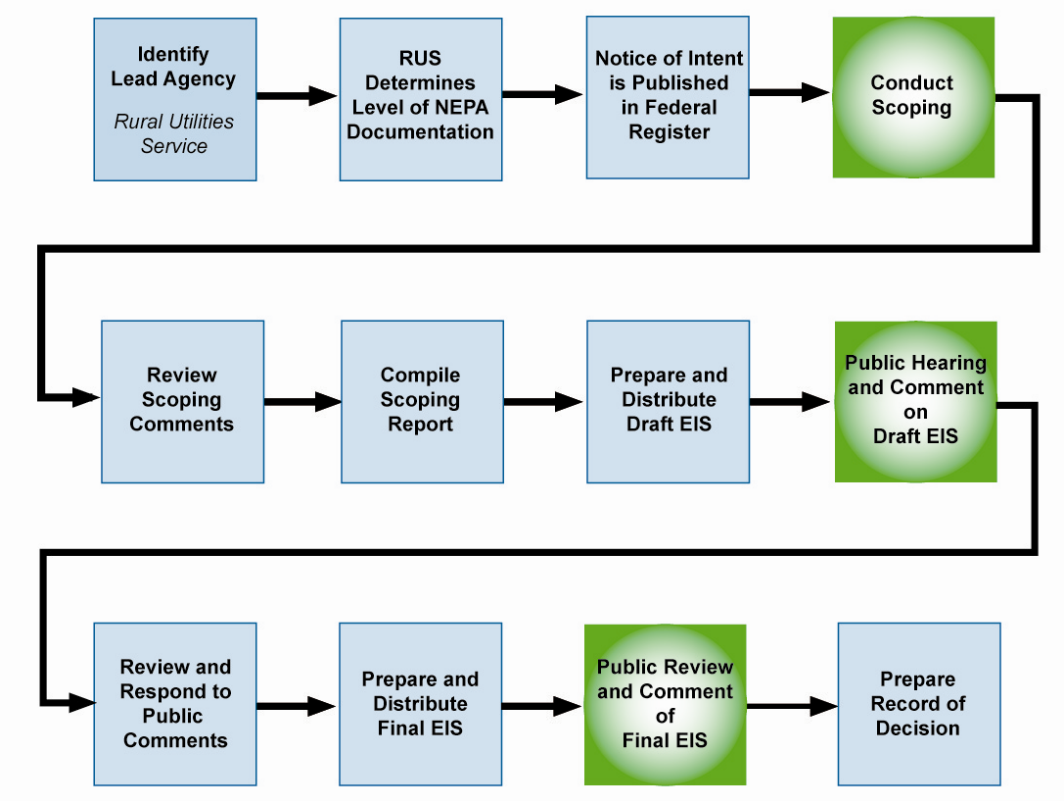

Figure 1-1: RUS NEPA Process

1.4 Proposal Description

The Utilities propose to construct the following facilities:

- A 345 kV transmission line from a new Hampton Substation near Hampton, Minnesota (southeast of the Twin Cities) to a new North Rochester Substation near Rochester, Minnesota, and a 345 kV transmission line from the new North Rochester Substation to a substation in the area of La Crosse, Wisconsin (this transmission line will of necessity include crossing the Mississippi River). The 345 kV line would be approximately 120 to 140 circuit miles depending on where it is routed;
- Two 161 kV transmission lines, one between the new North Rochester Substation and the Northern Hills Substation, and one between the new North Rochester Substation and the Chester Substation.

The North Rochester–Northern Hills 161 kV line would be approximately 10 to 15 circuit miles long and the North Rochester–Chester 161 kV line would be approximately 20 to 30 circuit miles in length;

- Modifications to the Hampton Substation to accommodate connection of the Twin Cities–Rochester–La Crosse 345 kV transmission line.[2] This work will be limited to the addition of one circuit breaker, two switches and associated bus and the addition of relaying in the control building. No additional grading will be required;
- Improvements at the Northern Hills Substation to accommodate the new 161 kV line. These improvements include: an expansion of the existing graded yard by approximately 30 ft, and the addition of 161 kV equipment including one circuit breaker and associated line termination switches and associated controls;
- Improvements at the Chester Substation including expansion of the existing graded yard and the addition of 161 kV equipment such as one steel line terminal structure, one circuit breaker, three voltage transformers, three current transformers, two disconnect switches, and all with associated foundations. Other work may include the installation of 2 relaying, communications and control panels inside the existing control building, plus other miscellaneous upgrades;
- Construction of a new North Rochester Substation north of Rochester. This new substation would be approximately 5 acres in size and include six 345 kV circuit breakers, a 345/161 kV transformer, three 161 kV breakers, a control house and associated line termination structures, switches, buswork, controls and associated equipment. The Utilities propose to acquire a parcel of approximately 40 acres to accommodate the fenced area, a buffer and line connections; and depending on the eastern termination, potential improvements at either the La Crosse or North La Crosse substations in Wisconsin to accommodate a termination of the proposed 345 kV transmission line, or construction of a new substation near La Crosse, Holmen, or Galesville Wisconsin. Potential modifications to the existing La Crosse or North La Crosse substations may include one 345 kV breaker, a 345/161 kV power transformer, ten 161 kV breakers, a control house, associated line termination structures, switches, buswork, controls and associated equipment. If a new substation is required, the Utilities propose to acquire a parcel of approximately 40 acres to accommodate the fenced area, a buffer and line connections, and include those items described above.

The Proposal, including associated facilities, is illustrated in Figure 1-2. The proposed 345 kV transmission line would be routed from the Hampton area southeast of the Twin Cities to one of three alternative locations for crossing the Mississippi River, with a termination in the La Crosse area. The three potential crossings are near (1) Alma, Wisconsin, (2) Winona, Minnesota, and (3) the La Crosse/La Crescent area. At each of these locations, there is an existing high-voltage transmission line crossing the river.

2 The new Hampton Substation will be constructed as part of another CapX2020 345 kV Project, the Brookings County–Hampton 345 kV Project, and will include a graded and fenced area approximately four acres in size. The Brookings County–Hampton 345 kV Project is designed to enhance regional reliability, maintain local community reliability and to increase generation outlet capability in southwestern Minnesota and southeastern South Dakota. The Hampton Substation will be constructed as an integral part of the Brookings County–Hampton 345 kV Project which is needed and planned to be constructed regardless of whether the Proposal is built. The substation is expected to be completed in December 2012. The Twin Cities–Rochester–La Crosse 345 kV transmission line, expected to be completed in 2015, will terminate at the Hampton Substation.

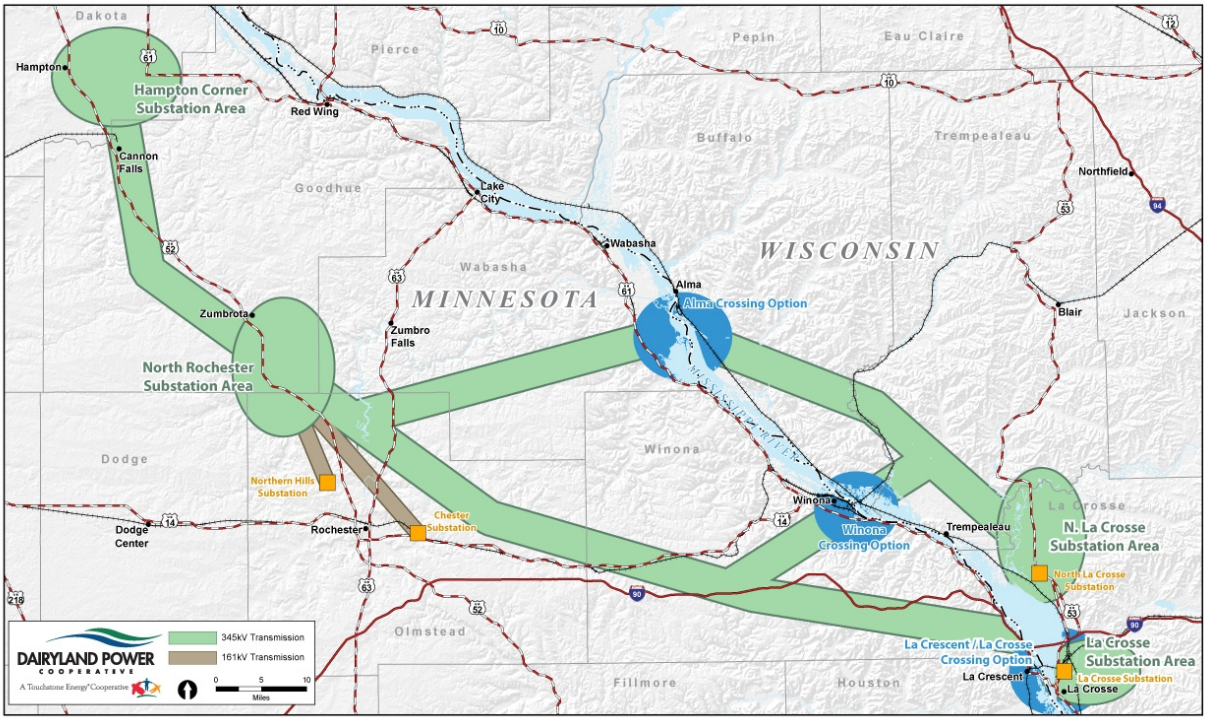

Figure 1-2: Proposal Facilities

The Mississippi River crossing location will determine the Proposal's termination point. If the proposed transmission line crosses the Mississippi River at the La Crosse/La Crescent Crossing Option, it would terminate at the La Crosse Substation, located on the eastern side of Wisconsin State Highway 35 where it crosses the La Crosse River, or at a new substation in the area of the La Crosse Substation. If the proposed transmission line crosses the Mississippi River at either the Alma or Winona crossing options, three substation sites would be considered for the Proposal's termination. The first option would be the existing North La Crosse Substation, located adjacent to Briggs Road near its intersection with U.S. Highway 53/Wisconsin State Highway 35 and north of La Crosse County Road XX. The second option would be a new substation near Holmen. The third option would be a new substation east of the city of Galesville just north of U.S. Highway 53/Wisconsin State Highway 93. If a new substation were constructed, a new 161 kV transmission line would connect the new substation to the existing North La Crosse Substation. In addition, the existing Tremvel-La Crosse tap 161 kV transmission line would be routed to the end point substation.

Table 1-2 describes characteristics of typical transmission line structures for 345 kV/345 kV and 345 kV/161 kV double-circuit structures, and 345 kV and 161 kV single-circuit structures.[3]

Table 1-2:
Typical 345 kV and 161 kV Transmission Line Characteristics

345 kV Transmission Lines (includes 345 kV/345 kV and 345 kV/161 kV Double-Circuit, and 345 kV Single-Circuit Structures)	Details
Voltage (kV)	345 kV
Right-of-Way Width (feet)	150
Span (feet)	750 to 1,100
Typical Span (feet)	900
Typical Range of Structure Heights (feet)	105 to 150 (single-circuit) 130 to 175 (double-circuit)
Typical Number of Structures per mile	5 to 7
Minimum Ground Clearance Beneath Conductor (feet)	34[1]
Maximum Height of Machinery that can be Operated Safely Under Line (feet)	18[2]
161 kV Transmission Lines	**Details**
Voltage (kV)	161 kV
Right-of-Way Width (feet)	80
Span (feet)	400 to 600
Typical Span (feet)	600
Typical Range of Structure Heights (feet)	70 to 105
Average No. of Structures (per mile)	8 to 13
Minimum Ground Clearance Beneath Conductor (feet)	26[3]
Maximum Height of Machinery that can be Operated Safely Under Line (feet)	18[4]

1 The minimum ground clearance stated above is for design purposes for the conductor at its maximum operating temperature. National Electric Safety Code (NESC) minimum vertical clearance for 345 kV is 24.75 feet.

2 The NESC minimum ground clearance requirement assumes a maximum vehicle height of 14 feet. Using the design clearance of 34 feet, the maximum vehicle height under a 345 kV transmission line is increased to 18 feet. Machinery is assumed to be some type of agricultural vehicle that is not permanently stationed underneath the line.

3 The minimum ground clearance as shown is for design purposes for the conductor at its maximum operating temperature. NESC minimum vertical clearance for 161 kV is 21.0 feet.

4 The NESC minimum ground clearance requirement assumes a maximum vehicle height of 14 feet. Using the design clearance of 26 feet, the maximum vehicle height under a 161 kV line is increased to 18 feet. Machinery is assumed to be some type of agricultural vehicle that is not permanently stationed underneath the line.

3 Final routes for the Project may include different structure configurations.

1.5 Purpose and Need

The Proposal is designed to meet three identified needs: regional reliability, community reliability, and generation outlet capability. Each is fully described in the AES submitted to the RUS with this study. A summary of the AES is provided in the following sections.

The Proposal is one of four transmission projects (collectively, Group 1 Projects) proposed by the CapX2020 Transmission Expansion Initiative (CapX2020). CapX2020 is a joint initiative (CapX2020 Initiative) of 11 transmission-owning utilities in Minnesota, Wisconsin and the surrounding region whose goal is to study, develop, permit and construct transmission infrastructure needed to implement long-term and cost-effective solutions for customers to meet growing energy demands to the year 2020. The 11 utilities include Utilities, Great River Energy, Minnesota Power, Minnkota Power Cooperative, Missouri River Energy Services, Central Minnesota Municipal Power Agency and Otter Tail Power Company.

Each of the three other projects was developed to address specific identified needs. The first of the projects is the Brookings County–Hampton 345 kV Project which was designed to enhance regional reliability, improve local community service and increase generation outlet capability in southwestern Minnesota and southeastern South Dakota. The second project is the Fargo–Monticello 345 kV Project. The Fargo–Monticello 345 kV Project was developed to address load serving needs in the southern Red River Valley, including Alexandria, and St. Cloud, to enhance regional reliability and provide generation outlet support in northwestern Minnesota and southeastern North Dakota. The third project, the Bemidji–Grand Rapids 230 kV Project, will meet community load serving needs in the Bemidji area, improve regional transmission reliability of the larger northwestern Minnesota and eastern North Dakota region, and assist in the potential development of wind-energy resources in portions of the Red River Valley and eastern North Dakota.

All four transmission projects were analyzed individually and each is supported by a separate engineering report: Southeastern Minnesota–Southwestern Wisconsin Reliability Enhancement Study (March 13, 2006); Southwest Minnesota–Twin Cities EHV Development Electric Transmission Study, Volume 1 (November 9, 2005), Appendix A.2; Red River Valley–Northwest Minnesota Load-Serving Transmission Study (TIPS Update) (February 13, 2006); and Bemidji, Minnesota Area Electric Transmission System Study (January 2007). Each of the four proposals is proposed to be constructed independent of whether the other proposals are built.

This section describes the initial CapX2020 study effort, Technical Update: Identifying Minnesota's Electric Transmission Infrastructure Needs (May 2005) (updated October 2005) (Vision Plan) and the system-wide reliability need. This section also details the local reliability needs and the timing of those needs. This section further describes the growing demand for additional generation outlet capability in southeastern Minnesota where these facilities will be constructed.

1.5.1 Regional Reliability Need

It has been nearly three decades since the electrical network serving Minnesota and the surrounding area including eastern Wisconsin has been expanded to any large degree. At the same time, the demand for power has continued to grow. Beginning in 2004, a study effort was undertaken to examine the regional electrical system transmission needs that would be necessary to meet the power requirements of customers anticipated by the year 2020.

1.5.1.1 The CapX2020 Vision Plan

The initial CapX2020 study effort, *Technical Update: Identifying Minnesota's Electric Transmission Infrastructure Needs* (CapX2020 2005) ("Vision Plan"), identified the high voltage transmission facilities needed to support this growth in demand and ensure that load in the region could be served reliably under different generation scenarios. This study was intended to be a high level and provide a blue-print for future transmission development. The region selected for the Vision Plan was primarily based on the geographic boundaries of the service territories of utilities with customers in Minnesota ("planning region"). Those systems include all of Minnesota and portions of North Dakota, South Dakota, Iowa, Wisconsin, and upper Michigan. Figure 1-3 illustrates the CapX2020 Study Area.

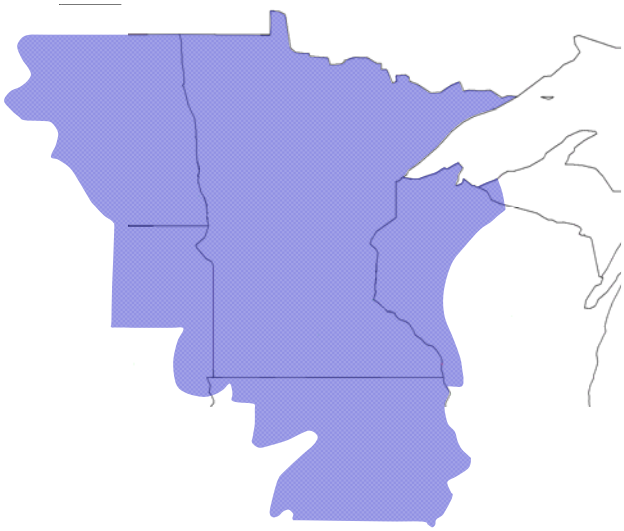

Figure 1-3: CapX2020 Study Area

While the planning region was the primary area of focus, transmission is regional in nature, and, as a result, the CapX2020 Initiative planning engineers included modeling of a region somewhat larger than the primary study area.

To assess the long-term need, planning engineers developed a load forecast and analyzed three different generation scenarios. Planning engineers contacted energy forecasters (from state and other electric power agencies and groups) for information about the anticipated growth in the demand for electricity. Generation developers and utilities were canvassed for information about where power plants might be

located to meet growing electricity demand, and relied on forecasts of the growth in electrical demand from generation planners and from Resource Planning proceedings before the Minnesota Public Utilities Commission (MN PUC). Copies of those documents and the associated data are available online at www.CapX2020.com.

Given the uncertainty of where generation will develop, planning engineers created and studied three generation scenarios. These three generation scenarios reflect potential generation development that might influence electric power flows on the regional grid and thus indicate the size and location of new transmission infrastructure needed to deliver this new generation to customers. These three generation scenarios were then compared to determine what transmission facilities were needed under each scenario. The Proposal was one of the facilities needed under each of the scenarios studied.

Since the Vision Plan was published in 2005, further analyses of the integrated resource plan and other system planning data (Mid-Continent Area Power Pool (MAPP) Load and Capability) have confirmed that the greater Minnesota area will experience significant load growth of several thousand MW by the year 2020.[4]

1.5.1.2 Renewable Energy

The need for new high voltage transmission facilities in the region is also driven by the need for significant infrastructure to support renewable energy generation development.

One of the many drivers for increased reliance on renewable energy is the Renewable Energy Standard (RES) passed by the Minnesota Legislature in 2007. The renewable standard[5] called by some legislators as, "the most aggressive renewable energy law in the United States," imposes standards on public utilities providing electric service, generation and transmission cooperative electric associations, municipal power agencies, and power districts to generate or buy sufficient renewable energy. Each electric utility serving Minnesota retail customers must meet the following standards for the percentage of its retail sales that must derive from renewable energy sources: (1) 12 percent by 2012, (2) 17 percent by 2016, (3) 20 percent by 2020[6]; and (4) 25 percent by 2025.

The law also specifically sets higher standards for NSPM which must provide 30% of energy to retail customers from renewable-based generation by the year 2020. To satisfy Minnesota's renewable requirements, it is currently estimated that the CapX2020 utilities will need to procure in the range of 5,000 MW of additional installed wind generation along with lesser amounts of biomass and solar generation. Renewable Energy Standards Report 2007 at 34, MN PUC Docket No. E999/M-07-1028 (November 1, 2007) (RES Report).

Wisconsin has similarly implemented renewable energy legislation. Wisconsin's renewable legislation requires Wisconsin utilities to meet a gradually increasing percentage of their retail sales with renewable

4 MAPP creates the Load and Capability Report on an annual basis for the purpose of projecting the future resource (generation) and load of each MAPP member in the reserve sharing pool.

5 Minn. Stat. § 216B.1691 (as amended 2007).

resources. Wisconsin set a goal that by 2015, 10 percent of the electric energy consumed in the state must be produced by renewable resources (Wisconsin Statute § 196.378(2)(a)).

In April 2007, Wisconsin Governor Jim Doyle signed Executive Order 191, which created a Task Force on Global Warming. In July 2008, the Task Force voted to finalize its report, Wisconsin's Strategy for Reducing Global Warming. In its report, the Task Force recommends extensive revisions to Wisconsin's renewable standard. Specifically, the Task Force recommended that the following percentages of electric power sold by Wisconsin utilities must come from renewable resources:

1. 10 percent by 2013
2. 20 percent by 2020, not less than 6 percent of total sales being from Wisconsin-based resources
3. 25 percent by 2025, not less than 10 percent of total sales being from Wisconsin-based resources

The Group 1 Projects, including the Proposal, are a necessary first step toward meeting Wisconsin and Minnesota's renewable energy policy goals.

1.5.2 Community Reliability Needs

The need to maintain electric reliability in the Rochester and Winona/La Crosse communities is a driving need for the Proposal. The Rochester and La Crosse areas are both facing electric reliability issues due to increasing growth in the demand for power. Without transmission system improvements, these communities are at risk for loss of service under certain critical contingency conditions.

1.5.2.1 Rochester Area

The Rochester area sees its greatest use of electricity during the summer months. Dairyland and its member, Peoples Cooperative Services, serve rural customers around the city of Rochester. RPU is the municipal electric utility serving the city of Rochester. As described in detail in the AES, power is transmitted to the Rochester area by three 161 kV transmission lines; one from the west (the Byron–Maple Lake 161 kV transmission line that connects Rochester to the Prairie Island–Bryon 345 kV transmission line), one from the northeast (the Alma Substation), and one from the south (the Adams Substation).

Utilities use the term contingency to describe how the system will work when one or more of the existing transmission lines are out of service. If the Byron–Maple Leaf 161 kV transmission line is out of service, the remaining transmission system can only reliably deliver 181 MW of power to area substations. Under this contingency, there are only two 161 kV ties remaining to serve customers of RPU and Peoples Cooperative Services. The two remaining Dairyland 161 kV lines provide the 181 MW import capability. Due to this limitation, RPU must run local generation when RPU's demand exceeds 145 MW to ensure reliable service to customers should the Byron–Maple Leaf 161 kV line lose service. In 2005, the demand for power on the RPU system exceeded 145 MW for about 5,400 hours. The system peak occurred in 2006 and reached 330 MW.

The historical data and forecast demonstrate that demand in the Rochester area currently exceeds the level at which the electrical system can reliably serve customers during periods of peak demand. As a result, system operators must cut service to customers in the event of a critical outage to maintain the

stability of the electrical system during peak times. The risk of service interruptions currently exist in the event of a Byron–Maple Leaf 161 kV transmission line outage unless all internal generation is running. As the system is currently configured, the risk for interruptions is expected to be reached even if all internal generation is running as early as 2014.

To reliably serve the Rochester area demand, new power sources are needed. The proposed Northern Hills–North Rochester and Northern Hills–Chester 161 kV lines will provide significant load serving capability to the system.

In addition, there are two other recent transmission proposals that could further enhance the transmission system's capabilities. These two projects are not related to the Proposal, but are being proposed for the same geographic area as the two 161 kV lines that are part of the Proposal. These projects do not change the need for the Proposal but may affect the specific timing of when the Northern Hills–North Rochester and Northern Hills–Chester 161 kV lines are constructed. The two transmission proposals are as follows:

- **The Pleasant Valley 161 kV lines**: The Pleasant Valley 161 kV lines are a group of three 161 kV transmission lines needed to enable two new wind farms to reliably deliver power and to increase generation outlet capability in the area. One of the 161 kV lines, a proposed connection between Pleasant Valley Substation and Willow Creek Substation, will also provide additional import capability for the Rochester area. The two other lines proposed by NSPM and RPU are: 1) a 161 kV line from Pleasant Valley Substation to Byron Substation; and 2) a 161 kV transmission line connecting the Byron Substation to an RPU planned West Side Substation. A Certificate of Need (CON) from the MN PUC is required for the first two lines. As of the date of this MCS, no Certificate of Need application has been filed.
- **Reconductor of the Rochester–Adams 161 kV Transmission Line.** The reconductor project, currently planned by Dairyland, will increase the capacity of the line and the capability of the system and is anticipated to be undertaken in 2009. The current proposal is to reconductor the line to 380 million volt-amp (MVA). No RUS funds will be required for this reconductor proposal.

As explained above, planning engineers have determined that the Rochester area needs a 345 kV connection to the Twin Cities and two new 161 kV sources to maintain reliable community service through the 2020s. The addition of three 161 kV sources into the area would meet load serving needs past mid-century. Assuming construction of the 345 kV line from the Twin Cities to La Crosse, if the Northern Hills–North Rochester 161 kV line or the Pleasant Valley–Willow Creek 161 kV line and the Rochester–Adams 161 kV line is reconductored at 380 MVA, the transmission system would have approximately 468 MW of capacity. This level of capacity could potentially meet local Rochester area needs until approximately 2025, if the current forecast growth rates are realized. If the higher growth rates that the rapidly expanding Rochester area has experienced historically return in the near term, the area load could exceed the improved transmission system's capacity by approximately 2019. To meet demand beyond this time, a second 161 kV source must be added to the system.

The Utilities propose to meet the immediate Rochester needs by constructing the North Rochester–Northern Hills 161 kV transmission line first with the objective of having it in service in 2011. The Utilities

also propose to construct the North Rochester–Chester 161 kV line with the 345 kV line by 2015, which would increase the capability of the system to 707 MW and meet area needs until approximately 2050. If the Pleasant Valley–Willow Creek 161 kV line is constructed as part of the Pleasant Valley projects it would provide further robustness to the electrical system serving the Rochester area and could potentially affect the construction dates of the North Rochester–Chester 161 kV line.

1.5.2.2 La Crosse/Winona Area

The La Crosse/Winona area, which has its highest electricity demand during the summer, is also facing reliability issues as a result of population growth and the resulting increase in demand for electricity. The area includes the cities of La Crosse, Onalaska, and Holmen, Wisconsin; extends east to include Sparta, Wisconsin; northeast to include Arcadia, Wisconsin; northwest to include the area of Winona/Goodview, Minnesota; and southwest to include La Crescent, Houston and Caledonia, Minnesota.

Xcel Energy and Dairyland distribution cooperatives Vernon Electric Cooperative, Tri-County Electric Cooperative, Oakdale Electric Cooperative, and Riverland Energy Cooperative, serve the La Crosse/Winona area. Power to the area is provided by four 161 kV transmission lines: the Alma–Marshland–La Crosse 161 kV transmission line, the Alma–Tremval–La Crosse 161 kV transmission line, the Genoa–Coulee 161 kV transmission line, and the Genoa–La Crosse 161 kV transmission line.

The Alma-Marshland-La Crosse 161 kV portion of the transmission line referred to as the Q-1 transmission line is identified in Dairyland's 2008-2010 work plan (RUS 1071) for rebuild due to age and condition. One of the routes being considered for the 345 kV line if the Proposal crosses at either the Alma or the Winona river crossings is the Q-1 route. If this route is selected and co-locating the new 345 kV transmission with the existing Q-1 transmission line is determined to be the appropriate configuration, the cost of the Q-1 rebuild will be part of the Proposal costs. If the two lines are not co-located, Dairyland anticipates it will seek additional RUS funds for the Q-1 rebuild project in 2012.

The ability of the transmission system to reliably serve the area depends on the status of major power plants in the area. If the Genoa and Alma generation plants are in operation and a transmission source fails, 470 MW of power demand can be met. Transmission support to the area can drop to as low as 330 MW if Alma and/or Genoa generation are not operating. Local generation at French Island in La Crosse totaling 70 MW must be run any time demand exceeds these critical load levels. Peak demand reached 447 MW in 2006.

Forecast information based on substation load data show that the La Crosse/Winona area will begin exceeding the ability of the transmission system alone to provide power in the event of critical transmission line failure beginning in approximately 2009-2010. In 2015, demand will exceed the system's capability by 45 MW (470 MW of capacity versus 515 MW of demand). This means that in 2015, approximately 45 MW of load would be at risk of service interruption. New high voltage transmission facilities are needed in this area to provide transmission support that will alleviate these contingencies.

1.5.3 Generation Outlet/Renewable Energy Support

The Proposal is also designed to provide generation support. The southeastern Minnesota area is experiencing considerable growth in generation development, including wind generation. In Mower

County, just southwest of Rochester, as of January 2009, there were 1,397 MW of generation projects listed in the MISO Generation Interconnection Queue. For this same time period, there are more than 12,000 MW of generation projects in the MISO Generation Interconnection Queue for the counties of Mower, Olmstead, Fillmore, Howard (Iowa), Mitchell (Iowa), and Worth.

In southeastern Minnesota, the ability of the electrical system to transmit this new generation is limited because the area transmission system has a deficiency during off-peak, high-transfer conditions. Specifically, in the event of a Byron–Adams 345 kV line outage, there would be congestion on the Byron–Maple Leaf 161 kV line that would limit the flow on the Prairie Island–Byron–Adams 345 kV line and the North-South transfer between Minnesota and Iowa. The deficiency is significant enough that it has resulted in a documented operating guide that SMMPA has filed with MISO entitled *Byron–Maple Leaf 161 kV Operating Guide, Revision 1*. This operating guide limits the amount of power that can flow south on the Prairie Island–Byron 345 kV line to 766 MW when temperatures are greater than 45 degrees Fahrenheit (April, May, June, July, August, September, and October) and 835 MW when temperatures are less than 45 degrees Fahrenheit (November, December, January, February, and March) to plan for a fault and subsequent outage along the Byron–Pleasant Valley–Adams 345 kV line. The limit is in place so that if this system condition were to occur, the Byron–Maple Leaf 161 kV line would not become overloaded and potentially trip off-line. The Proposal would address this constraint.

In Wisconsin, the transmission grid in the western portion of the state, along with interface loading levels across Minnesota–Wisconsin border, limit the ability to interconnect new generation in Minnesota as well as generation from points further west. While preliminary stability analysis shows that the proposed 345 kV line has no impact on the Minnesota-Wisconsin Export Interface (MWEX), it will provide the foundation for future power transfers between Minnesota and Wisconsin. The need for and configuration of additional transmission facilities to the east is being addressed in a study currently underway by Xcel Energy and the American Transmission Company.

1.6 Required Permits/Approvals

The Utilities will be required to obtain approvals from a variety of federal and state agencies prior to constructing the Proposal. During development of the Macro-Corridor Study, permitting and regulatory requirements were reviewed to identify jurisdictional authority at the federal and state level.

Agencies with primary permitting authority include RUS, MN PUC, and the Public Service Commission of Wisconsin (PSCW). Tables 1-3, 1-4, and 1-5 identify the permits and other approvals that may be required by federal agencies, the state of Minnesota, and the state of Wisconsin, respectively. This preliminary listing of regulatory requirements is subject to change as the Proposal proceeds.

Table 1-3:
Federal Approvals That May Be Required for Proposal

Agency	Permit, Regulatory Compliance, or other Coordination
RUS	Alternative Evaluation Study and Macro-Corridor Study NEPA Compliance
U.S. Army Corps of Engineers (USACE)	Section 10 Permit of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) for crossing the Mississippi River
USACE and U.S. Environmental Protection Agency Region 5	Nationwide permit or individual permit under Section 404 of the Clean Water Act of 1977
U.S. Department of Agriculture's Natural Resource Conservation Service	Farmland Conversion Impact Rating (Form AD-1006)
U.S. Fish and Wildlife Service (USFWS)	Use authorization if right-of-way required on National Wildlife Refuge or Wetland Management District lands (Standard Form 299) and Special Use Permit if crossing National Wildlife Refuge Section 7 of the Endangered Species Act 1973 (16 U.S.C. 1531–1544; 50 C.F.R. 22 consultation Bald and Golden Eagle Protection Act (16 U.S.C. 668; 50 C.F.R. 22) Migratory Bird Treaty Act (16 U.S.C. 701–712)
Federal Aviation Administration (FAA)	Form 7460–1 Objects Affecting Navigable Airspace
National Park Service	Consultation: Section 7 of the Wild and Scenic Rivers Act 1968 (if Proposal affects federally designated areas)

Table 1-4:
State of Minnesota Permits and Other Compliance That May Be Required for Proposal

Agency	Permit, Regulatory Compliance, or other Coordination
Minnesota Public Utilities Commission (MN PUC)	Certificate of Need (CON)
	Route Permit (includes state environmental impact statement requirement)
Minnesota Department of Transportation (Mn/DOT)	Utility Permit on Trunk Highway Right of Way (Long Form No.2525) Access Driveway Permit Drainage Permit
Minnesota Department of Natural Resources (MN DNR)	Protected water crossings permits Application for a License to cross Public Lands and Waters Wetland Conservation Act requirements Public Waters Work Permit Program Minnesota Wild and Scenic Rivers Program State Canoe Routes and Trails Minnesota State Forests Endangered Species Statues—Permits and Coordination
Minnesota Pollution Control Agency	Air Quality and Noise Standards and Requirements National Pollutant Discharge Elimination System Stormwater Permits (construction, operation) Section 401 Water Quality Certification (if a 404 permit is required by USACE)
Minnesota Historical Society/Minnesota State Preservation Office	National Historic Preservation Act—Section 106 compliance
Minnesota Department of Agriculture	Agricultural Mitigation Plan (if required)

Table 1-5:
State of Wisconsin Permits and Other Compliance That May Be Required for Proposal

Agency	Permit, Regulatory Compliance, or Other Coordination
Public Service Commission of Wisconsin (PSCW)	Certificate of Public Convenience and Necessity (CPCN)
Wisconsin Department of Natural Resources (WDNR)	Utility Permit State EIS Joint state-federal application for impacts to waterways and wetlands Indication of Endangered/Threatened Species Incidental Take Authorization Construction Site Erosion Control and Stormwater Discharge Permit General Utility Crossings Permit Section 401 Water Quality Certification (if 404 permit is required by USACE)
Wisconsin Department of Transportation (WisDOT)	Application to Construct and Operate Utility Facilities on Highways Rights-of-way (Form DT1553) Access Driveway Permit (may be required) Drainage Permit (may be required)
Wisconsin Historical Society/Office of Preservation Planning	National Historic Preservation Act, Section 106 consultation
Wisconsin Department of Agriculture, Trade, and Consumer Protection	Agricultural Impact Statement

1.7 Community Outreach and Public Involvement Process

To implement an open and comprehensive community outreach program throughout the siting and permitting process, a variety of tools and techniques have been employed by the Utilities. Early notification, accessible information, and opportunities to provide input are vital for a successful public involvement effort, particularly with those stakeholders potentially affected by the Proposal.

Community outreach efforts were built upon existing relationships and interactions between the Utilities and the public. The public participation tools and techniques described were used to provide relevant information to the various stakeholders and to receive input on corridors at each step in the process. These tools have been updated or modified as necessary during the course of the Proposal and include the following: a website describing the Proposal and related information, stakeholder notification, news releases and display advertisements, voluntary public meetings and route working groups (collectively, public meetings), and required public hearings.

Between August 2007 and December 2008, the five rounds of public meetings were held to engage stakeholders in the Proposal. The Utilities held three rounds of public open house meetings, and one round of small-group route working group meetings. The Minnesota Department of Commerce held one round of Environmental Report scoping meetings, in an open-house format. The 21 public open house meetings (including the Environmental Report scoping meetings) have drawn over 1,000 attendees to date. The five route working group meetings included 43 participants, including landowners and representatives from local, state, and Federal government agencies.

The CapX2020 Utilities held six meetings in southeastern Minnesota during September 2007 following the CON application submittal to MN PUC for the three 345 kV Group 1 Projects. The open house format featured large informational displays, aerial maps, and handouts that were made available for the public to review. Utility representatives were present to answer questions and engage the public in discussion. The CON process will determine the need for the projects as well as characteristics such as substation and endpoint locations in Minnesota. The Minnesota Department of Commerce held Environmental Report scoping meetings in December 2007 to support the preparation of the Environmental Report for the CON proceedings. The CON meetings were also held in an open house format. MN PUC conducted public hearings and formal testimony as part of the CON process in early 2009. The CON was approved in April 2009.

Route working group meetings were held during March 2008 and May 2008 in five locations in the study area. Route working groups utilized a workshop format in which small groups discuss the importance and implications of the routing criteria used for the Proposal. Federal, state, regional, county, and city officials and representatives and members of the general public who requested to be included were invited to participate in the Route Working Groups. These individuals were asked to provide comments, data, and input representing their organizations or communities. Some participants were appointed or selected by their respective agency. Members of the general public were invited to participate through the December 2007 CapX2020 update newsletter. Interested individuals could sign up to participate in the Route Working Groups at the December 2007 CON meetings.

Five public meetings, not related to specific permitting documents and procedures, were also held in May 2008 to provide new information to the public in the study area and gather input on the siting process and preliminary macro-corridors. Another round of seven public meetings was conducted in December 2008 to provide information on routing progress, and to present route options or segments within the preliminary macro-corridors.

More than 300 recorded comments have been collected to date from all public meetings (Appendix A). Those comments were used to refine Proposal features as appropriate given the purpose and need of the outlined by the Utilities. The details of how stakeholder comments were used to refine the corridors are described in subsequent sections of this Macro-Corridor Study.

Appendix B includes the project fact sheets provided at the public meetings.

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2.0 Macro-Corridor Study Requirements and Methodology

RUS provides the following guidance for developing a Macro-Corridor Study (RUS 2002):

> *A Macro-Corridor Study should define the project study area and show the end points on a linear project (e.g., electric transmission line or natural gas pipeline). Within this project study area alternative corridor routes should be developed based on environmental, engineering, economic, land use, and permitting constraints. Corridors may vary in width from a few hundred feet up to a mile.*[7] *The use of existing rights-of-way or double circuiting of existing electric transmission lines should be addressed as appropriate.*

The Utilities applied a three-step methodology to corridor development that meets federal and state requirements for routing transmission facilities as well as addressing landowner concerns. The steps included study area definition, data acquisition and mapping, and stakeholder input/public involvement creating a phased approach to macro-corridor development. A summary of each step is described below

During the initial steps of investigation, a study area was identified in where macro-corridors would be located. The study area was based on the identified end points for the Proposal from the Minnesota CON application that included a new substation in the Hampton area southeast of the Twin Cities, Minnesota, and either a substation expansion or a new substation in the La Crosse area in Wisconsin. Boundaries of the study area were set according to purpose and need as well as the required interconnections to increase reliability in certain communities, enhance regional reliability, and support generator outlet capability. Prominent geographic features or lands with special designation also influenced the study area boundary.

The Utilities gathered data from landowners, including tribes; local, state, and federal agencies; and published resources to help identify potential opportunities and constraints for routing the proposed transmission line. Data collected were related to permitting requirements and environmental, engineering, economic, and land use issues identified within the study area. Existing linear features, such as transmission and transportation corridors were identified as potential opportunities for transmission line routing and incorporated into a Geographic Information System (GIS) database.

As shown in Figure 2-1, a phased approach was used for corridor development with a series of corridor refinements from the CON Corridors to preliminary macro-corridors and then to final macro-corridors. Each phase had a public involvement component and stakeholder input from the public, non-profit organizations and government agencies, along with field reconnaissance, to refine the macro-corridors. The Utilities, along with environmental, permitting, and engineering team members, reviewed data collected at each phase to analyze potential opportunities or constraints for corridors.

7 RUS guidance regarding corridor width is a flexible parameter that may vary from project-to-project. This Macro-Corridor Study identifies corridors that are wider than one mile. RUS has approved the use of corridors over one mile for the purpose of this Project.

The Utilities focused on several overarching objectives to identify preliminary macro-corridors, including:

- Compliance with Minnesota and Wisconsin statutes and rules regarding the routing of transmission lines. This includes maximizing opportunities to use existing transmission and transportation rights-of-way, and property, field, and survey lines, and ensuring appropriate consideration of regulated areas.
- Compliance with North American Electric Reliability Corporation (NERC) electrical system planning standards.
- Minimize environmental and land use impacts, including impacts associated with crossing the Mississippi, Zumbro, Cannon, and Black rivers.

The preliminary macro-corridors varied in width throughout the study area, to allow for identification and consideration of various routes that may meet these objectives.

Before finalizing the macro-corridors, the Utilities identified opportunities and constraints for potential route options or segments within the preliminary macro-corridors. A resource review provided information about land use and environmental resources that provide a compatible land use or that might constrain the construction of a new transmission line.

After additional data collection including field reconnaissance and stakeholder input, route options between the same endpoints were compared and kept for further analysis or eliminated based on a number of factors related to the objectives described above. The preliminary macro-corridors were then modified into final macro-corridors.

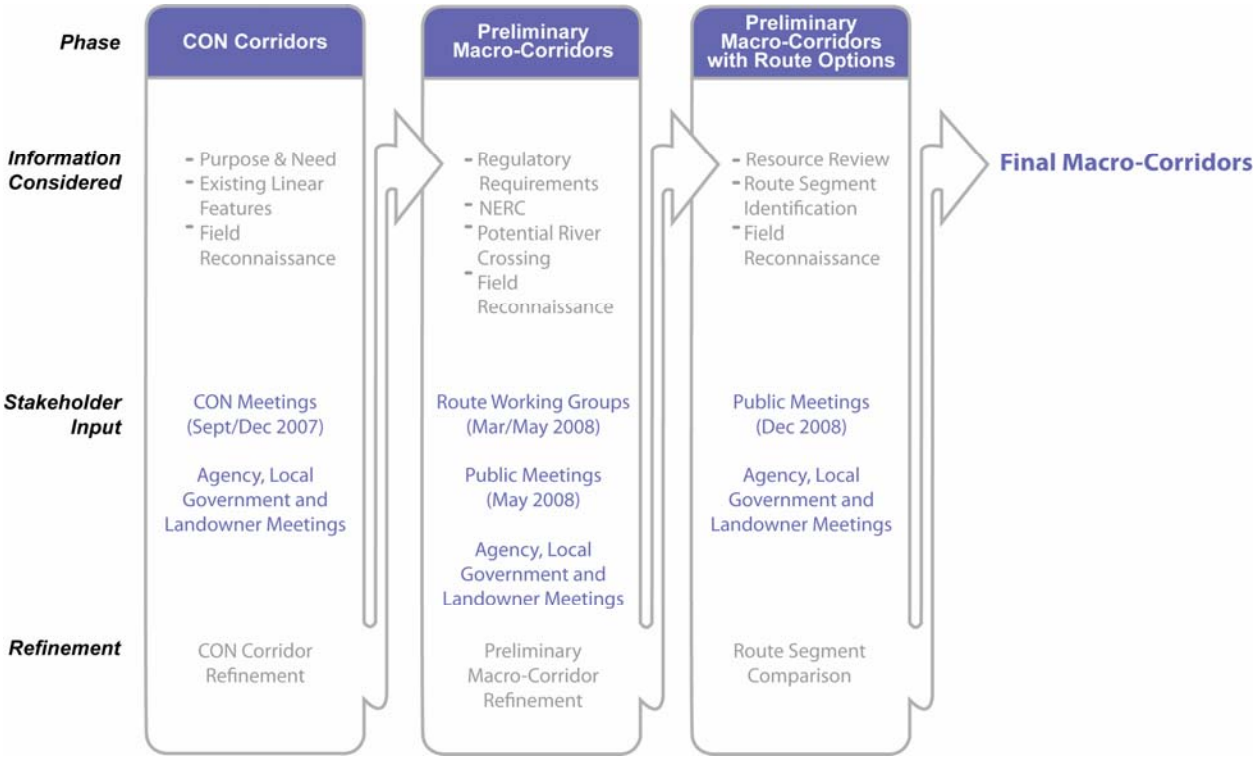

Figure 2-1: Approach to Macro-Corridor Identification

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3.0 Study Area Definition and Data Acquisition

The study area includes the southeastern Twin Cities region, the cities of Rochester, Winona, and La Crescent in Minnesota, and Alma, Arcadia, and Blair areas and the La Crosse area in western Wisconsin, including Galesville and Holmen. The northern end point in the Southeast Twin Cities area will be the proposed Hampton Substation, and the southern end point will be a substation in the greater La Crosse area in western Wisconsin.

Study area boundaries were set to allow consideration of multiple options for routing the proposed 345 kV and 161 kV transmission lines, including several options where the proposed 345 kV transmission line may cross the Mississippi River. The study area is sufficiently large to allow for mitigation of sensitive natural resources, such as floodplains and wetlands, and for consideration of lands designated for conservation and recreation purposes, which are common in the Mississippi River Valley.

The study area was expanded after the December 2008 public meetings to include two additional alternative corridors from the Alma River crossing. One alternative is from Alma to Arcadia, Wisconsin, and then south into the North La Crosse area along existing transmission line corridors. The other alternative corridor is from Alma to Blair, Wisconsin, through Galesville into the North La Crosse area.

Figure 3-1 identifies the study area, which includes portions of Dakota, Goodhue, Rice, Wabasha, Dodge, Olmsted, Winona and Houston counties in Minnesota, and Buffalo, Trempealeau, and La Crosse counties in Wisconsin. Figure 3-1 also shows the federal and state agencies that manage lands in the study area, as well as other land managers.

Federal agencies managing lands in the study area include USFWS and the National Park Service. USFWS manages the Upper Mississippi River National Wildlife and Fish Refuge, which includes lands along the Mississippi River from near Reads Landing, Minnesota, to the north and to the south of La Crosse, Wisconsin. USFWS also operates the Trempealeau National Wildlife Refuge, northwest of Trempealeau, Wisconsin, in the study area. Additional lands owned by the Ho-Chunk Sovereign Nation (formerly known as the Wisconsin Winnebago Tribe) are located in Houston County Minnesota, in the southernmost part of the study area along the Mississippi River.

State agencies that manage lands in the study area include Minnesota Department of Natural Resources (MN DNR) and the Wisconsin Department of Natural Resources (WDNR). In the Minnesota portion of the study area, MN DNR manages the Richard J. Dorer Memorial Hardwood Forest (RJD State Forest), Minnesota State Parks, and Minnesota Wildlife Management Areas. Also in Minnesota, two non-profit organizations, The Nature Conservancy and the Minnesota Land Trust, manage lands in the Minnesota portion of the study area. In Wisconsin, WDNR manages wildlife areas and Wisconsin State Parks in the study area.

The Utilities reviewed digital, hard-copy, and Internet-based data regarding land use and natural resources in the study area from a variety of state, federal, and local contacts, including those listed below:

- Bureau of Transportation Services
- Federal Communications Commission
- Federal Emergency Management Agency (FEMA)
- Minnesota Department of Transportation (MnDOT)
- Minnesota Department of Natural Resources (MN DNR)
- Minnesota Land Management Information Center
- Minnesota Land Trust
- Minnesota Public Utilities Commission (MN PUC)
- National Register of Historic Places (NRHP)
- The Nature Conservancy
- Public Service Commission of Wisconsin (PSCW)
- U.S. Census Bureau
- U.S. Geological Survey (USGS)
- Wisconsin Department of Natural Resources (WDNR)
- Wisconsin Department of Transportation (WisDOT)

Data collected included information related to the natural environment (such as water, geology and soils, vegetation, and wildlife habitat), and the human environment (such as land use, infrastructure, and listed cultural resources).The Utilities also collected data on economic indicators, electrical reliability factors, engineering feasibility, cost, and comments from stakeholders, including individuals and agencies.

The data were compiled in a GIS database and used in the resource review phase of macro-corridor refinements.

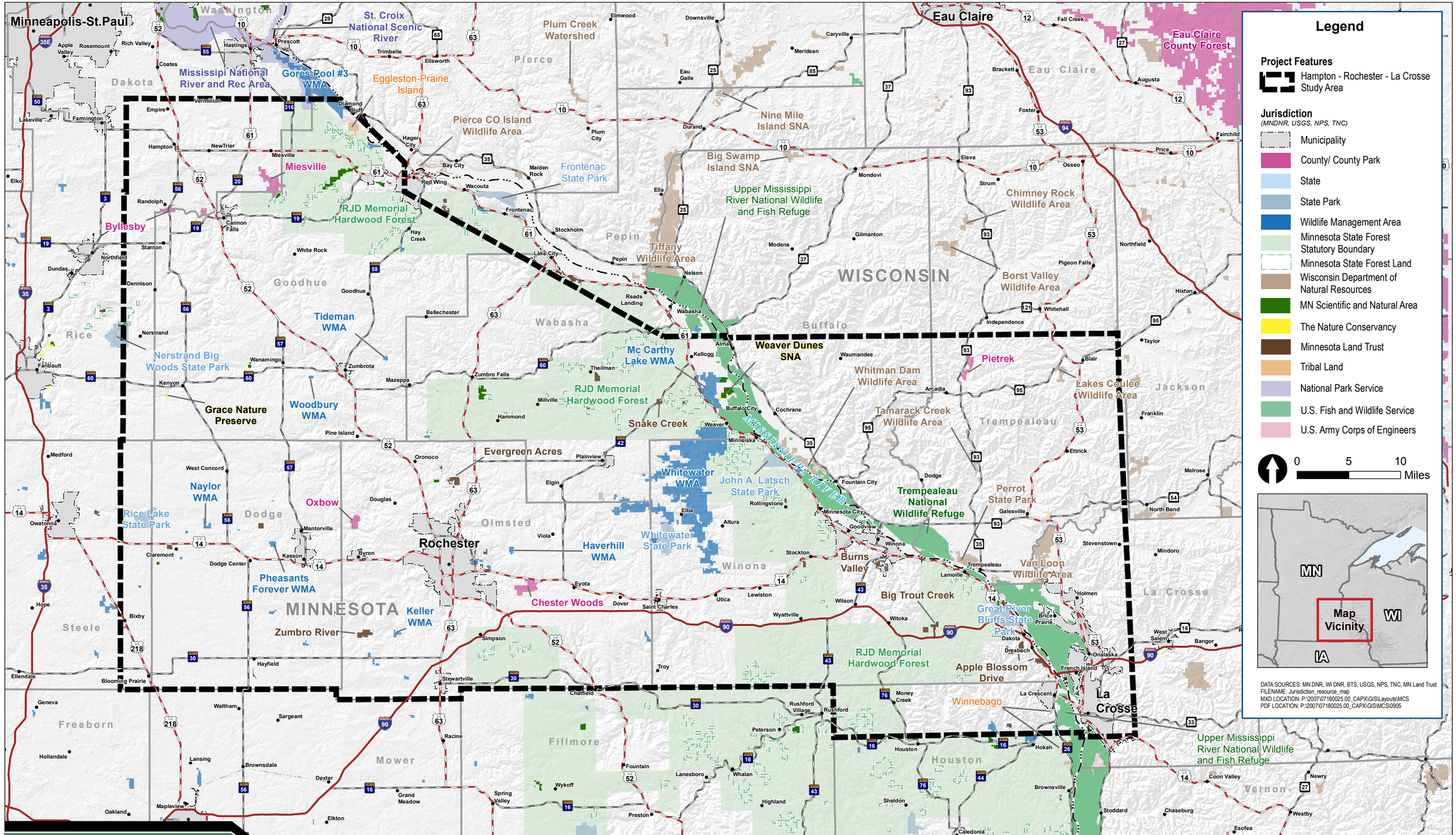

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Figure 3-1: Study Area and Land Management

4.0 Minnesota Certificate of Need Corridors

On August 16, 2007, CapX 2020 Utilities submitted a CON application to the MN PUC for the three 345 kV projects that comprise the Group 1 Projects. The MN CON permitting process requires project information public meetings to be held in the project study area. To meet these requirements, a notice plan was developed for the purpose of identifying occupants and owners of land who could reasonably be affected by the proposed project based on identified end points and preliminary opportunities for routing the transmission line. The CON Corridors, or notice corridors, illustrated in Figure 4-1, provided a starting point for the identification of macro-corridors. Since the CON filing, the Utilities have undertaken additional field studies of the CON Corridors as well as collected stakeholder input during the two rounds of CON meetings to identify areas where the CON Corridors should be expanded or reduced. The process by which CON Corridors were initially developed then refined to preliminary macro-corridors is described in the following sections.

4.1 Development of CON Corridors

For the CON process, the Utilities established a broad corridor based on the Proposal's origin southeast of the Twin Cities in the Hampton area, through northern Rochester, and into the La Crosse area of Wisconsin. The CON Corridors were set to encompass opportunities for routing the proposed transmission lines identified early in the CON process, such as existing transmission lines and major transportation corridors. Between the Twin Cities and Rochester, opportunities were identified along several 69 kV, 115 kV, and 161 kV transmission line corridors, and along the Prairie Island-Byron and Prairie Island–Twin Cities 345 kV transmission lines. Opportunities identified along transportation corridors followed portions of Minnesota State Highway 56 (MN-56), U.S. Highway 52 (US-52), U.S. Highway 14 (US-14), and Minnesota State Highway 58 (MN-58). Major roads between the Pine Island substation and Rochester were considered opportunities for routing the proposed 161 kV transmission lines in the Rochester area.

The CON Corridors included potential crossing sites at the Mississippi River that used existing transmission corridors: a 161 kV/ 69 kV double circuit transmission line near Alma, Wisconsin; a 69 kV transmission line built to 161 kV specifications near Winona; and a 69 KV transmission line between La Crescent, Minnesota and La Crosse, Wisconsin. A fourth crossing option was identified near Trempealeau, at a narrow point in the Mississippi River where several islands were thought to be able to support transmission line structures. The Trempealeau crossing option was eliminated from further consideration because it did not follow an existing high-voltage transmission line through the USFWS refuge.[8] A 161 kV transmission corridor was identified as an opportunity connecting Rochester and the Alma crossing option. The Interstate 90 (I-90) corridor was identified as the major opportunity connecting Rochester with the Winona, Trempealeau, and La Crescent/La Crosse crossing options. A wide corridor was identified between Winona and La Crescent around the bluffs west of the Mississippi River to allow consideration of different approaches to the remaining river crossings.

[8] The Mississippi River crossing is discussed in detail in Section 5.2.1, River Crossings.

In Wisconsin, the primary opportunities followed the Dairyland Q-1 transmission corridor, an existing 161 kV line between the Alma generating plant and the North La Crosse Substation. This transmission line was identified as an opportunity because it requires a complete rebuild within five years of the CON application submittal (2007), and the proposed 345 kV transmission line could be placed on the same structures. Additional opportunities in Wisconsin included other 69 kV transmission lines that cross the area, railroads, and major roadways (Wisconsin Highway 35).

4.2 Stakeholder Input

CON Corridors were presented to stakeholders during two rounds of meetings held in 2007 that focused on the CON proceedings: MN CON Project Information public meetings, and MN CON Environmental Report scoping meetings. Significant stakeholder outreach was undertaken as part of the CON process in Minnesota. Although the CON proceedings were a Minnesota state process, the Utilities also sent meeting notices to Wisconsin landowners about the Proposal, inviting them to provide comments.

4.2.1 CON Project Information Public Meetings

The CapX2020 Utilities held a series of open houses in September 2007 focused on the three CapX2020 345 kV Group 1 Projects. Table 4-1 lists the six public meetings held in the study area over a two-week period, which were timed to maximize public participation.

Table 4-1:
MN CON Project Information Public Meetings Held in Study Area in September 2007

Locations	Dates	Time
Winona, MN	September 11, 2007	3:00 p.m. to 7:00 p.m.
Rochester, MN	September 12, 2007	9:00 a.m. to 12:00 p.m. and 3:00 p.m. to 7:00 p.m.
Wabasha, MN	September 13, 2007	3:00 p.m. to 7:00 p.m.
Redwing, MN	September 25, 2007	3:00 p.m. to 7:00 p.m.
Northfield, MN	September 26, 2007	9:00 a.m. to 12:00 p.m. and 3:00 p.m. to 7:00 p.m.
Lakeville, MN	September 27, 2007	3:00 p.m. to 7:00 p.m.

The purpose of the initial public meetings was to introduce and describe the Proposal, communicate the need for the Proposal, identify potential issues, obtain input, and develop a Project mailing list. The public meetings were held in an open house format with large informational displays, aerial maps, and take-home handouts. Project representatives were on hand to answer questions and engage the public in discussion. Large sheet maps based on aerial photography illustrated the CON Corridors. Comment forms were made available for participants to submit formal comments. Sign-in sheets allowed participants to provide additional contact information that was added to the mailing list. Appendix A-1 provides a summary of comments received at the CON Project Information public meetings.

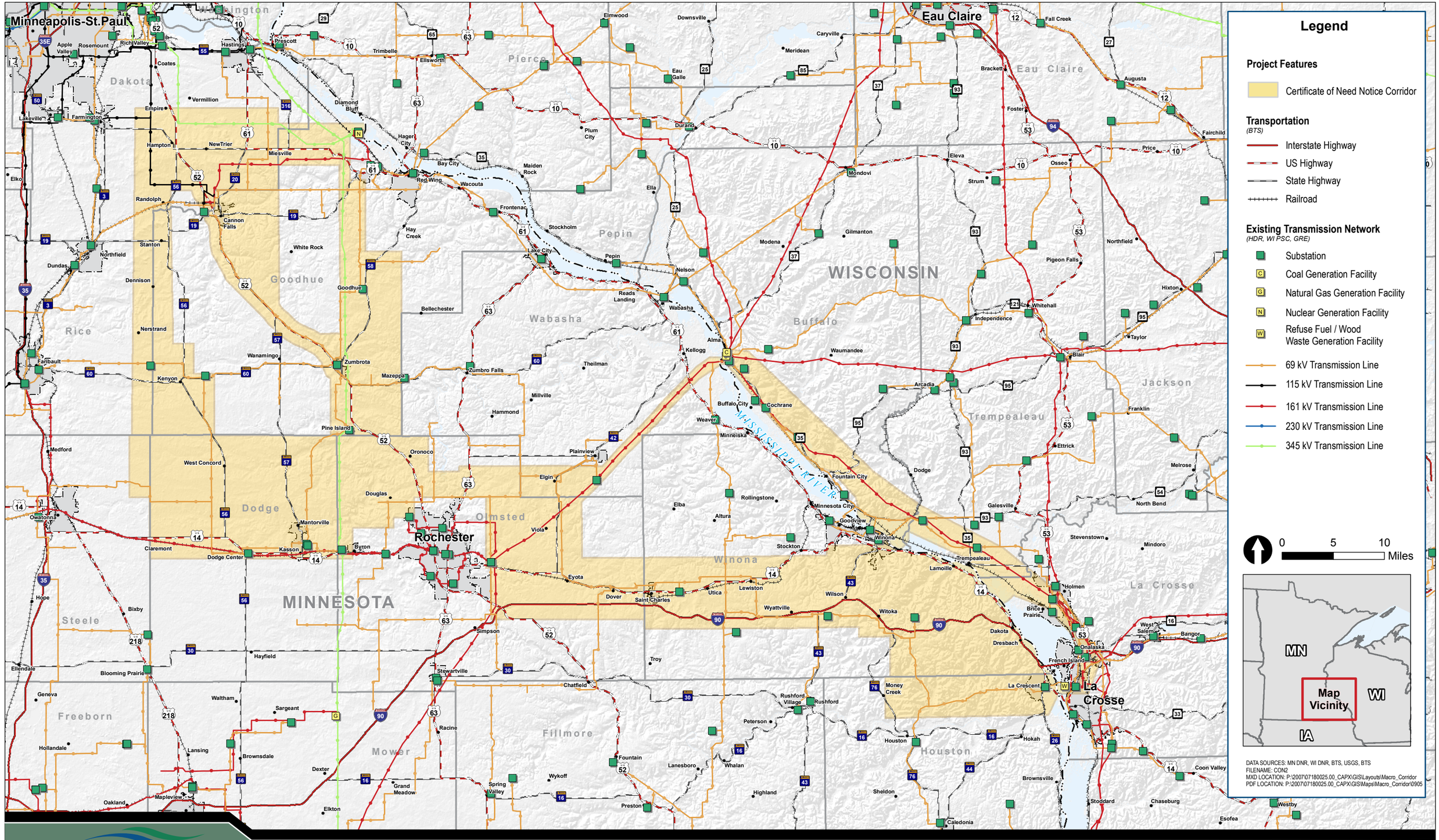

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Figure 4-1: CON Corridors

4.2.2 CON Environmental Report Scoping Meetings

The Minnesota Department of Commerce Office of Energy Security (OES) Energy Permitting Staff is responsible for preparing an Environmental Report for CON proceedings (MN Rules 7849.7010-7110). The OES hosted 10 scoping meetings in December 2007 for the CON Environmental Report process, which covered the three CapX2020 345 kV Group 1 Projects. Three of these meetings, listed in Table 4-2, were held to review information specific to the Project within the study area.

Table 4-2:
CON Environmental Report Scoping Meetings by December 2007

Locations	Dates	Time
Winona, MN	December 13, 2007	9:00 a.m. to 12:00 p.m.
Rochester, MN	December 13, 2007	5:00 p.m. to 8:00 p.m.
Cannon Falls, MN	December 17, 2007	5:00 p.m. to 8:00 p.m.

The purpose of the CON Environmental Report scoping meetings was to inform the public of the CON process and collect comments on the purpose and need and potential environmental issues associated with the Proposal. OES completed its CON Environmental Report on March 31, 2008, which is available online (https://www.edockets.state.mn.us/EFiling/ShowFile.do?DocNumber=5046228).

4.3 CON Corridor Refinement

In response to agency and public comments (Appendix A), additional data collection and field reconnaissance, the Utilities refined the initial CON Corridors submitted in the CON in August 2007. Corridor refinement included expanding and reducing or eliminating areas of the CON Corridors to develop macro-corridors.

The Prairie Island-Byron 345 kV transmission line corridor was eliminated because the Proposal is needed to provide redundancy for the Prairie Island-Byron transmission line. These transmission lines cannot be collocated to reduce the risk of both lines being out of service in the event of a storm or other disaster. Other areas eliminated included the bluff areas between Winona and La Crescent, Minnesota, and the area south of Kenyon and west of the Pine Island- Byron 345 kV transmission line due to constraints in routing.

Corridors were expanded where additional opportunities were identified, or where additional area was needed to assess a wider array of alternatives. These areas included the MN-56 and MN-60 corridors between Hampton and Pine Island, Minnesota, and the northern Zumbro River crossing area between Pine Island and Alma, Wisconsin. Additional corridors were identified between Trempealeau and the North La Crosse Substation and east of the Dairyland Q-1 corridor to allow for alternatives to the Black River crossing.

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5.0 Macro-Corridor Development

The Utilities considered numerous factors and stakeholder comments (Appendix A) to develop preliminary macro-corridors from refined CON Corridors, consistent with RUS guidance requiring consideration of environmental, engineering, economic, land use, and permitting in developing a Macro-Corridor Study (RUS 2002). Figure 5-1 shows the preliminary macro-corridors overlaid on the CON corridors. The Utilities focused on several overarching objectives in identifying preliminary macro-corridors, including:

- Compliance with Minnesota and Wisconsin ***regulatory requirements*** regarding the routing of transmission lines. This includes maximizing opportunities to use existing transmission and transportation rights-of-way, and property, field, and survey lines, and ensuring appropriate consideration of regulated areas. Compliance with federal laws, policies and guidelines regarding wetlands, floodplains, historic properties, and other resources was also considered
- Compliance with ***NERC electrical system planning standards***.
- Minimizing environmental and land use impacts, including impacts associated with ***river crossings*** (the Mississippi, Zumbro, Cannon, and Black rivers).

These strategic objectives are factors typically considered when routing a new transmission line and they are designed to minimize environmental and land use impacts. Environmental, engineering, economic, land use and permitting implications are implicit in each objective. For example, impacts may be minimized by identifying areas for the proposed transmission line that would use existing transmission or transportation corridors where rights-of-way already exist; reducing engineering, construction, and operational costs; and avoiding areas with sensitive environmental resources (such as wetlands) that require additional permitting and/or mitigation.

Other factors influencing the development of the preliminary macro-corridors included comments collected by stakeholders (the public, non-profit organizations, and government agencies), and field reconnaissance of the study area. These factors, and the strategies listed above, are described in detail in the following sections.

5.1 Regulatory Requirements

Wisconsin and Minnesota statutes and administrative rules mandate consideration of certain factors when routing high voltage transmission lines. Specifically, Wisconsin Statute §1.12(6) states that, to the greatest extent feasible, the following corridors should be used in routing high voltage transmission lines, in the following order of priority: (1) existing utility corridors, (2) highway and railroad corridors, (3) recreational trails, to the extent the facilities can be constructed underground and that the facilities do not significantly impact environmentally sensitive areas, and (4) new corridors.

Wisconsin law provides that utility corridors should be given top priority when routing high voltage transmission lines (Wisconsin Statute §1.12(6)(a)). Wisconsin law further provides that existing rights-of-way should be used “to the extent practicable and the routing… minimizes environmental impacts in a manner that is consistent with achieving reasonable electric rates.” Wisconsin Statute § 196.491 (3r). Likewise, Minnesota requires permitting authorities to consider existing electrical transmission rights-of-

way when issuing a route permit for a high voltage transmission line (Minn. R. 7849.5910(J)), *PEER*, 266 N.W.2d 868. RUS Bulletin 1794A-603 also notes that the use of existing rights-of-way or double circuiting of existing electric transmission lines should be considered in developing macro-corridors (RUS 2002).

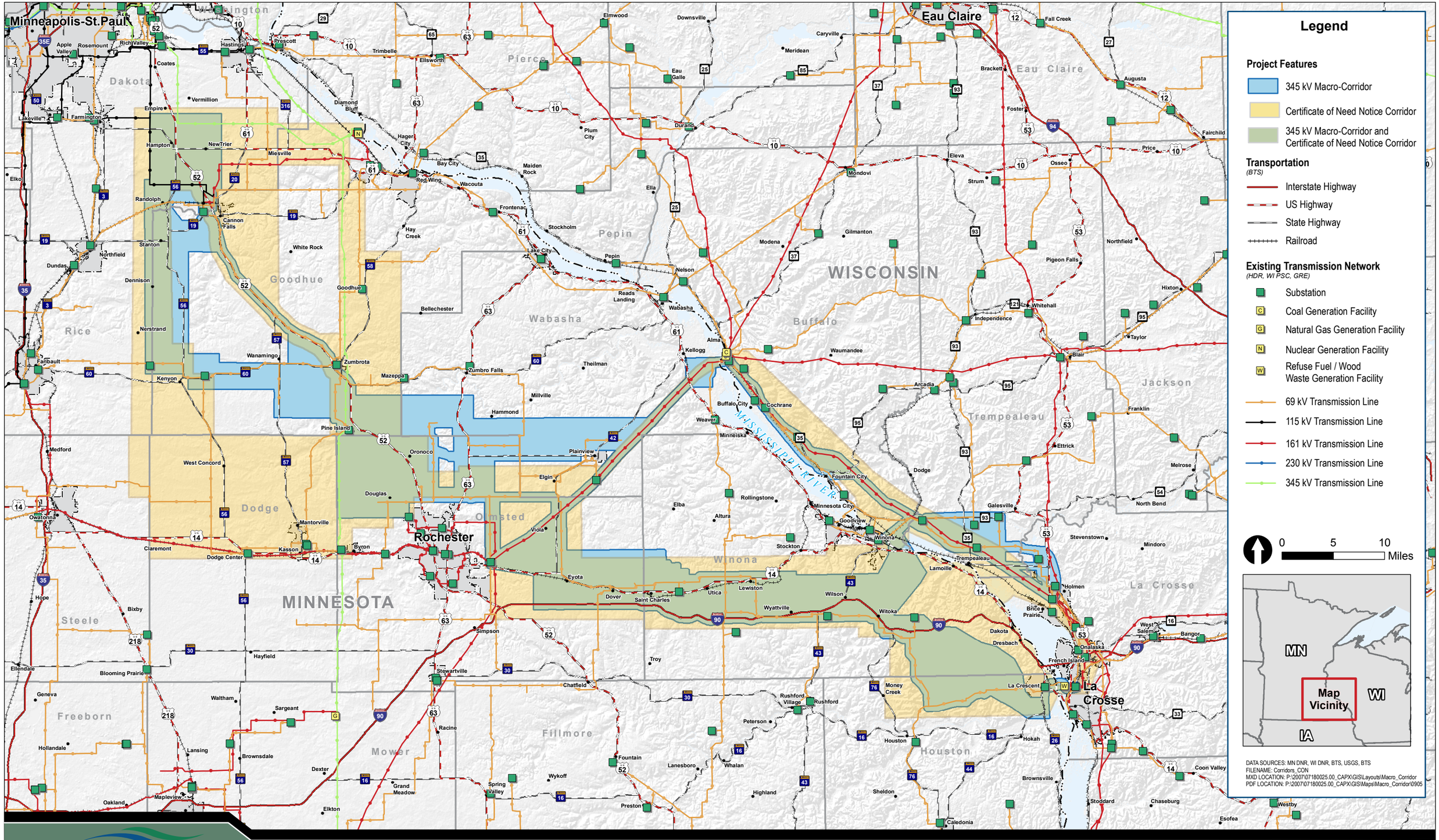
In Minnesota, the Power Plant Siting Act, Minnesota Statutes Chapter 216E and the Commission's implementing routing rules require consideration of existing railroad and highway right-of-ways and any existing transmission corridors in selecting transmission line routes. Minn. Stat. § 216E.03, Subd. 7(b)(8); accord Minn. R. 7849.5910(H) (requiring consideration of "use or paralleling of existing rights-of-way"). This policy of non-proliferation creates a preference for placing new transmission lines near existing infrastructure as a way to minimize the proliferation of new corridors. *People for Envtl. Enlightenment and Responsibility (PEER), Inc. v. Minnesota Envtl. Quality Council*, 266 N.W.2d 858, 868 (Minn. 1978). In contrast to the Wisconsin statute, the Minnesota statute and rules do not prioritize these routing considerations.

Existing transmission and transportation corridors, property lines, field lines, and section lines were considered potential opportunities for routing the proposed transmission lines within the identified macro-corridors. Existing transmission and transportation corridors were given greater priority than other possible corridors in compliance with Wisconsin and Minnesota policies. Existing rights-of-way were also given priority because from a practical standpoint, easements, access roads, and disturbance often already exist in these locations. As a result, using existing corridors usually results in less incremental environmental disturbance, lower construction costs, and less intrusive maintenance access. Property, field, fence, and section lines were considered in macro-corridor development in compliance with Minnesota policy. It is common practice to follow property, field, fence, and section lines when routing new transmission lines to minimize impacts on land use, specifically on homes and agricultural operations.

5.1.1 Transmission Corridors

Utilizing existing transmission corridors for new transmission lines would avoid any impacts to resources in previously undisturbed locations. There are also disadvantages to using existing transmission corridors, including the possibility that both lines could be damaged by a single catastrophic event (such as a tornado), potentially leading to network reliability problems.

The regional electric transmission network (Figure 5-2) provides opportunities to use existing transmission corridors by collocating the proposed transmission lines with existing transmission lines where appropriate and allowed by NERC system planning standards, or by paralleling existing rights-of-way. Data on existing transmission lines and substations in Minnesota were collected from the Minnesota Land Management Information Center (2007). Data on existing transmission lines and substations in Wisconsin were collected from PSCW (2001). These datasets were combined to create GIS layers that were verified and corrected using aerial photography as well as on-site verification.



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Macro-Corridor Study

Figure 5-1: Preliminary Macro-Corridors with CON Corridors

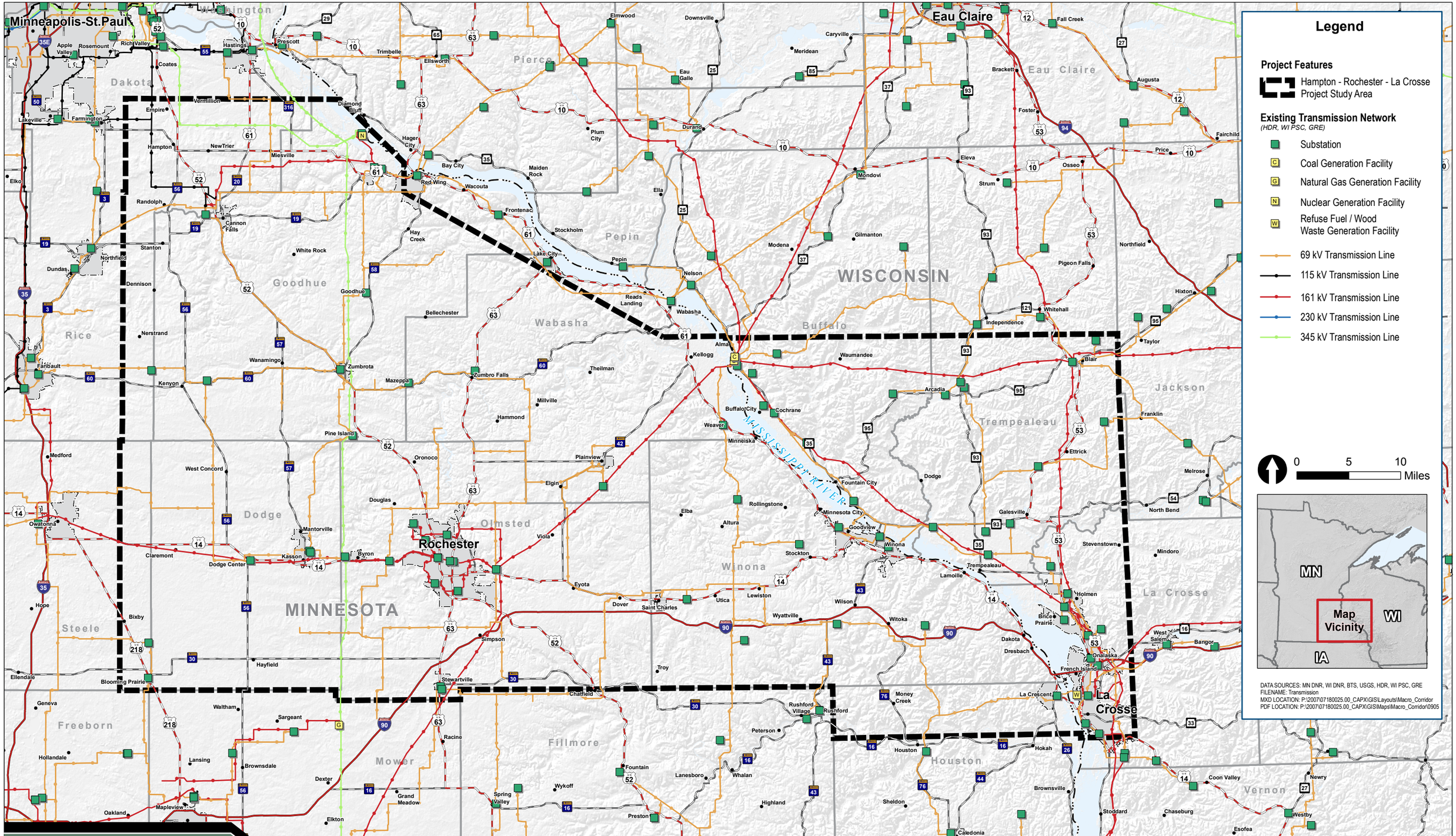

Figure 5-2: Regional Transmission System

5.1.2 Transportation Corridors

The state of Wisconsin mandates that highway and railroad corridors be given secondary priority, after existing transmission corridors, in routing new high-voltage transmission lines (Wisconsin Statute §1.12 (6)(b)). Minnesota also requires that state permitting authorities consider existing transportation systems or existing rights-of-way in issuing a route permit (Minn. R. 7849.5910(J)). Existing transportation corridors, such as roads, bridges, and railroads, may facilitate construction of the transmission line through right-of-way access.

Figure 5-3 shows major roadways in the study area. Data on highways, roads, and railroads were obtained from the Bureau of Transportation Services (BTS 2003). Interstate 90, that runs from southeast of Rochester to La Crosse, is the only interstate highway that occurs in the study area. There are several U.S. highways and state highways, as well as other major roadways in the study area that may represent opportunities for routing the transmission line

5.1.3 Property, Field, Fence, and Survey Lines

Experience indicates that following property, field, fence, and surveyed lines in routing new transmission lines can minimize impacts on land use. The state of Minnesota requires the MN PUC to consider use or paralleling survey lines, natural division lines, and agricultural field boundaries (Minn. R. 7849.5910 (H)). Minnesota Statute § 216E.03 further requires “evaluation of governmental survey lines and other natural division lines of agricultural land so as to minimize interference with agricultural operations.” Property lines are established lines of ownership by survey, defined by deed or possession. Field lines separate field plots, and may follow a constructed fence. Survey lines are surveyed land subdivision lines, used by governments in mapping and surveying, and may include section lines, county boundaries, and municipal boundaries. Following any of these lines may minimize intrusion and impact inside agricultural fields or other property.

The Utilities used aerial photographs and landowner input to identify property lines, field lines, and survey lines with potential to minimize impact to structures (which may include homes and farm buildings), and agricultural fields (including irrigation pivots). In many cases, these corridors provide connections between corridor segments that follow existing transmission or transportation rights-of-way. Property, field, and survey lines that follow straight lines for longer distances are generally seen as presenting better opportunity for transmission line routing, because angle structures and additional length caused by angles and curvature in the line tend to result in additional impacts to landowners and natural resources as well as higher construction costs. Property, field, and survey lines that have fewer nearby structures, such as homes, are also seen as presenting greater opportunity with respect to transmission line routing. During the route refinement process, proximity to homes and economic impacts of line curvatures will be evaluated in-depth.

5.1.4 State Protected Resources

Minnesota and Wisconsin have specific statutes and agency regulations that guide the routing of high voltage transmission lines on or around specific land areas, jurisdictions, landscapes, and environmental features. These regulations often set constraints on transmission line routing, except when alternatives are not feasible and prudent, are too costly, or are otherwise undesirable.

Minnesota statutes and regulations govern the placement of transmission lines in proximity to sensitive environmental features or landscapes, including wetlands, Minnesota Wild and Scenic Rivers, recreation areas, scientific and natural areas, trout streams, forested MN DNR lands, other public lands, and public waters (Minn. R. Ch. 6135; Minn. R. Ch. 7849). Minnesota law prohibits transmission line routing through state or national parks or state scientific and natural areas, "unless the transmission line would not materially damage or impair the purpose for which the area was designated and no feasible and prudent alternative exists" (Minn. R. 7849.5930).

Although these environmental features will be addressed in detail during routing, efforts were made to avoid sensitive and prohibited areas or concentrations of such areas during macro-corridor development.[9] Specifically, the area between MN-42 and I-90 (see Figure 3-1) was deliberately avoided in macro-corridor development because of several recreation areas including Whitewater State Park, Whitewater Wildlife Management Area, John A. Latsch State Park, and a number of RJD Forest recreation sites. These areas are all managed by MN DNR. WDNR manages lands within the study area in Wisconsin, including the Van Loon Wildlife Area in Wisconsin, Whitman Dam Wildlife Area, and Perrot State Park, which were considered during routing. Efforts were also made to avoid federally protected areas, including the Trempealeau National Wildlife Refuge, and the Upper Mississippi National Wildlife and Fish Refuge, except where there are existing transmission line corridors.

5.2 NERC Electrical System Planning Requirements

The Southeastern Minnesota–Southwestern Wisconsin Reliability Enhancement Study (March 13, 2006), which is further described in the AES, evaluated the system alternatives for meeting the community service needs in the Rochester and Winona/La Crosse areas.

This study applied NERC standards and identified system deficiencies and facilities to address those deficiencies. The standards require affected entities, including the Utilities, to maintain the system in a secure state, able to withstand the next contingency, even after one or more contingencies have already occurred. Utilities are required to meet NERC reliability standards when planning, constructing, operating, and maintaining the electrical systems. *Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, 72 FR 16,416 (April 4, 2007), Federal Energy Regulatory Commission (FERC) Stats. & Regs., 31,242 *order on reh'g,* 120 FERC 61,053 (July 19, 2007). NERC standards include a requirement that the system be designed so that under "system intact" conditions or "single contingency" ("N-1") condition (for example, when a single transmission line, generator, or transformer is out of service), operators are able to reliably operate the system and serve all connected loads without any ongoing overloads or voltage problems.

9 An objective for developing macro-corridors for the Project was to minimize environmental impacts. As part of the development of the preliminary macro-corridors environmentally sensitive landscapes and resources at a largely regional or "macro" level were considered. Site-specific environmental data will be incorporated as the routing progresses and as part of the NEPA and state permitting processes.

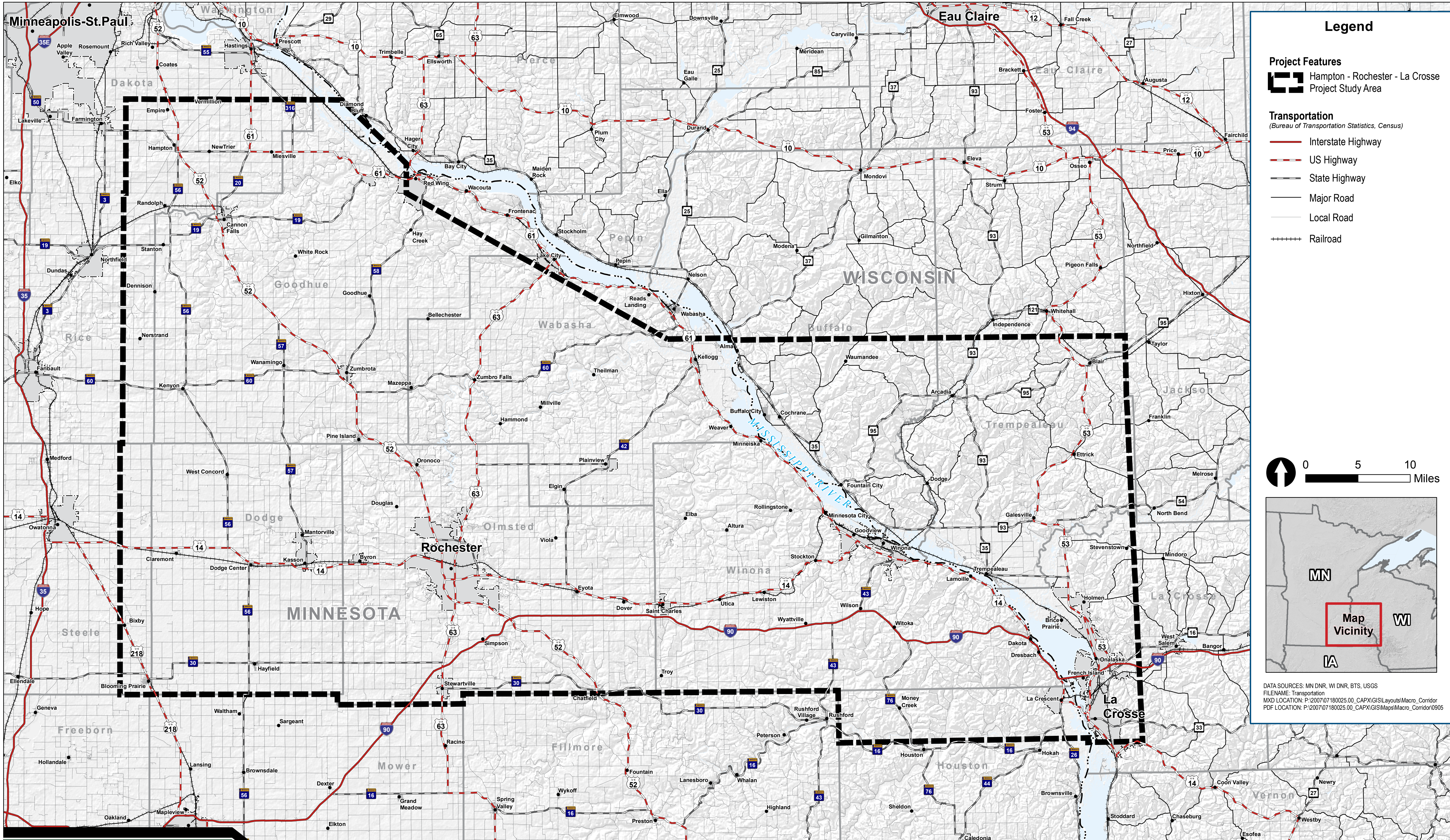

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Figure 5-3: Transportation

In developing the macro-corridors, the Utilities considered potential opportunities to double circuit the new transmission facilities with existing lines. One factor that must be considered when determining whether double circuiting is a feasible option is compliance with NERC Standard TPL-003-0, *System Performance Following Loss of Two or More Bulk Electric System Elements*. This standard requires transmission planners to perform periodic assessments that demonstrate that their portion of the interconnected transmission system is planned such that the network can be operated reliably under specified contingency conditions. One such contingency condition is an event resulting in the loss of any two circuits of a multiple circuit transmission line.

The extent to which new transmission lines and existing transmission lines can be placed on double circuit structures depends on specific circumstances, application of system reliability requirements, and the electrical characteristics of the transmission lines. More specifically, double circuiting is more feasible when the two transmission lines that will be strung on the same structures serve different purposes. For example, double circuiting may be appropriate where one circuit is used more for transfer capability on the bulk transmission system, and a lower-voltage second circuit is designed to provide for local community service reliability needs. If, in contrast, both lines are needed for the system to withstand the outage of the first line, then the two lines must be placed on separate structures.

NERC planning criteria will continue to be an important consideration in routing.

5.3 River Crossings

Important environmental considerations for routing are the crossings of the Mississippi, Cannon, Zumbro, and Black rivers. These rivers are protected waters with specific regulations and permitting requirements.

5.3.1 Mississippi River

Protection of the Mississippi River biological, cultural, visual and recreational values are important considerations for routing. Valuable resources associated with the Mississippi River Valley include sensitive species habitat, vegetation, recreation areas, scenic areas, and cultural and historic sites. The wetland backwaters in the area are primarily owned and or administered as part of the national wildlife refuge system by USFWS, including the Trempealeau National Wildlife Refuge and the Upper Mississippi River National Wildlife and Fish Refuge. Physical characteristics such as topography, and land use, were considered as well.

Each Mississippi River crossing alternative is located at an existing high-voltage transmission line corridor and identified to meet USFWS requirements as well as minimize new impacts to the river by using existing rights-of-way.

There are two existing transmission lines that cross the river near Alma, Wisconsin: The existing 161 kV and 69 kV transmission lines cross the river on the same double-circuit structures but diverge both east and west of the river. There are also three existing transmission lines that cross the Mississippi River near Winona, Minnesota. The existing transmission line that crosses farthest downstream is a 69 kV transmission line owned by Xcel Energy that parallels a railroad grade across the river. Other existing transmission lines that cross the Mississippi River upstream are located in proximity to high-density

development and an airport, and were considered as potential crossing sites. Additionally, two 69 kV transmission lines cross the Mississippi River between La Crosse, Wisconsin, and La Crescent, Minnesota, on double-circuit structures south of a railroad bridge with structures on French Island.

After initial review of the proposed crossings at the Mississippi River, USFWS sent a letter to the Utilities recommending "any crossing considers use of existing energy company rights-of-way or easements." Furthermore, the letter states that new rights-of-way are unlikely to be approved, "since Service policy and regulations do not allow new uses that fragment habitat on refuges." USFWS' recommendations affirm the Utilities' decision to propose crossing the Mississippi River at existing transmission line corridors. Appendix C contains official correspondence received to date from the USFWS regarding the Proposal.

5.3.2 Cannon River

Segments of the Cannon River, near Cannon Falls, Minnesota, are designated as scenic or recreational by MN DNR. Macro-corridors avoid sections of the Cannon River that are designated as Scenic River, because of regulations designed to prevent impact to scenic views.

Macro-corridors are wide where they cross the Cannon River in order to facilitate consideration of several crossings to minimize impact. The macro-corridor that follows MN-56 includes potential Cannon River crossings at existing roadway crossings (Dixie Avenue and Randolph Boulevard/MN-56), and at points along the river channel where both the channel and associated floodplains are narrow. The macro-corridor along US-52 includes an existing 69 kV transmission line crossing over the Cannon River, and an existing roadway crossing along US-52. An area between Cannon Falls and Randolph was omitted from the macro-corridor due to floodplains that are too wide to span.

5.3.3 Zumbro River

There are three macro-corridor alternatives that cross the Zumbro River in Minnesota. These macro-corridors were set to allow consideration of multiple options crossing the Zumbro River, while avoiding high density residential areas and the Evergreen Acres conservation easement along the river.

The northernmost corridor would only be utilized for the proposed 345 kV transmission line. This corridor includes the Zumbro Dam and other field or property lines that may provide an opportunity for crossing the river while avoiding residences. The central macro-corridor alternative could be utilized for the 345 kV transmission line, the 161 kV transmission line, or both lines collocated on the same structures, and it follows a bridge that crosses the Zumbro River along White Bridge Road. The southern macro-corridor alternative would only be utilized for the proposed 161 kV transmission line, and follows a bridge that crosses the Zumbro River at 75th Street.

5.3.4 Black River

The macro-corridor was set to allow consideration of multiple options crossing the Black River, while mitigating for potential environmental impacts in the Upper Mississippi National Wildlife and Fish Refuge (managed by USFWS), and the Van Loon Wildlife Area (managed by WDNR).

Several linear features cross the Black River inside the macro-corridor. To the north, Highway 93 crosses the Black River east of Galesville along an existing bridge outside of the Van Loon Wildlife Area. An

existing 69 kV transmission line crossing near the Seven Bridges historic trail, which links several bridges listed as historic places on the National Register of Historic Places (NRHP).

West of the Holman area, the macro-corridor contains a Black River crossing at Wisconsin Highway 35, through the Van Loon Wildlife Area. This portion of WI-35 is designated as the Great River Road National Scenic byway.

The existing Dairyland-owned Q-1 161 kV transmission line also crosses the Black River through the Upper Mississippi Wildlife and Fish Refuge and the Van Loon Wildlife Area in the southern portion of the macro-corridor in this area. This transmission corridor is the Dairyland Q-1 transmission line that needs to be rebuilt (discussed in Section 4.1).

5.4 Opportunities and Constraints Identification

Table 5-1 identifies opportunities and constraints associated with the preliminary macro-corridors, as discussed in Section 5.1, Regulatory Requirements. Findings are organized and color-coded by sections within the macro-corridors illustrated on Figure 5-4. Constraints were identified to determine areas that should be avoided or excluded, when possible during routing.

Table 5-1:
Macro-Corridor Opportunities and Constraints by Section

Segment	Opportunity Along Existing Transmission Corridor	Opportunity Along Existing Transportation Corridor	Opportunity Along Property, Field, on Survey Lines	Potential Constraints[10]
Section A: Hampton Substation to North Rochester Substation				
Hampton Substation Siting Area	None	US-52, MN-56, Railroad corridor	Property, Field, and Survey Lines	Pivot irrigation, Residences, Town of Hampton
MN-56/MN-60 Transportation Corridor	69 kV transmission line from Kenyon to south of Wanamingo; 69 kV lines in east and west ends of corridor; 345 kV in east end of corridor.	MN-56, MN-60, local and county roads	Property, Field, and Survey Lines (County Line)	Cannon River and associated resources; Towns of Randolph, Wanamingo, Dennison, Stanton, and Nerstrand; West Byllesby Park (Dakota County Parks); Stanton Airfield; Pivot Irrigation; Warsaw WMA; Nansen Agricultural Historic District and historic farms; Woodbury WMA; Residences along roadways

10 "Potential constraints" is not meant to include an exhaustive list of all constraints that occur in that section of the preliminary macro-corridor. Rather, it is included to identify major constraints appropriate for the level of macro-corridor identification. Specific constraints will be discussed during the routing when segments are compared.

Segment	Opportunity Along Existing Transmission Corridor	Opportunity Along Existing Transportation Corridor	Opportunity Along Property, Field, on Survey Lines	Potential Constraints[10]
US-52 Transportation Corridor	Existing 69 kV transmission line from Cannon Falls to Pine Island	US- 52	Property and Field Lines, with primary opportunity along U.S. Highway 52	Cannon River and associated resources; Towns of New Trier, Hampton, Cannon Falls, Zumbrota, and Pine Island; Lake Byllesby Park (Dakota County Parks); Pivot irrigation; Future development planned along US-52
North Rochester Substation Siting Area	345 kV and 69 kV transmission line from Zumbrota to Pine Island	Local roads	Property and Field Lines	Pivot irrigation, Residences
Section B: North Rochester Substation to Alma or to Chester Substation				
345 kV Corridor Between North Rochester Substation Siting Area to Alma	Existing 69 kV transmission line crosses Lake Zumbro at Zumbro Lake Dam; other existing 69 kV transmission lines; existing 161 kV transmission line to Alma River Crossing	US-63 through western corridor; MN-247 in southern corridor	Property and Field Lines	Zumbro River and associated natural resources; Residences along Zumbro River; Forested areas with associated natural resource values; RJD State Forest, Snake Creek Unit; Town of Plainview; Snake Creek (Minnesota Land Trust); McCarthy Lake WMA, Kellogg-Weaver SNA;, Wetlands/floodplains associated with Mississippi River; Upper Mississippi River National Fish and Wildlife Refuge
345 kV Corridor between North Rochester Substation Siting Area to Chester Substation	Existing 69 kV transmission line crosses Lake Zumbro at Zumbro Lake Dam; Existing 69 kV and 161 kV transmission lines.	Local road (White Bridge Road); 40th and 50th Avenues run N/S through corridor	Property and Field Lines	Zumbro River and associated natural resources; residences along Zumbro River ; RJD State Forest; Isaak Walton League WMA; Nietz Airstrip
161 kV Corridor between North Rochester Siting Area and Northern Hills Substation	Prairie Island-Byron 345 kV transmission line and a network of 69 kV transmission lines	US-52, Douglas Trail, 60th Avenue	Property, Field, and Survey Lines	Planned development along US-52; City of Rochester; Dense residential development
161 kV Corridor between North Rochester Substation Siting Area and Chester Substation	Existing 69 kV transmission lines	Local roads: 18th Avenue, White Bridge Road; 40th and 50th Avenues run N/S through corridor; 75th Avenue	Property and Field Lines	Zumbro River and associated natural resources, Houses along Zumbro River; Dense housing

Segment	Opportunity Along Existing Transmission Corridor	Opportunity Along Existing Transportation Corridor	Opportunity Along Property, Field, on Survey Lines	Potential Constraints[10]
Section C: Alma to North La Crosse Substation Section				
Dairyland Q-1 161 kV between Alma and Winona crossing options	Follows existing 161 kV transmission line, and half of the corridor follows an existing 69 kV transmission line	Follows WI-35 and a railroad corridor	Property, field, fence lines	Wetlands/Floodplains associated with Mississippi River corridor; Great River Road Scenic Byway; Areas of dense residential development; Towns of Buffalo City, Cochrane, and Fountain City; Upper Mississippi River National Wildlife and Fish Refuge; Whitman Dam Wildlife Area (WDNR); Merrick State Park
Winona/Centerville Corridor Area	Existing 69 kV transmission lines, Dairyland Q-1 161 kV transmission line	WI-54/93, WI-35, other local roads	Property, field, fence, and section lines	Great River Road Scenic Byway; Pivot irrigation; Schubert and Carhart Farms Airstrips; residential development; Perrot State Park
Seven Bridges Corridor	Existing 69 kV transmission line adjacent to Seven Bridges Trail	None	None	Van Loon Wildlife Area; Seven Bridges; Seven Bridges Trail
WI-35 Corridor	None	WI-35	None	Great River Road Scenic Byway; Van Loon Wildlife Area
Dairyland Q-1 Black River Crossing to North La Crosse Substation	Dairyland Q-1	None	None	Van Loon Wildlife Area; Upper Mississippi National Wildlife and Fish Refuge
Section D: I-90 Corridor Section				
Chester Substation and I-90 Corridor	Network of existing 69 kV transmission lines	Primary opportunities include US-14 and I-90. Secondary opportunities include railroad corridor and multiple local roads.	Property, field, fence, and section lines	Towns of Eyota, Dover, St. Charles, Utica, Lewiston, Wyattville, and Wilson; RJD State Forest parcels
I-90 to Winona River Crossing	Winona Mississippi River crossing option follows an existing 69 kV transmission line	Follows of US- 14 and railroad corridors	Property, field, fence, and section lines	Bluff areas approaching Winona; Wetlands/floodplains associated with the Mississippi River; Apple Blossom Scenic Byway
I-90 to La Crescent/ La Crosse River Crossing and La Crosse Substation Area	Network of 69 kV transmission lines	Follows I-90 in northern part of segment, South Ridge Road, County Road 103, and other local roads in area	Property, field, fence, and section lines	Town of Witoka; Bluffs area approaching La Crescent; Wetlands/floodplains associated with the Mississippi River; Minnesota Land Trust (Big Trout Creek); Apple Blossom Scenic Byway

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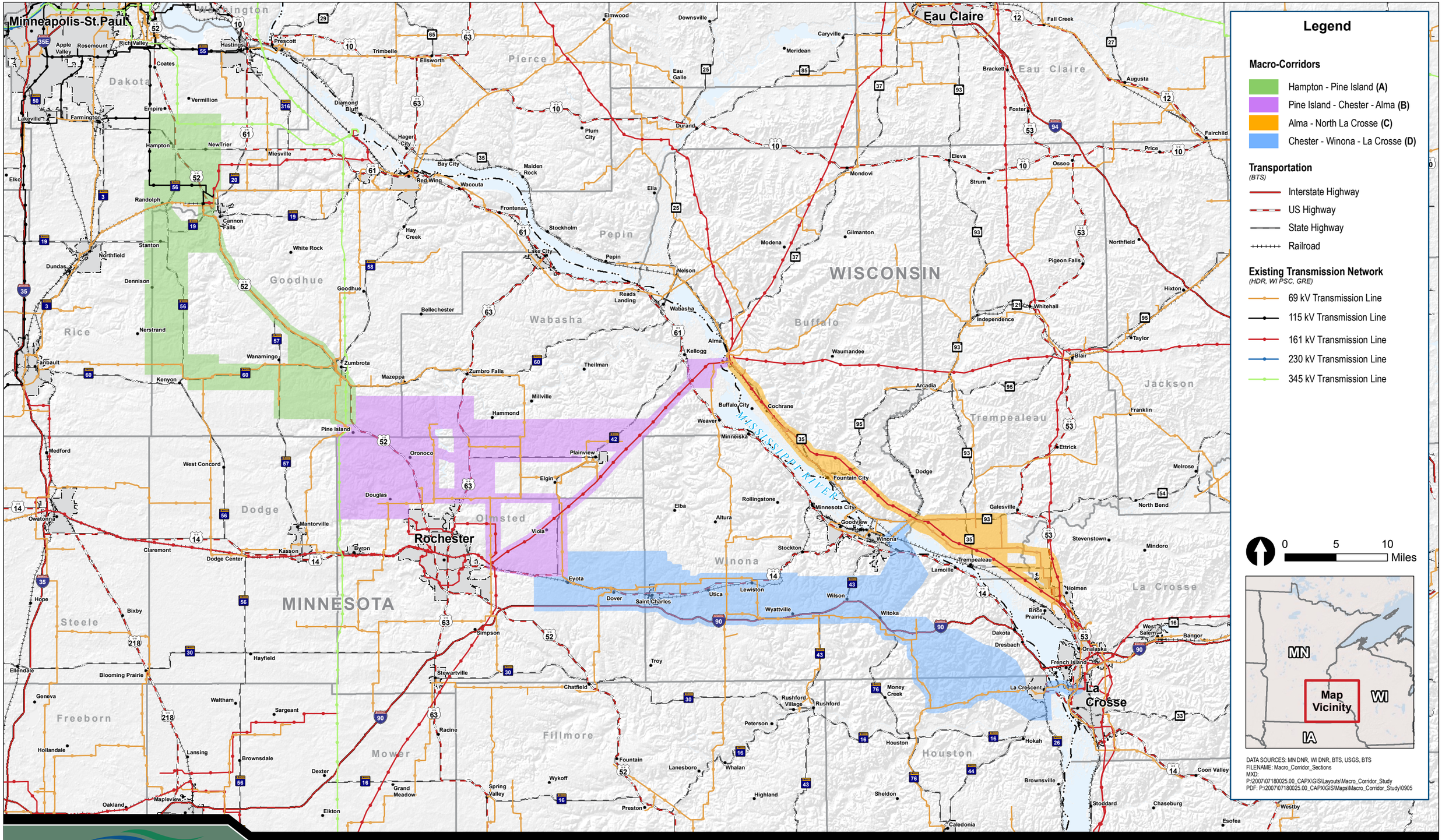

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Figure 5-4: Preliminary Macro-Corridors by Section

5.5 Stakeholder Input

The Utilities provided opportunities for stakeholders to comment on the preliminary macro-corridors during two rounds of public meetings in 2008, Route Working Groups, and public meetings described in the next sections.

5.5.1 Route Working Groups

The Utilities have not yet filed an application with either MN PUC for a route permit or PSCW CPCN. In advance of those anticipated submissions, the Utilities held Route Working Groups in March and May 2008 (Table 5-2) to gather comments from landowners, government representatives and other interested parties about the preliminary macro-corridors.

Table 5-2:
Route Working Groups

Locations	Dates	Time
Rochester, MN	March 3, 2008	10:00 a.m. to 2:00 p.m.
Winona, MN	March 4, 2008	10:00 a.m. to 2:00 p.m.
La Crosse, WI	March 5, 2008	10:00 a.m. to 2:00 p.m.
Lakeville, MN	March 6, 2008	5:00 p.m. to 8:00 p.m.
Cannon Falls, MN	May 22, 2008	11:00 a.m. to 2:00 p.m.

The goal of the Route Working Groups was to provide key stakeholders early opportunities to contribute to data collection and initial routing efforts, prior to entering into a formal permitting process. The Route Working Groups consisted of representatives from federal and state agencies, as well as regional, county, and city representatives or local elected officials as well as landowners who requested to participate at the CON Environmental Report scoping meetings or through an update newsletter distributed in December 2007.

The Route Working Groups served as a venue to collect general input, route suggestions, and identify challenges within the preliminary macro-corridors. The data and information gathered during the Route Working Groups was used to supplement data and information already collected, and to refine the preliminary macro-corridors.

Approximately 43 individuals joined the Route Working Groups, which were divided by geographic regions of the study area. One group represents each of the following areas of interest: La Crosse-La Crescent, Wisconsin; Winona, Minnesota; Rochester, Minnesota; Hampton/Lakeville, Minnesota; and Cannon Falls, Minnesota. The Hampton/Lakeville, Minnesota meeting was combined with the Brookings County to Twin Cities 245 kV Transmission Line Project Route Working Group.

The Route Working Groups began with a presentation that described the Proposal overview, routing approach, criteria, resources, and comparative analysis. Discussion sessions in small groups were held to review the routing criteria, and map workshops were held to focus on specific geographic areas. Appendix A-2 provides a summary of comments received from the Route Working Groups.

5.5.2 May 2008 Public Meetings

Five public meetings, listed in Table 5-3, were held in May 2008 to present preliminary macro-corridors in the study area.

Table 5-3:
Public Meetings, May 2008

Locations	Dates	Time
Winona, MN	May 20, 2008	11:00 a.m. to 2:00 p.m.
Trempealeau, WI	May 20, 2008	5:00 a.m. to 8:00 p.m.
Rochester, MN	May 21, 2008	11:00 a.m. to 2:00 p.m.
St. Charles, MN	May 21, 2008	5:00 p.m. to 8:00 p.m.
Cannon Falls, MN	May 22, 2008	4:00 p.m. to 7:00 p.m.

The Utilities notified all potentially affected landowners included in the CON Corridors and the preliminary macro-corridors. The meetings were held in an open house format, with large-format informational displays, Proposal fact sheets, and large sheet maps based on aerial photography and parcel boundaries illustrating the preliminary macro-corridors. The sheet maps facilitated discussion with landowners and other stakeholders to identify properties, issues, and concerns within the preliminary macro-corridors. Participants were able to write specific siting and routing suggestions directly on sheet maps. Sign-in sheets provided additional contact information that was added to the mailing list.

A total of 261 people signed in at the five public meetings. Attendees included landowners, farm owners, business owners, representatives from local electric cooperatives and public utilities, media, neighborhood associations, local elected officials, county commissioners, and planners. The majority of attendees who submitted comment forms identified themselves as residential property owners. Appendix A-3 provides a summary of comments received from the May 2008 public meetings.

7.0 Conclusion: Final Macro-Corridors and River Crossing Scenarios

This MCS was prepared in accordance with the RUS guidance regarding MCS development (RUS 2002). The study accomplished several intermediate steps in the overall transmission line routing process, including the following:

- Identified a study area from the end points and the Proposal's purpose and need
- Identified the macro-corridors
- Described how the macro-corridors were selected based on environmental, engineering, economic, land use, and permitting considerations
- Addressed the use of existing rights-of-way or collocation of facilities with existing transmission lines

The final macro-corridors are shown in Figure 7-1, color-coded by section. Each section contains multiple route options that can be linked to connect endpoints via one of the three river crossing options. Sections of the macro-corridor that would be used for the proposed project vary between the Alma, Winona, and La Crescent/La Crosse river crossing scenarios as shown in Figures 7-2, 7-3, and 7-4, respectively.

The alternative routes within each corridor section are discussed in detail below.

7.1 Hampton to North Rochester Substation

Section A (green) shows two corridor alternatives for the proposed 345 kV transmission line between the proposed Hampton Substation and the proposed North Rochester Substation. One corridor alternative follows the US-52 transportation corridor, and the other corridor alternative follows the MN-56 and MN-60 transportation corridors. The Hampton to North Rochester segment of the proposed 345 kV transmission line would be approximately 40 to 50 circuit miles long and, depending on the route chosen, may pass through Dakota, Rice, Goodhue, Dodge, and Olmsted counties in Minnesota.

A wider corridor was designated east of the Hampton Substation siting area to provide alternatives for transmission line from the substation towards the Rochester area. This flexibility is needed, in part, to coordinate siting with the proposed Brookings County–Twin Cities 345 kV Transmission Line Project. The Brookings Project would begin at the Brookings County Substation in South Dakota and terminate at the proposed Hampton Substation, entering from the west.

7.2 North Rochester Substation to Alma Crossing Option and Chester Substation

Corridor alternatives in Section B (purple) for the proposed 345 kV transmission line would connect the proposed North Rochester Substation to either the Alma Mississippi River Crossing or to the Chester Substation east of Rochester (and eventually to the Winona or La Crescent/La Crosse River crossing option). If the Alma crossing were selected, the length of the 345 kV transmission line in Section B would be approximately 40 circuit miles long. If the North Rochester Substation to Chester Substation corridor were selected for the 345 kV transmission line, the length of the 345 kV transmission line in Section B it would be approximately 30 circuit miles long.

Section B also contains the proposed 161 kV transmission line corridors, shown in Figure 7-1. One proposed 161 kV transmission line would connect the proposed North Rochester Substation with the

Northern Hills Substation in northwestern Rochester and be 10 to 15 circuit miles long. The other proposed 161 kV transmission line would connect the North Rochester Substation with the Chester Substation on the eastern side of the city of Rochester and be 20 to 30 circuit miles long. A portion of the Chester 161 kV transmission line may be collocated on the same structures as the proposed 345 kV transmission line. Section B contains portions of Dodge, Wabasha, and Olmsted counties in Minnesota.

If the proposed transmission line crosses at Alma, the new 345 kV transmission line and a portion of the existing Rochester-Alma 161 kV transmission line may be placed on double-circuit compatible structures.

The proposed North Rochester substation is planned to be sited between Zumbrota and Pine Island. The wide, square corridor in the substation siting area allows consideration of alternative locations for the proposed substation, and accommodates multiple potential routes for the proposed 345 kV transmission line. The corridor is also wider at this location to accommodate the two proposed 161 kV transmission lines that would connect the proposed North Rochester Substation with the Northern Hills and Chester substations.

7.3 Wisconsin

Section C (orange) shows the macro-corridors in Wisconsin that would be considered under the Alma or Winona river crossing scenarios. Section C contains portions of Buffalo, Trempealeau, and La Crosse counties. The segment of the proposed 345 kV transmission line between the proposed North Rochester Substation and the end point in Wisconsin may be 80 to 100 circuit miles long, depending on the crossing selected.

From the Alma crossing option, a 3-mile-wide corridor alternative along WI-35 includes the Dairyland Q-1 161 kV transmission line and a route option east of the Dairyland Q-1 transmission line. A second corridor alternative follows a 161-kV transmission line east of the Alma crossing, leading to corridor alternatives through Arcadia and Blair. The Arcadia corridor alternative follows a 69-kV transmission line south to terminate at either the proposed Galesville or Holmen substations, or the North La Crosse Substation. The Blair corridor alternative continues to follow a 161-kV transmission corridor (the Xcel Energy Tremvel 161 kV line) to the North La Crosse Substation.

From the Winona river crossing, corridor alternatives offer multiple options for crossing the Black River. A corridor option along WI-93 through Galesville connects with the Blair corridor, and would offer the opportunity to cross the Black River without crossing the Van Loon Wildlife Area. Corridor options that pass through the Van Loon Wildlife Area follow a 69-kV transmission line along the Seven Bridges Trail, WI-35, and the existing Dairyland Q-1 161 kV transmission corridor.

Double circuit structures may be used where the new 345 kV transmission line is collocated with existing transmission The Dairyland Q-1 transmission line is scheduled to be rebuilt due to age and condition. If the proposed 345-kV transmission line is not collocated with the existing Dairyland Q-1 transmission line for any portion of its length, the remainder of the Q-1 line would be rebuilt as a separate project.

New substations near Holmen and Galesville are also being considered inside the Section C corridor. Voltage of the proposed transmission lines between Galesveille and the North La Crosse substation may be 161 kV, 345 kV, or 345/161 kV depending upon the final substation configuration.

7.4 Chester Substation to Mississippi River, and La Crosse Crossing

Section D (blue) shows the portion of the macro-corridor that connects the Chester Substation east of Rochester with the Winona and La Crosse Mississippi River crossing options. The portion of the macro-corridor along I-90 contains routing options along the highway in the southern portion of the corridor, and along field and property lines along the northern portion of the corridor. Macro-corridor alternatives diverge near the river, running south to the La Crescent/La Crosse Mississippi River crossing and north to the Winona Mississippi River Crossing. The corridor alternative between the Chester Substation and Winona would be approximately 45 circuit miles in length. The corridor alternative between the Chester Substation and the La Crosse Substation area would be approximately 60 circuit miles length.

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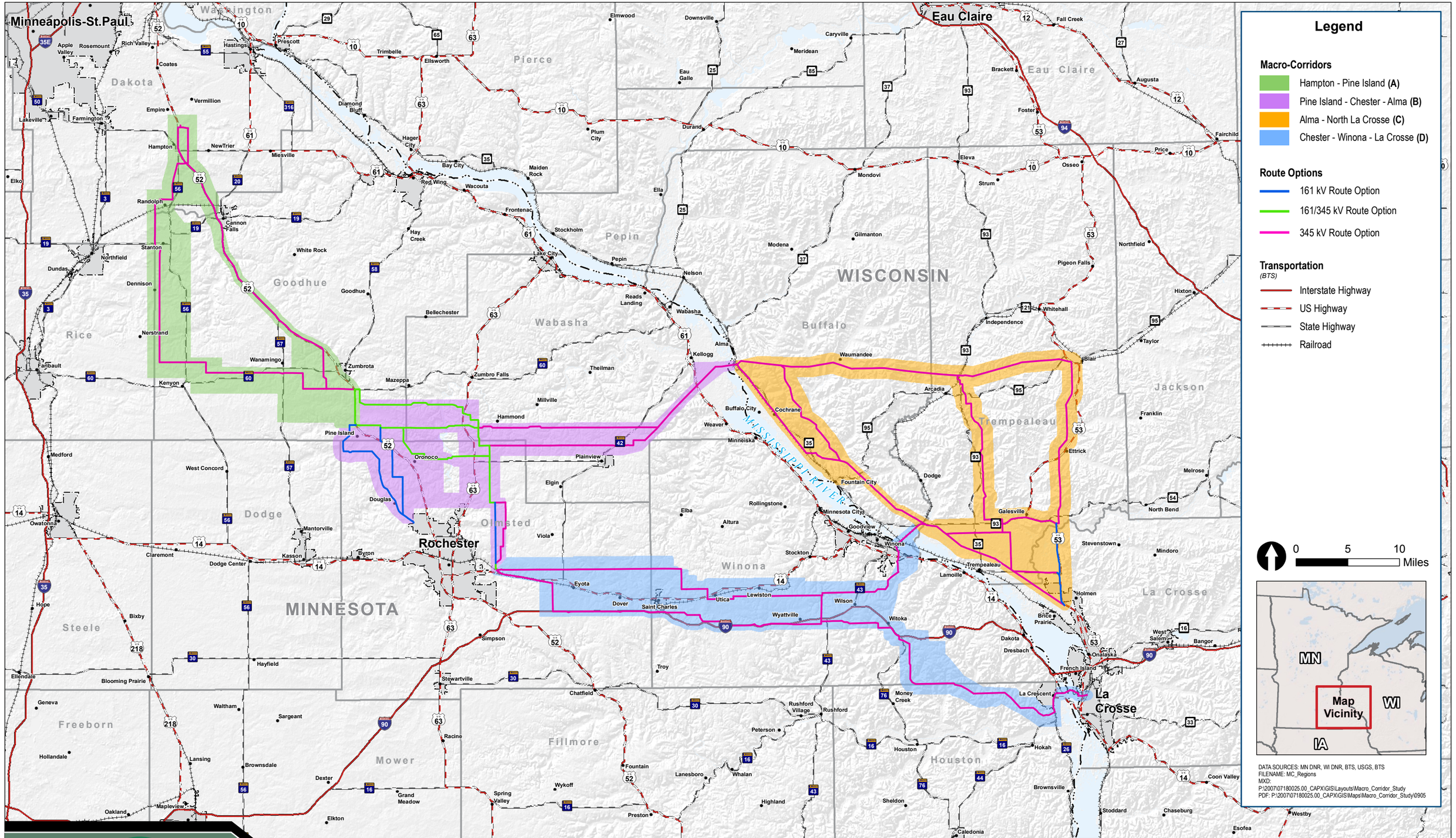

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Figure 7-1: Final Macro-Corridors

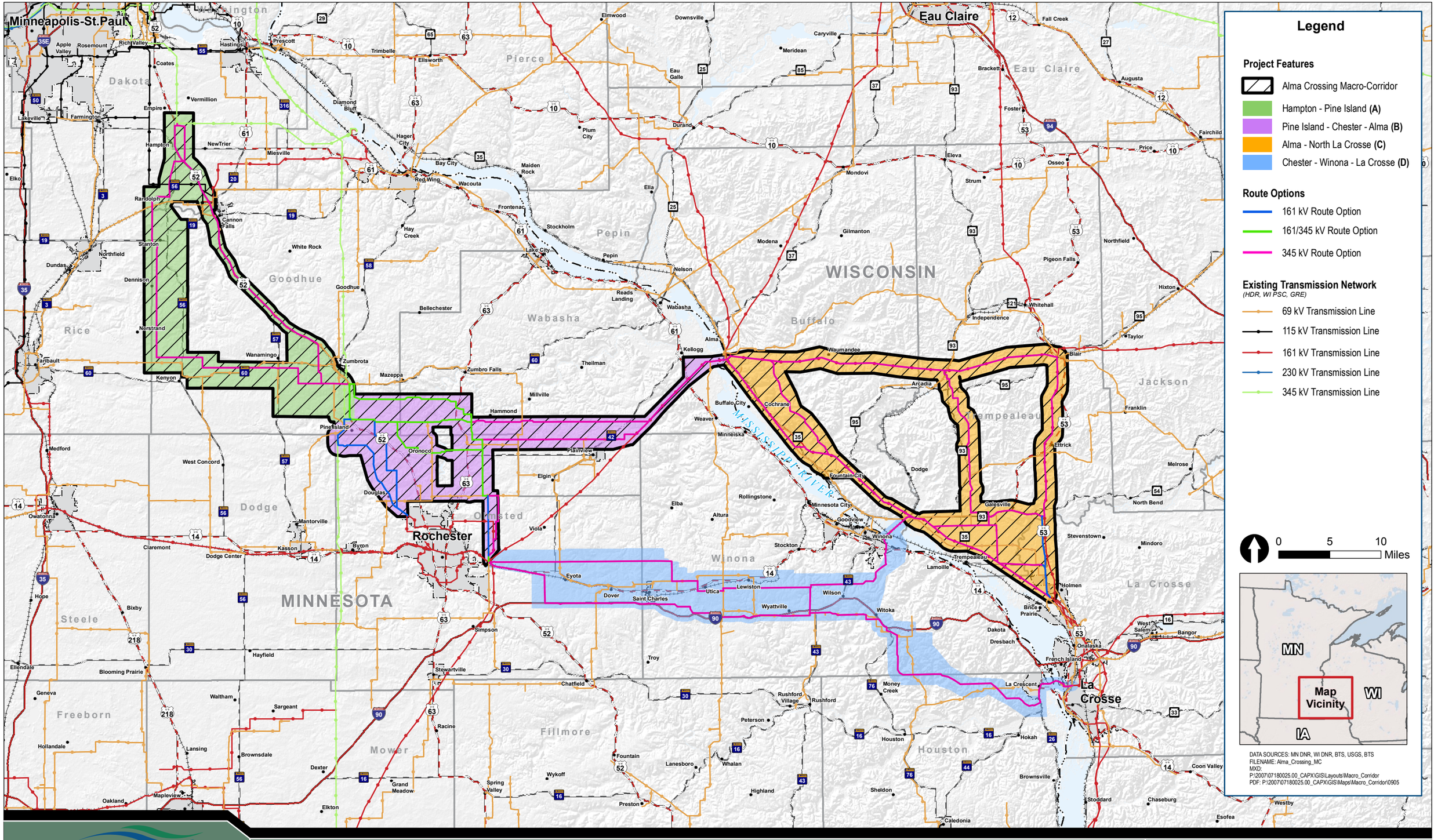

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Figure 7-2: Alma River Crossing Scenario

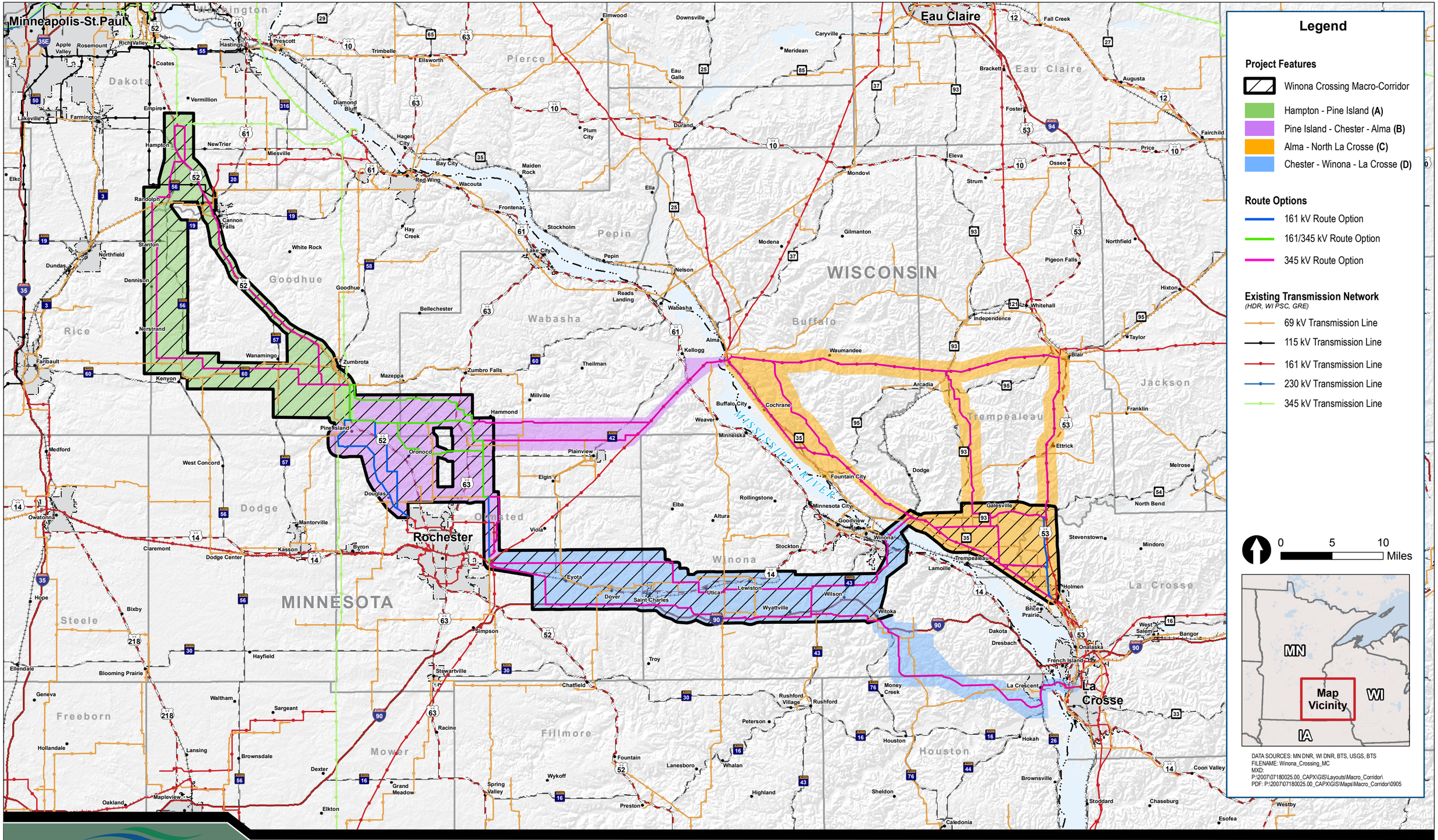

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Figure 7-3: Winona River Crossing Scenario

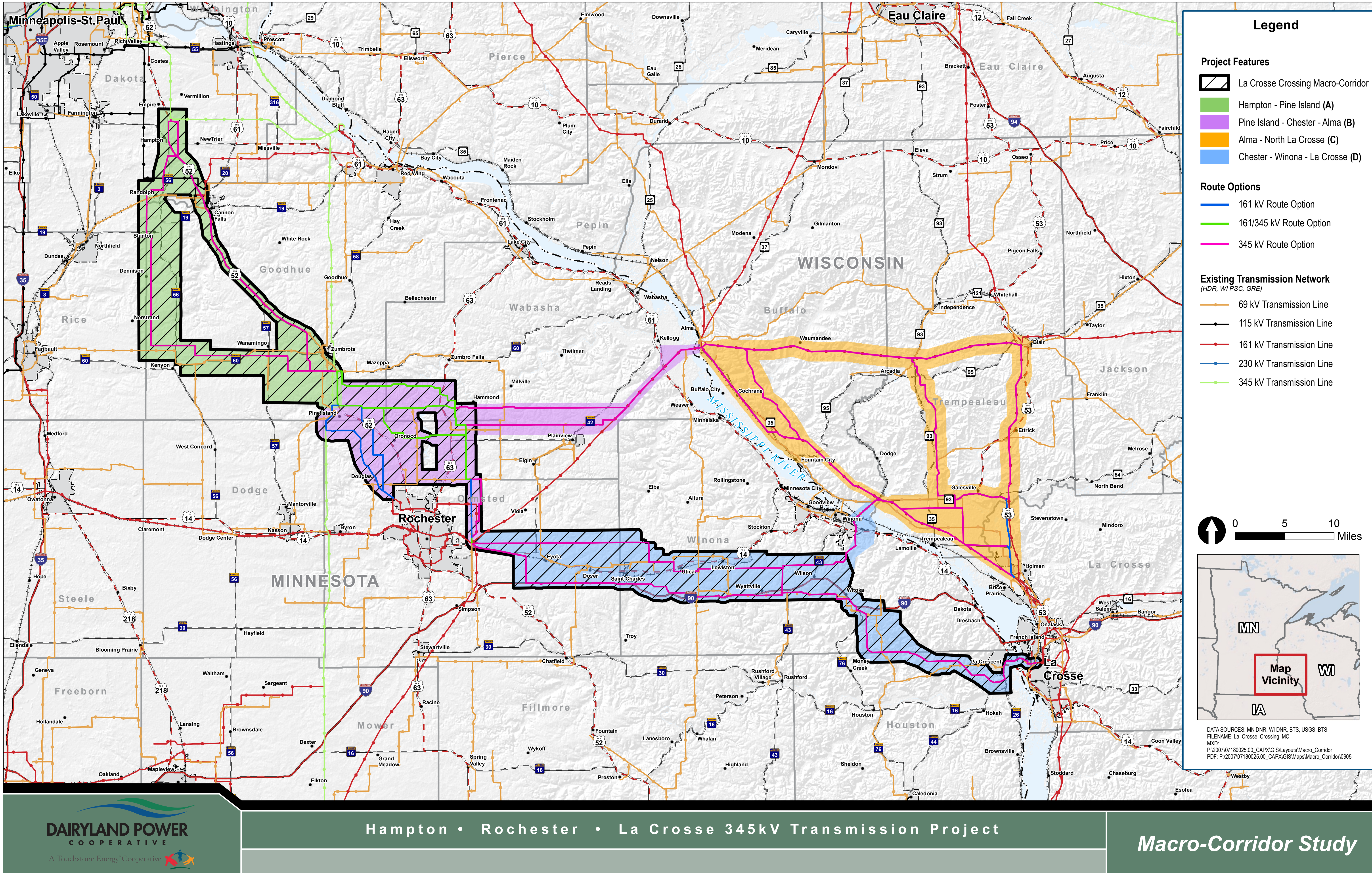

Figure 7-4: La Crescent/La Crosse River Crossing Scenario

6.0 Preliminary Macro-Corridors with Route Options

Before finalizing the macro-corridors, the Utilities identified a set of initial route options, and narrowed those route options based on stakeholder input and a comparative analysis. These important steps served to ensure the corridor boundaries provided multiple options for the proposed 345 kV and 161 kV transmission lines to be carried forward into the NEPA analysis and state permit applications.

6.1 Route Option Identification

Potential route options were identified using information from the opportunities and constraints identification, mapping, and fieldwork. In accordance with Minnesota and Wisconsin regulations, consideration was given to following existing linear features (roads or existing transmission lines), property lines, field lines, or survey lines. The Utilities attempted to identify potential route options that followed such linear features and passed by a limited number of houses (with the goal to avoid all houses), avoid known environmental and cultural resources, and conflicting land uses.[11] Multiple route options between substations and river crossings were identified to allow for consideration of alternatives, and to create options where routing may be more difficult (for example, near residential areas or in proximity to sensitive environmental resources).

Figure 6-1 shows all potential route options or segments identified inside the preliminary macro-corridors. These corridors were presented with these route options at the December 2008 public meetings to obtain stakeholder input with the exception of the Arcadia, Blair and Galesville alternative corridors. These were added after the public meetings and based on the public and agency comments.

6.2 Stakeholder Input

Stakeholders were given an opportunity to comment on the preliminary macro-corridors with route options during the December 2008 Public Meetings. The seven public meetings are listed in Table 6-1.

Table 6-1
Public Meetings, December 2008

Locations	Dates	Time
Winona, MN	December 8, 2008	5:00 p.m. to 8:00 p.m.
St. Charles, MN	December 9, 2008	11:00 a.m. to 2:00 p.m.
Alma, WI	December 9, 2008	5:00 p.m. to 8:00 p.m.
Trempealeau, WI	December 10, 2008	11:00 a.m. to 2:00 p.m.
La Crescent, MN	December 10, 2008	5:00 p.m. to 8:00 p.m.
Oronoco, MN	December 11. 2008	11:00 a.m. to 2:00 p.m.
Cannon Falls, MN	December 11, 2008	5:00 p.m. to 8:00 p.m.

The Utilities notified all landowners in the CON Corridors and the preliminary macro-corridors as well as any additional stakeholders who signed up for the mailing list. The meetings were held in an “open house” format, with large-format informational displays, take-home fact sheets, and large sheet maps based on aerial photography and parcel boundaries illustrating the macro-corridors with route options. The sheet

[11] The process whereby route segments were identified and eliminated will be fully analyzed and reported after completion of formal NEPA scoping meetings to allow full consideration of public scoping comments.

maps facilitated discussion with landowners and other stakeholders to identify properties, issues, and concerns within the preliminary macro-corridors. Participants were able to write specific siting and routing suggestions directly on sheet maps. Sign-in sheets provided additional stakeholder contact information that was added to the mailing list.

A total of 397 people signed in at the seven public meetings in December 2008. Attendees included landowners, farm owners, business owners, and representatives from local electric cooperatives and public utilities; local media outlets; neighborhood associations; local elected officials, state and local agencies, commissioners, and planners; non-profit organizations; and the University of Wisconsin-La Crosse. The majority of the commenters who submitted comment forms identified themselves as residential or agricultural property owners. Appendix A-4 provides a summary of comments received from the December 2008 public meetings.

One comment expressed by both members of the public and agency representatives attending the December 2008 meetings was a request to identify and evaluate a corridor alternative to the existing 161 kV transmission corridor (the Dairyland Q-1) along Wisconsin State Highway (WI-35) and the Mississippi River in Wisconsin (Section C). In response, the macro-corridors were expanded to include route options along the bluffs east of the Dairyland Q-1 161 kV transmission corridor in Wisconsin, between Alma and Fountain City, and through Arcadia to the North La Crosse Substation Area.

In addition, Dairyland and Xcel Energy have discussed routing options in the Van Loon Wildlife Area and based on agency comments have identified an alternative to crossing the Black River. This alternative is a corridor from the Dairyland Q-1 to Galesville, Wisconsin, with a proposed substation site identified just to the east of Galesville and north of Wisconsin State Highway (WI-93). With this new endpoint for the 345 kV line proposed at Galesville, an alternative corridor from Alma to Blair to Galesville was also added as an opportunity for routing the proposed transmission line. If a new substation were constructed at Galesville, a new 161 kV transmission line would connect the new substation to the existing North La Crosse Substation. In addition, the existing Tremvel 161 kV transmission line from the Blair substation would need to have a tap to either the Galesville or a new substation at Holmen and be reconductored to the North La Crosse Substation.

Dairyland and Xcel have attended several meetings with local government representatives (counties, cities, townships, etc.) held in response to a letter sent out to potentially affected communities stating the Project Proposal team's availability and willingness to discuss Proposal details and route options with local agency representatives and government officials.

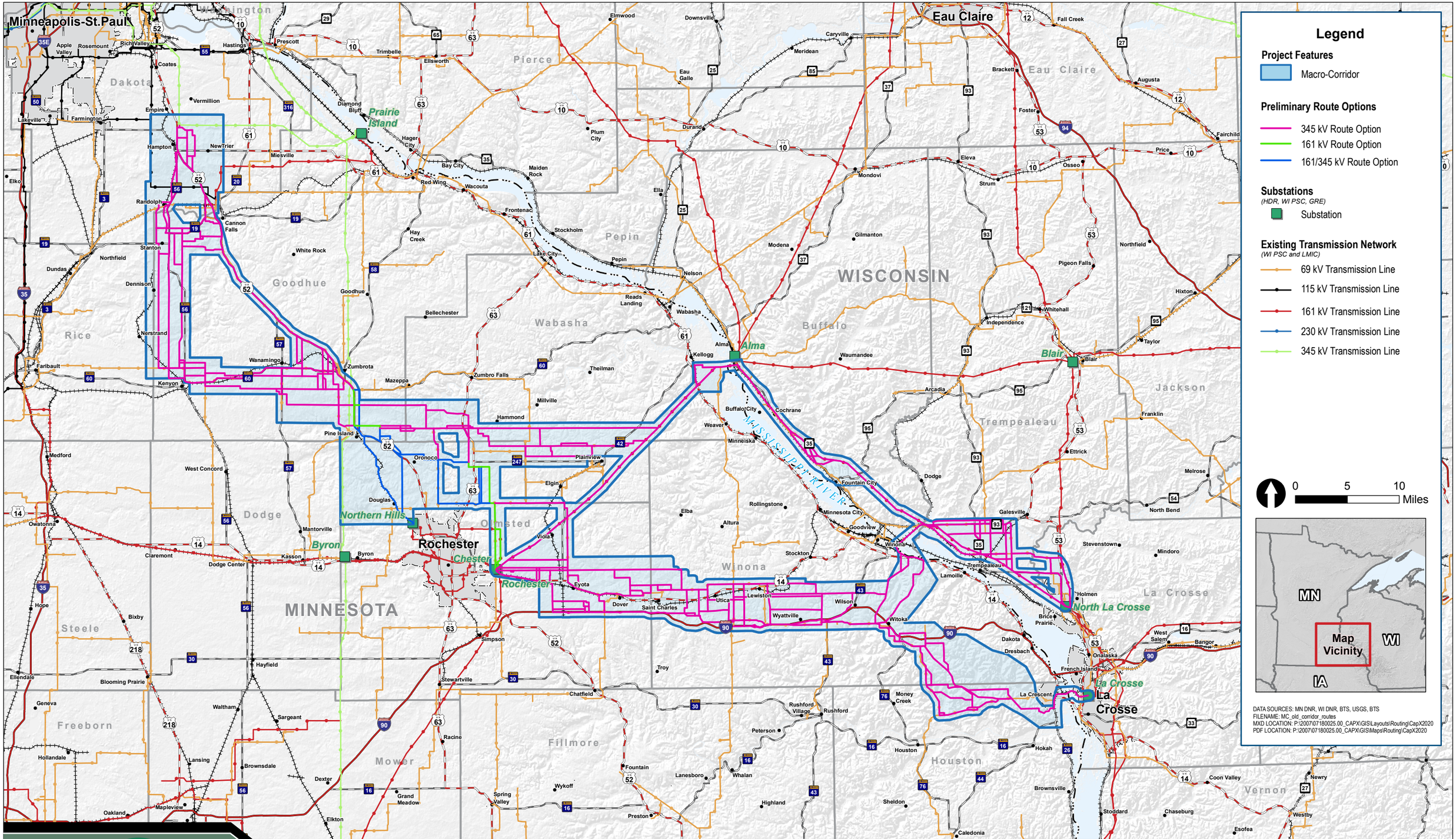

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Figure 6-1: Preliminary Macro-Corridors with Route Options

6.3 Preliminary Macro-Corridor Refinement

Based on data collected, public input, and comments from local governments and state agencies, and the route segment comparison, route options were either considered but eliminated, or kept for further evaluation. New segments were added where appropriate, and final modifications were made to the preliminary macro-corridors summarized in Table 6-2 and illustrated on Figure 6-2.

Table 6-2:
Modifications to Preliminary Macro-Corridors (after December 2008 Public Meeting)

Section A	Narrowed corridor southeast and southwest of Hampton substation siting area. Utilities did not identify routes to the southwest because the Brookings County 345 kV Transmission Line Project is routed in that area and no suitable alternatives were identified to the southeast.
	Corridor south of the Cannon River between Randolph and Cannon Falls was removed because no alternatives were identified that provided better options than US-52 or MN-56 corridors.
Section B	Corridor southwest of Oronoco was narrowed because no suitable alternatives were identified southwest of the Douglas Trail.
	Chester to Alma corridor was removed because the 345 kV line does not need to interconnect at Chester prior to Alma.
	Alma approach corridor was narrowed on southern side based upon review of routes and removal of southern option.
	McCarthy Lake corridor area was modified to remove widened corridor south of the WMA, and to avoid Kellogg-Weaver Scientific and Natural Area.
	Corridor west of Pine Island was expanded to accommodate a potential 161-kV route west of Pine Island.
Section C	Corridor along WI-35 widened between Alma and Fountain City to allow for bluff top route option.
	Arcadia Corridor added to provide additional route option for an Alma crossing that may still offer some opportunity to rebuild the Dairyland Q-1 transmission line, and based on public/agency comment.
	Galesville corridor added to provide alternative to crossing the Van Loon WA. Blair Corridor added as an alternative to the newly proposed Galesville substation site.
Section D	Winona approach corridor width decreased based upon field review of routes and suitability of other alternatives.
	La Crescent/La Crosse corridor narrowed on where suitable routes were not found. Corridor was expanded between Interstate 90 and Houston, MN where additional feasible routes were found.

Table 6-3 summarizes opportunities and constraints in corridors that were added after the December 2008 public meetings.

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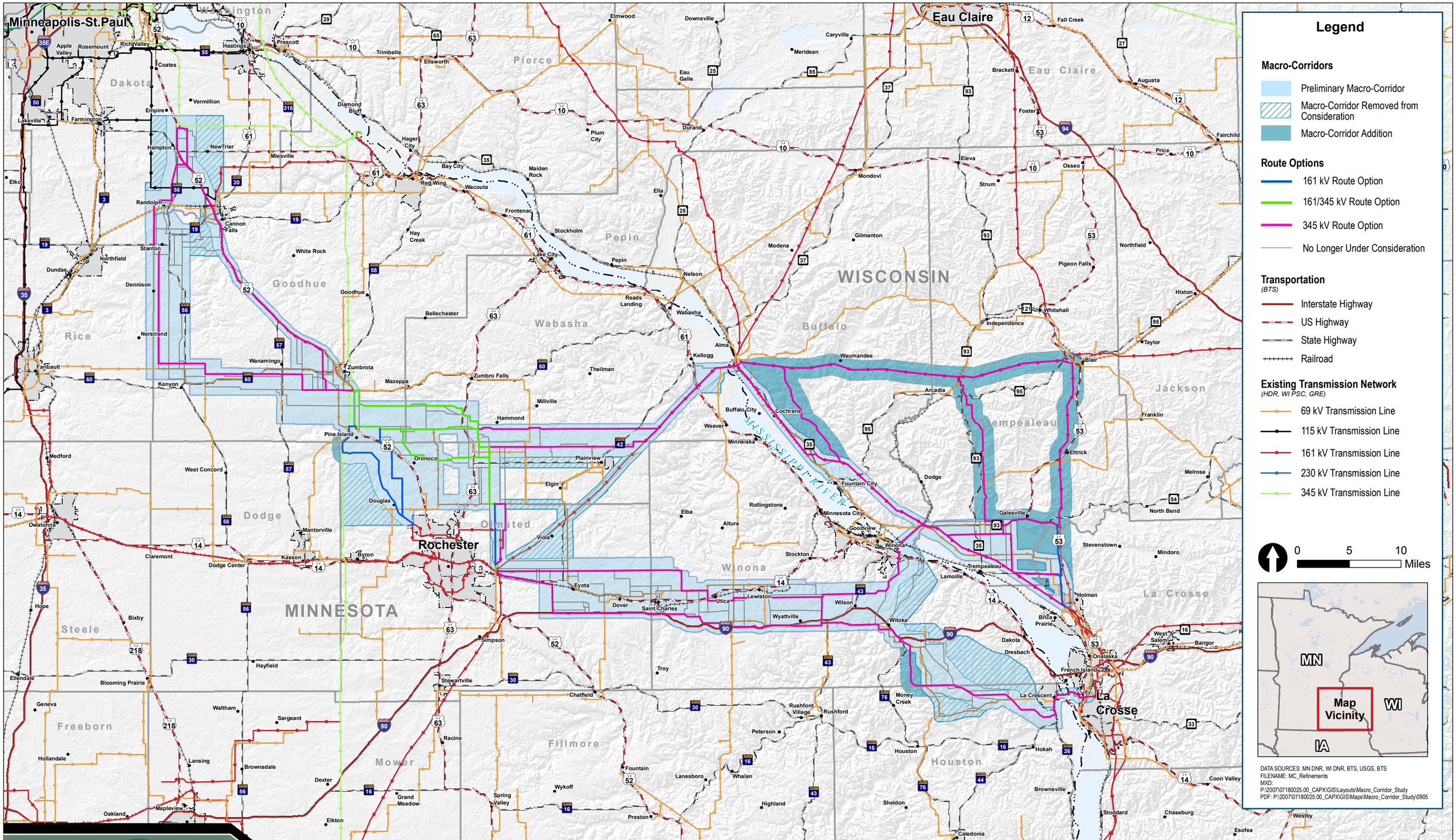

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Figure 6-2: Preliminary Macro-Corridor Refinement

Table 6-3:
Opportunities and Constraints (Section C Macro-Corridors added after December 2008)

Segment	Opportunity Along Existing Transmission Corridor	Opportunity Along Existing Transportation Corridor	Opportunity Along Property, Field, on Survey Lines	Potential Constraints[12]
Bluff top Alternative Corridor	Follows a portion of the existing 161 kV transmission line from the Alma power plant	None	Property, field, fence lines on top of bluffs east of Dairyland 161 kV between Alma and Fountain City	Rural residential; agricultural operations; forested areas
Arcadia Corridor	Follows existing 161 kV transmission line between Alma and Arcadia, and 69 kV between Arcadia and the North La Crosse Substation	U.S. 53	Property and Field Lines	Pietrek County Park. Tamarack Creek Wildlife Area, Lakes Coulee WA, and Van Loon WA (Trempealeau County)
Blair Corridor	Follows existing 161 kV transmission line between Alma and Blair, and 161kV transmission line (Tremvel Line) between Blair and the North La Crosse Substation	U.S.53	Property and Field Lines	Pietrek County Park (Trempealeau County), Coulee Lakes Wildlife Area; Dense residential development near Holmen
Galesville to North La Crosse Substation Area	Existing 161-kV transmission line (Tremvel line)	U.S. 53/WI-93	Property, field, fence, and section lines	Towns of Holland and Holmen; Great River Road Scenic Byway; Black River; Dense residential development

6.4 Resource Review for Macro-Corridors

To support the routing process, the Utilities conducted a resource review to identify potential opportunities and constraints inside the macro-corridors on a more site-specific level.

The resource review identified opportunity areas that are generally compatible with transmission lines. Routing a new transmission line in these areas typically results in lower cost and reduced environmental impacts.

Avoidance areas include lands or resources that would likely experience environmental or land use impacts if directly affected by the Proposal or require additional permitting. These areas should be avoided if possible, especially if alternative routing opportunities exist. If avoidance is not possible,

12 "Potential constraints" is not meant to include an exhaustive list of all constraints that occur in that section of the preliminary macro-corridor. Rather, it is included to identify major constraints appropriate for the level of macro-corridor identification. Specific constraints will be discussed during the routing when segments are compared.

feasible mitigation strategies should be employed such as routing adjustments, careful placement of the transmission line structures, access roads, or other construction measures.

An exclusion area is one that should be excluded from transmission route options when possible. Exclusion areas include very sensitive landscapes or resources, lands with special legal, regulatory, or legislative designations, or lands with physical characteristics that are not compatible with transmission line construction and operation. Routing a transmission line in these areas will typically lead to increased environmental impacts, higher costs, and additional regulatory approvals.

6.4.1 Land Use

6.4.1.1 Railroad Corridors

Existing railroad tracks are also classified as opportunities, with the exception of railroad right-of-way prairies, which often provide habitat for important populations of native plants (MN DNR 1998). Railroad right-of-way prairies were assessed as avoidance areas. Figure 5-3 shows major transportation corridors, including railroad tracks, within the macro-corridors.

6.4.1.2 Airports

Figure 6-3 identifies the public and private airports, as well as heliports in the macro-corridors. Data on airports were obtained from the Bureau of Transportation Services (BTS 2006).

Airports and heliports are potential constraints to the routing of new transmission lines depending on height of transmission structures, and proximity to the airport/heliport. The allowable height of a structure located within close proximity to a public airport is determined by the location of the proposed structure relative to the airport, the classification of that airport, as well as the relation of the proposed structure to the regulated airport imaginary surfaces. The imaginary surfaces are defined and regulated at a federal level by the Federal Aviation Administration (FAA) and further regulated at a state level by the Department of Transportation in both Minnesota and Wisconsin. While the federal regulations apply to public use airports only, each state has regulations applicable to public airports as well as private airports.

There are several public airports within or near the macro-corridors: Stanton Airfield, Winona Municipal-Max Conrad Field, Blair, and La Crosse Municipal airports. Private airports are more numerous, with several occurring inside or near the macro-corridors, including Lake Zumbro, Nietz Airstrip, Christison, Trygstad, Thomas Field, Schubert Airstrip, Carhart Farms, Holland Air Park, and Parkway Farm Strip. The heliports within or near macro-corridors are predominantly located at medical centers and hospitals.

Figure 6-3 illustrates approach and departure zones of the public airports according to FAA guidelines specific to each airport. Site-specific analysis of routing near public and private airports will be conducted during routing.

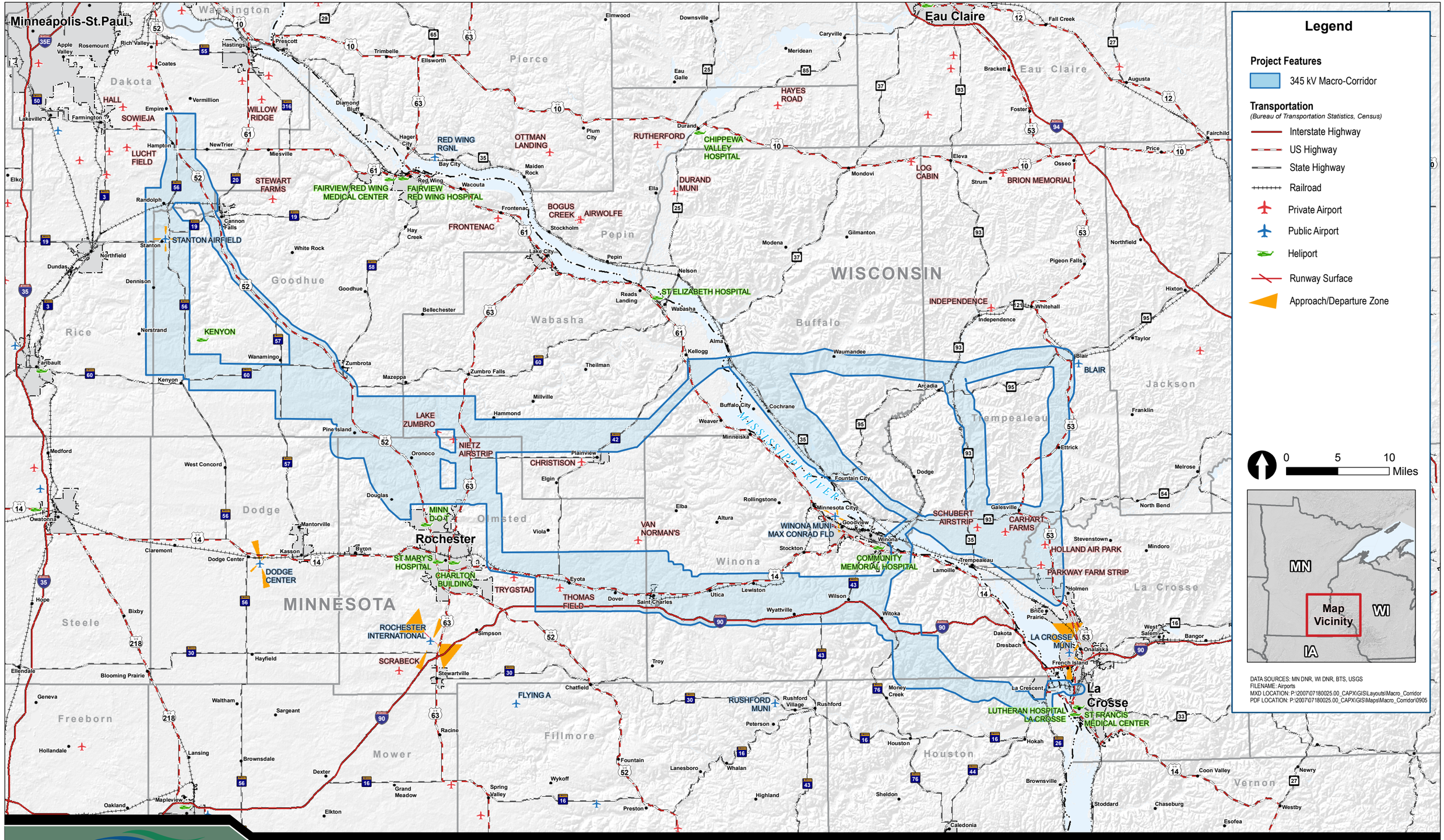

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Figure 6-3: Airports and Heliports

6.4.1.3 Communication Facilities

Communication facilities and structures will be avoided where possible for routing to prevent operational issues. Avoidance areas are within one-eighth of a mile of communications facilities, while exclusion areas are within 200 feet, where supporting infrastructure such as guy wires are likely to be located.

Figure 6-4 shows locations of existing communication facilities and structures including multiple TV, radio, cellular towers, etc. within the macro-corridors based on data from the Federal Communications Commission (FCC 2007), which will be avoided in routing.

6.4.1.4 Land Use/Land Cover

Land use/land cover data was obtained from USGS National Land Cover Dataset (NLCD) (USGS 2001). Land cover data are derived from satellite imagery and describe general categories of land use. Figure 6-5 shows land use/land cover classes for the macro-corridors. Table 6-4 provides definitions for land cover classes as defined by NLCD.

Cultivated crops cover a significant portion of the study area, with pasture/hay and forest interspersed throughout. Grassland/herbaceous cover type occurs, but to a lesser extent. Forest areas are often associated with water and wetlands. Land cover becomes less agricultural towards the Mississippi River, where forested bluffs become more prevalent. Developed areas are primarily associated with Rochester, La Crosse, and Winona, but are also scattered throughout the region in smaller communities. Wetlands are most prevalent in drainages and in and around the Mississippi River and other streams, but occur throughout the study area.

Land cover classes assessed as opportunities are those with current uses that would be generally compatible with transmission line construction and operation. Opportunity areas include barren, scrub, and grassland categories, as well as along property, field, or survey lines associated with cultivated crops and pasture/hay. Developed areas classified as Developed-Medium Intensity, Developed-Low Intensity, and Developed-Open space were also considered opportunity areas.

Land cover classes assessed as avoidance have current land uses that may be amenable to transmission line construction or operation under certain conditions. These areas, however, may present significant challenges to transmission line routing. Areas identified by NLCD as Open Water and Forest were assessed as avoidance areas, except along existing utility corridors.

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Figure 6-4: Communication Facilities

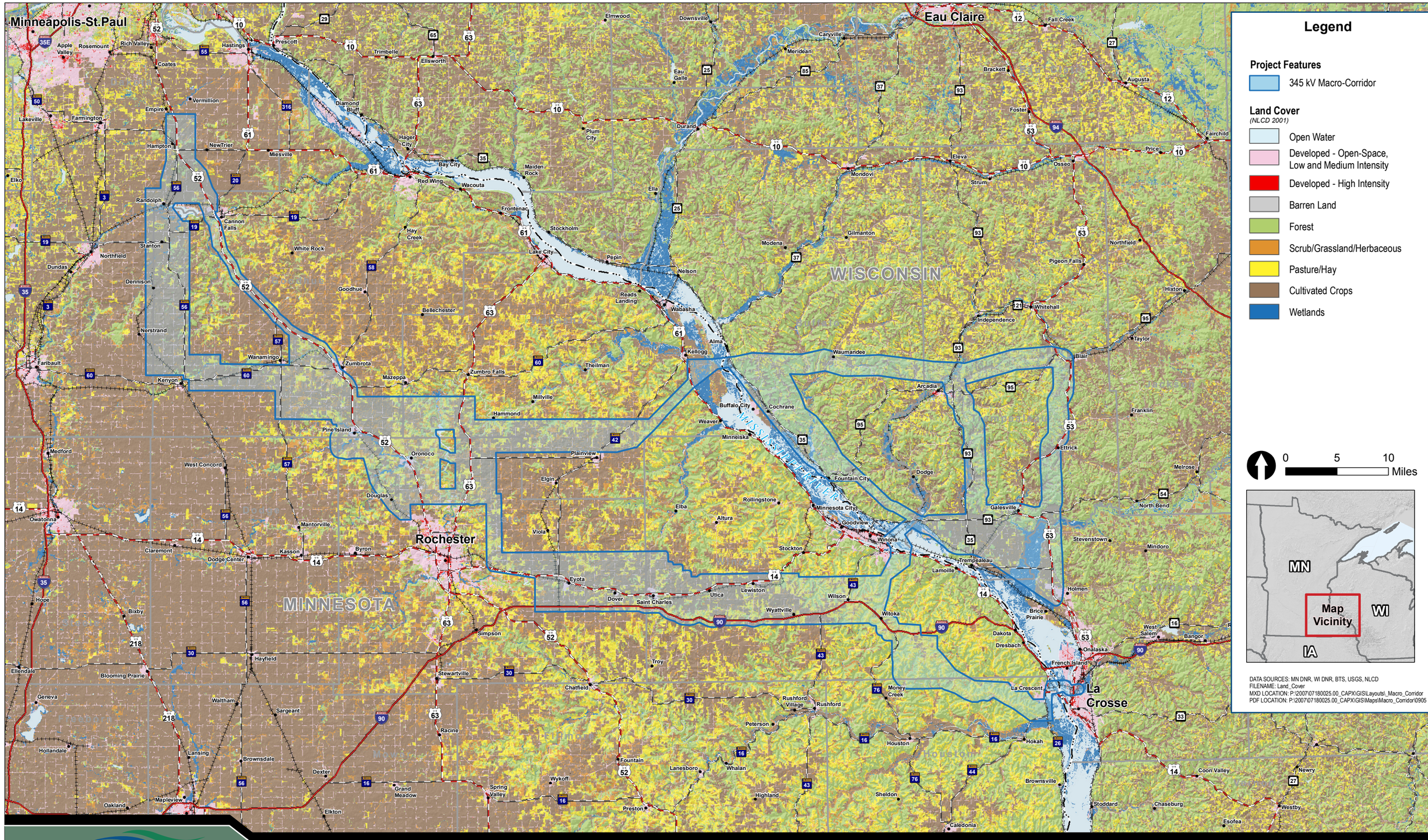

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Figure 6-5: Land Use/Land Cover

Table 6-4:
NLCD Land Cover Definitions

	Class (Number)	NLCD Definition
Opportunity	Barren (31)	Barren areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits, and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.
	Scrub (52)	Areas dominated by trees generally greater than 5 meters tall and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.
	Grasslands/Herbaceous (71)	Areas dominated by grammanoid or herbaceous vegetation, generally greater than 80% of total vegetation. These areas are not subject to intensive management such as tilling, but can be utilized for grazing.
	Pasture/Hay (81)	Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation.
	Cultivated Crops (82)	Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled.
	Developed—Low Intensity (22)	Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20–49% of total cover. These areas most commonly include single-family housing units.
	Developed—Medium Intensity (23)	Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50–79% of the total cover. These areas most commonly include single-family housing units.
	Developed—Open Space (21)	Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes
Avoidance	Open Water (11)	All areas of open water, generally with less than 25% cover of vegetation or soil.
	Forest (41, 42, 43)	41. Deciduous Forest—Areas dominated by trees generally greater than 5 meters tall and greater than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change. 42. Evergreen Forest—Areas dominated by trees generally greater than 5 meters tall and greater than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage. 43. Mixed Forest—Areas dominated by trees generally greater than 5 meters tall and greater than 20% of total vegetation cover. Neither deciduous nor evergreen species are greater than 75% of total tree cover.
Exclusion	Developed—High Intensity (24)	Includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80–100% of the total cover.

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Areas identified by NLCD as Developed-High Intensity were assessed as exclusion areas, except where utility corridors already exist. Developed-High Intensity areas occur mostly outside of the macro-corridors. Irrigation pivots in the macro-corridors were identified using aerial photography (Figure 6-6) and can be avoided during routing through careful structure placement.

6.4.1.5 Census Landmarks and Other Structures

Census landmark data were obtained from the U.S. Census Bureau (2000). Individual homes and other structures not classified by the U.S. Census Bureau were identified using aerial photography and field verification, digitized using GIS, then considered similarly to the Census landmark data. Figure 6-7 identifies the locations of census landmarks within the macro-corridors as listed in Table 6-5. Individual homes and structures are not visible in Figure 6-7 due to scale. Areas in close proximity to census landmarks listed in Table 6-5, homes, and other structures were assessed as avoidance areas. The immediate area around these structures would be assessed as exclusions to preclude land use conflicts and safety issues.

Table 6-5:
Census Landmarks Considered Avoidance Areas

Category	Census Feature Classification Code (CFCC) and Description
Residential	D21—Apartment building or complex (D21), Trailer Court or Mobile Home Park (D23)
Educational or Religious Institution	D40—Educational or Religious Institution; major category used alone when minor category could not be determined (D40)
	D43—Education institution, including academy, school, college, and university (D43)
Custodial Facility	D31—Hospital (D31)
Employment Center	D62—Shopping Center or Major Retail Center
	D-62—Industrial Building or Industrial Park

PSCW regulations prohibit placement of transmission lines with voltages in excess of 35 kV over dwellings or mobile homes intended for residential occupancy, including apartment buildings (PSCW 114.234A4). Although homes, residential structures, and other census landmarks occur inside the macro-corridors, their precise locations will be considered during routing.

6.4.2 Recreation and Conservation Areas

Recreation and conservation areas are scattered throughout the study area, and concentrated along the Mississippi River corridor in both Minnesota and Wisconsin (Figure 3-1). Data on recreation areas in Minnesota, including parks and trails and scenic and recreational river designations, were obtained from MN DNR (2003b, 2006a, 2006b). Data on Wisconsin parks and wildlife management areas were obtained from the USGS Gap Analysis Program (2005). Data on Wisconsin state trails were obtained from the WDNR (2005). Data on scenic byways were obtained from MnDOT (2007) and WisDOT (2007). Data on The Nature Conservancy preserves were obtained from that organization (2007).

Table 6-6 provides a list of recreation and conservation areas located within the macro-corridors. Recreation and conservation areas were largely considered avoidance areas for the purpose of identifying route options. Transmission line construction is permitted in these areas under specific and

individual circumstances. Minnesota prohibits transmission line routing in state parks, natural, or scientific areas unless the area's designated values would not be impaired and feasible and prudent alternatives do not exist (MN Rules 7849.5930). If utility corridors already exist in recreation or conservation areas, an additional transmission line may not cause incremental disturbances to recreational activities and management objectives. Recreation and conservation areas inside the macro-corridors will be considered during routing.

Table 6-6:
Recreation and Conservation Areas within Macro-Corridors

Type of Recreation Area	Managing Agencies	Name of Recreation Area
Minnesota		
County Parks	Dakota County	Byllesby
	Dakota County	West Byllesby
	Olmsted County	Chester Woods
	Olmsted County	Oxbow
Scenic Byway	Minnesota Land Trust	Apple Blossom Scenic Drive
		Historic Bluff Country Scenic Byway
Scientific and Natural Areas	MN DNR	Oronoco Prairie Scientific and Natural Area
		North Fork Zumbro Woods
State Trails	MN DNR	Douglas Trail
Wildlife Management Areas	MN DNR	Isaak Walton League Wildlife Management Area
		McCarthy Lake Wildlife Management Area
		Warsaw Wildlife Management Area
		Woodbury Wildlife Management Area
Minnesota Land Trust Lands	Minnesota Land Trust	Snake Creek
		Big Trout Creek
		Evergreen Acres
		Feyereisn Woods
Wisconsin		
State Parks	WDNR	Merrick State Park
		Perrot State Park
County Park	Trempealeau County	Pietrek
Wildlife Areas	WDNR	Van Loon Wildlife Area
		Lakes Coulee Wildlife Area
		Whitman Dam Wildlife Area
State Trails	WDNR	Great River State Trail
Minnesota and Wisconsin		
National Wildlife Refuge	USFWS	Trempealeau National Wildlife Refuge
		Upper Mississippi River National Wildlife and Fish Refuge
Scenic Byway	WDOT/MNDOT	Great River Road

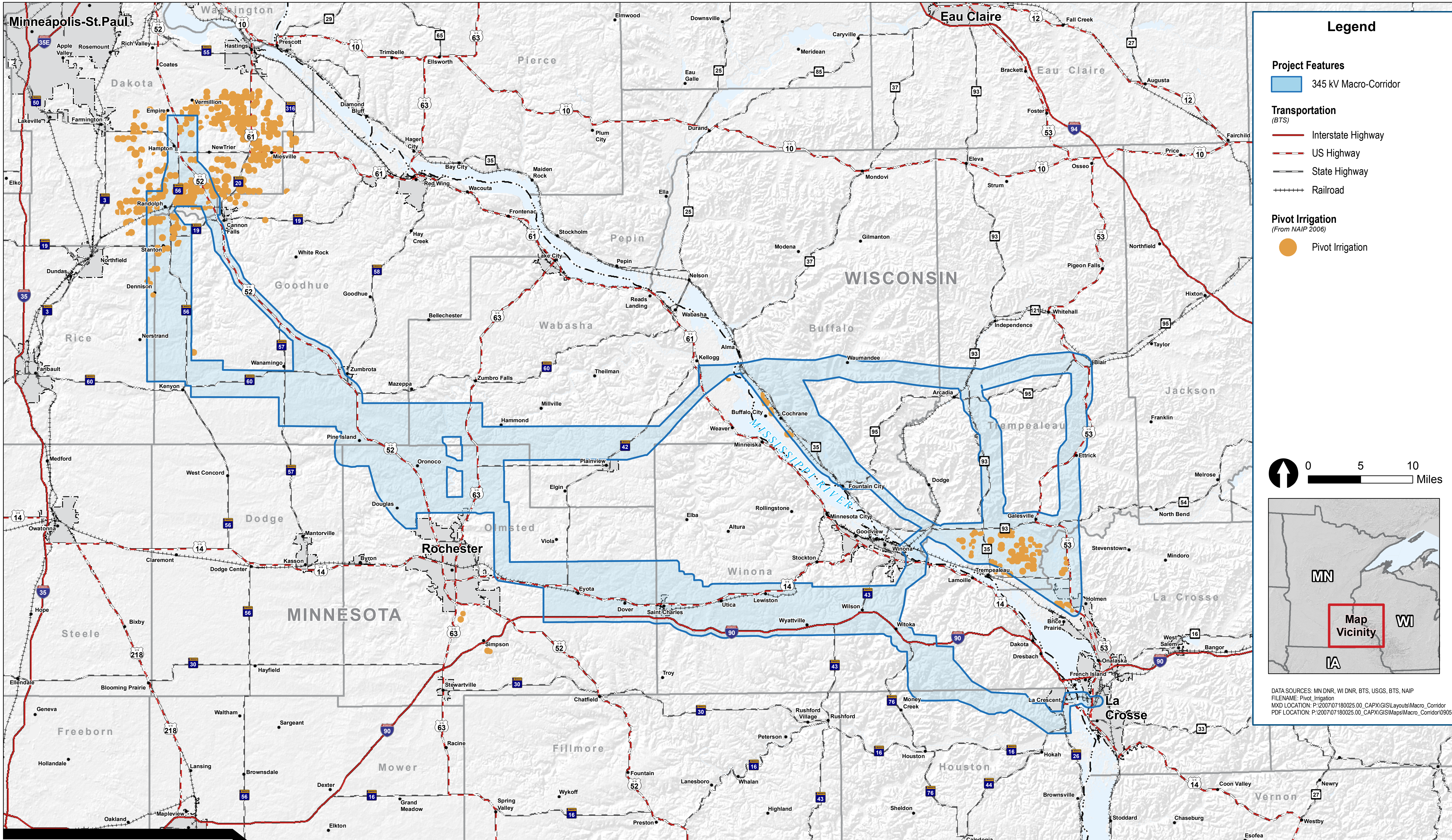

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Figure 6-6: Pivot Irrigation

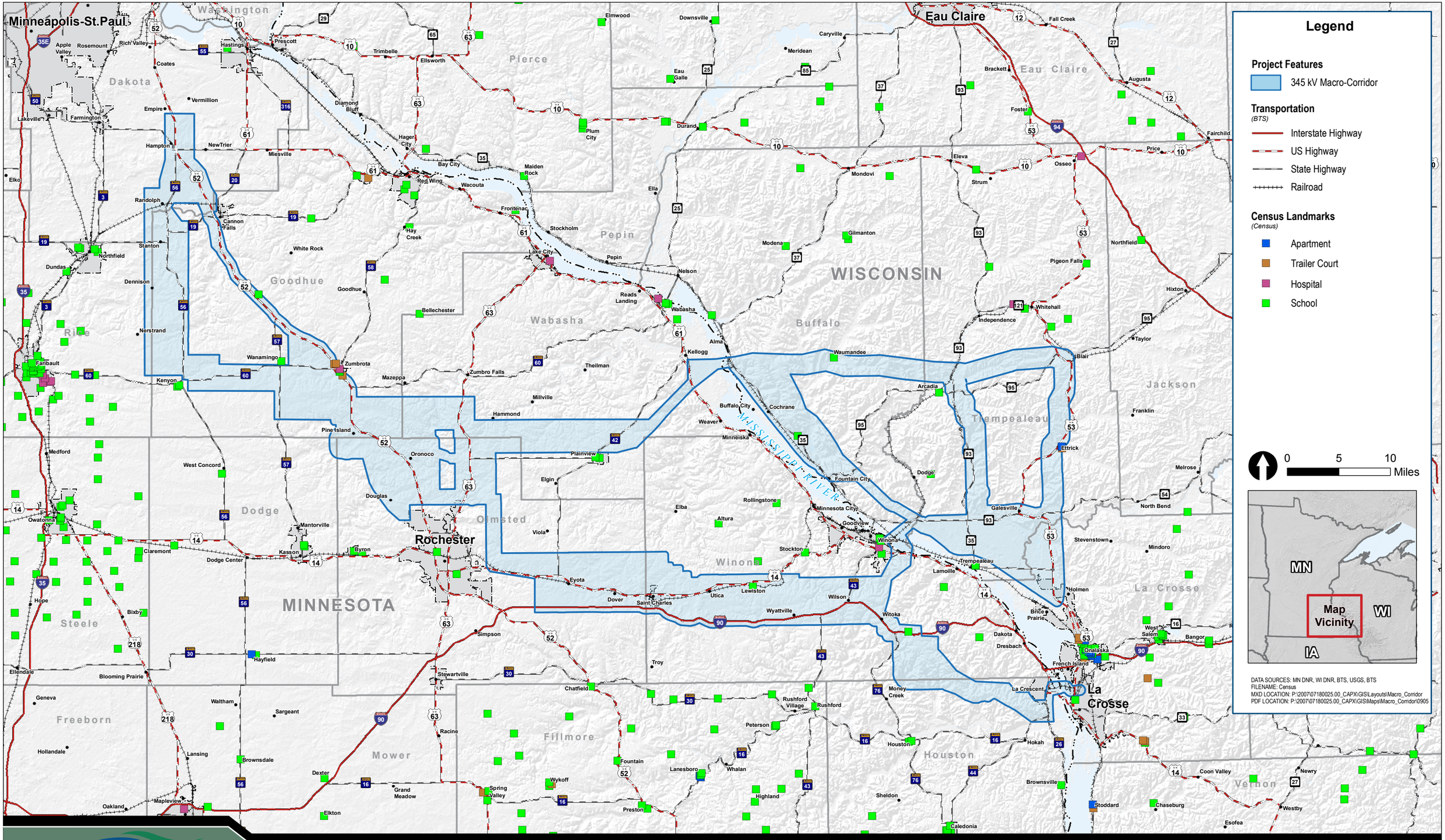

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Figure 6-7: Census Landmarks

Designated state trails occur within the macro-corridors as shown on Figure 6-8. These include the Douglas Trail between Rochester and Pine Island in Minnesota, and the Great River State Trail along the Mississippi River in Wisconsin. Scenic byways also occur within the macro-corridors. Great River Road National Scenic Byway runs along the Mississippi River in both Wisconsin and Minnesota, where it is also called the Apple Blossom Scenic Drive. Utility construction is allowed along scenic byways under specific circumstances in both states.

Scenic and recreational river sections along the Cannon River are shown on Figure 6-8. Scenic rivers are rivers that exist in a free-flowing state and with adjacent lands that are largely undeveloped (MN DNR 2008). Recreational rivers are those rivers that may have undergone some impoundment or diversion in the past and that may have adjacent lands which are considerably developed (MN DNR 2008).

Parts of the Trempealeau National Wildlife Refuge and the Upper Mississippi National Wildlife and Fish Refuge occur within the macro-corridors. RJD State Forest management units also occur within the macro-corridors. These management units are smaller parcels within the RJD State Forest lands (shown in Figure 3-1), which are used and managed intensely for recreation purposes.

The only recreation and conservation areas considered to be exclusion areas are state and federal wilderness areas. Minnesota law prohibits transmission line routing in state and national wilderness areas, however, no wilderness areas occur within the macro-corridors.

6.4.3 Cultural and Historic Resources

Historic districts and historic sites that are registered with the NRHP, including landmarks, districts, and monuments, were assessed as areas to exclude. Avoidance is preferred, but if a new corridor is developed that contains large historic districts or sites, appropriate steps will be taken to address concerns regarding potential effects on historic properties and values. Data on cultural and historic resources in the study area were obtained from NRHP (2001).

According to the NRHP, there are four historic districts and 32 historic places within the macro-corridors, 22 in Minnesota, and 14 in Wisconsin as listed in Table 6-7 and shown in Figure 6-9. Historic places consist mostly of bridges, homes, schools, churches, government buildings, and commercial buildings. The historic districts include the Nansen Agricultural Historic District, a portion of which is located within the macro-corridor that follows MN-56, and the Whitewater Avenue Commercial District in Minnesota, and the Downtown Historic District and Ridge Avenue Historic District in Wisconsin. Recorded and unrecorded prehistoric and historic resources occur in the study area. Information coming through tribal consultation (Section 106) will also shape the Proposal, this information is not solely documented information and is not required to be.

Table 6-7:
NRHP-Listed Districts and Places within Macro-Corridors

County	City	Name
Minnesota		
Dakota	Newtrier	Church of St. Mary's Catholic
Goodhue	Cannon Falls	Miller, Harrison, Farmhouse
Goodhue	Holden	Nansen Agricultural Historic District
Goodhue	Pine Island	Bringghold, Jacob, House
Goodhue	Pine Island	Opera Block House
Goodhue	Pine Island	Pine Island City Hall and Fire Station
Goodhue	Pine Island	Baslington, George, Farmhouse
Goodhue	Pine Island	Roscoe Butter and Cheese Factory
Olmsted	Dover	Bush, John G. , House
Olmsted	Dover	Krause, Christoph, Farmstead
Olmsted	Eyota	Coan House
Olmsted	Eyota	Eyota Farmers Cooperative Creamery Association
Olmsted	Oronoco	Oronoco School
Rice	Nerstrand	Veblen Farmstead
Wabasha	Mazeppa	Lake Zumbro Hydroelectric Generating Plant
Winona	St. Charles	St. Charles City Bakery
Winona	St. Charles	Trinity Episcopal Church
Winona	St. Charles	Whitewater Avenue Commercial Historic District
Winona	Elba	Whitewater State Park
Winona	Utica	Ellsworth, Benjamin, House
Winona	Winona	Bunnell, Willard, House
Wisconsin		
Buffalo	Fountain City	Fugina House
La Crosse	La Crosse	Bridge No. 1
La Crosse	La Crosse	Bridge No. 2
La Crosse	La Crosse	Bridge No. 3
La Crosse	La Crosse	Bridge No. 4
La Crosse	La Crosse	Bridge No. 5
La Crosse	La Crosse	Bridge No. 6
La Crosse	La Crosse	Chicago, Milwaukee and Saint Paul Railway Passenger Depot
Trempealeau	Galesville	Bartlett Blacksmith Shop- Scandinavian Hotel
Trempealeau	Galesville	John Bohrnstedt House
Trempealeau	Galesville	John F. Cance House
Trempealeau	Galesville	Downtown Historic District
Trempealeau	Galesville	Ridge Avenue Historic District
Trempealeau	Galesville	Tollef Jensen House

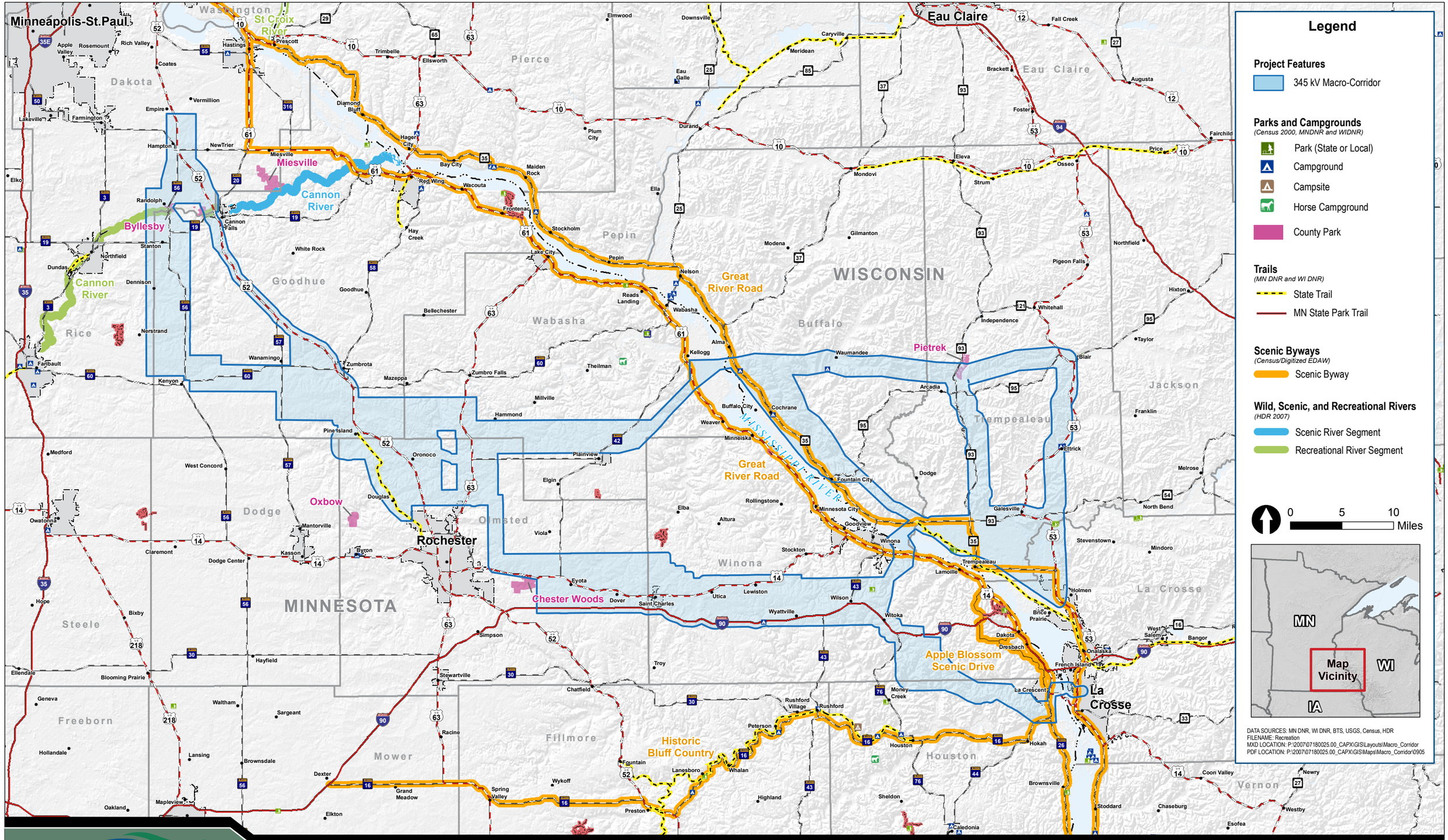

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Figure 6-8: Recreation

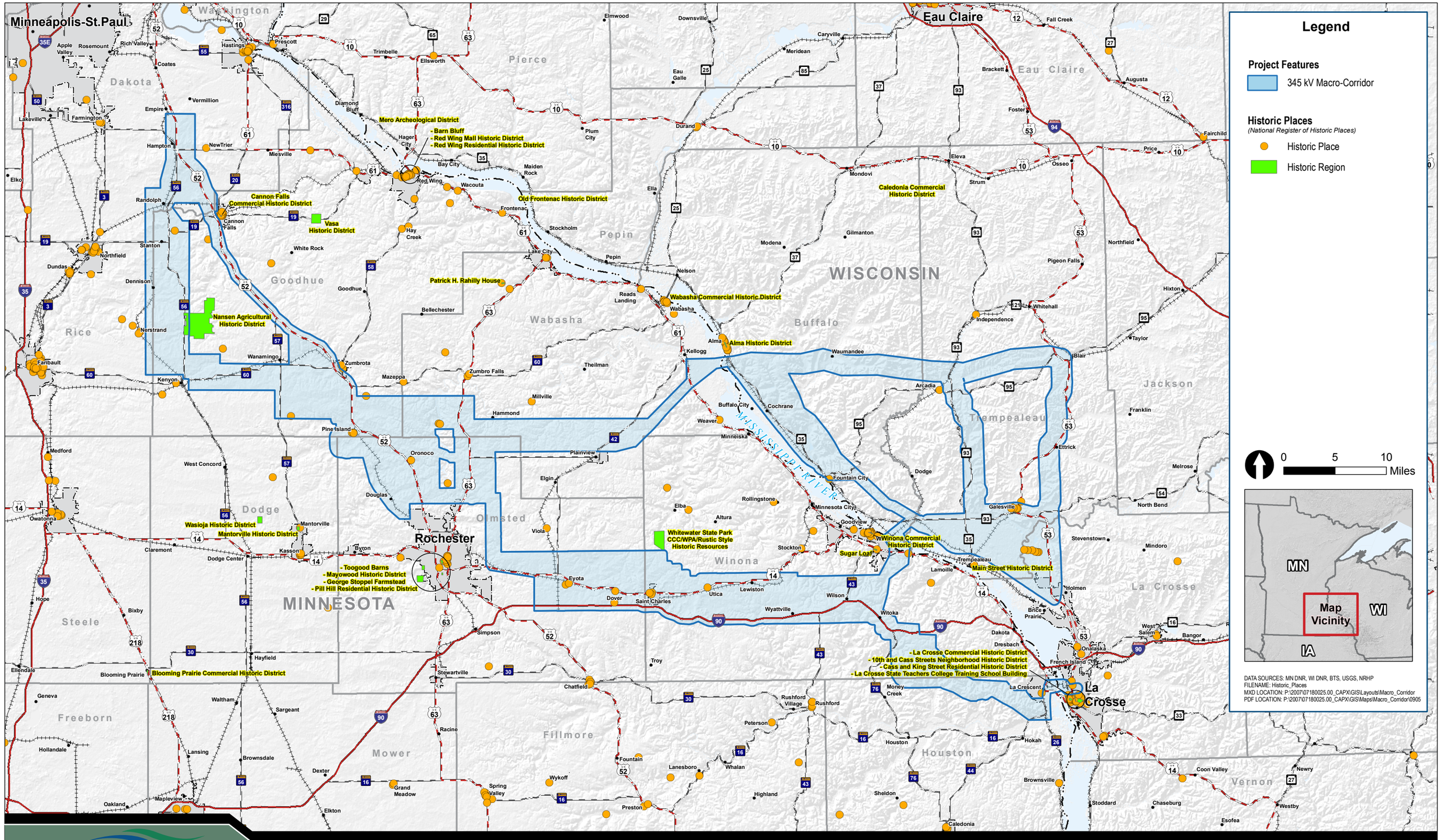

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Figure 6-9: Historic Places

6.4.4 Biological Resources

6.4.4.1 Wetlands

Wetlands are assessed as avoidance areas to minimize impacts on these environmentally sensitive resources. Wetlands are considered a valuable resource because they clean water, recharge water supplies, reduce flood risks, and provide habitat for many species of wildlife and vegetation (EPA 2001). Executive Order 11990, Protection of Wetlands (May 24, 1977), directs all federal agencies to issue or amend existing procedures to ensure consideration of wetlands protection during decision-making processes and to ensure the evaluation of the potential impacts of any new construction proposed in a wetland. In addition, wetlands that are "waters of the U.S." are under USACE jurisdiction, and activities that may impact such wetlands are subject to additional permitting requirements. If wetlands cannot be avoided, the appropriate agencies will be consulted and required permits will be obtained prior to construction.

Data for Minnesota wetlands were obtained from the National Wetlands Inventory (USFWS 1998–1994), and data for Wisconsin wetlands were obtained from the Wisconsin Wetland Inventory for La Crosse County (WDNR 1988), and Buffalo and Trempealeau counties (WDNR 2007). Wetlands are concentrated along the Mississippi River and its tributaries. Small, isolated wetlands are also mapped throughout the study area (Figure 6-10). Wetlands do occur inside the macro-corridors and will be avoided where possible by structure placement in routing the proposed transmission lines.

6.4.4.2 Biodiversity

Minnesota biodiversity data were obtained from MN DNR (2006c) (Figure 6-11). Wisconsin does not maintain data on biodiversity. Biodiversity is evaluated based on the presence of rare species, native ecosystems, and/or intact functional landscapes. Data are categorized into classes of biodiversity, including outstanding, high, moderate, and below. MN DNR defines these classes as:

- **Outstanding**: Sites containing the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most intact functional landscapes present in the state
- **High**: Sites containing very good quality of the rarest species, high quality examples of the rarest native plant communities and landscapes that have a strong potential for recovery
- **Moderate**: Sites containing significant occurrences of rare species, and/or moderately disturbed native plant communities and landscapes that have a strong potential for recovery
- **Below**: Sites lacking occurrences of rare species and/or natural features that meet Minnesota County Biological Survey standards for an Outstanding, High, or Moderate rank (MN DNR 2006c).

Areas in the outstanding class and high class do occur in the macro-corridors and are considered avoidance areas. Avoiding these areas will help to minimize impacts to sensitive species and native ecosystems. Additional site-specific data on threatened and endangered species, such as critical habitats and nest sites, will be evaluated through routing as well as through by the NEPA and state permitting processes.

6.5 Route Option Comparison

The Utilities used information from the resource review, maps, and a GIS-based comparative matrix tool to compare potential impacts associated with route options or segments combinations. Categories of potential impacts included factors with environmental impacts, socioeconomic implications, permitting or cost. Table 6-8 lists categories analyzed using the comparative matrix tool.

Table 6-8
Categories for Comparative Analysis

Category	Parameters Evaluated
Engineering Factors	Total length of route
	Length utilizing existing transportation ROW
	Length paralleling existing transmission lines (69 kV and higher voltages only)
	Length paralleling existing railroad
	Length along property lines
	Length crossing areas of steep terrain
Water Resources	Length crossing wetlands
	Length crossing 100-year floodplain
	Number of crossings of designated rivers (scenic and recreational)
Natural Resources	Length crossing areas of outstanding, high, and moderate biodiversity
	Length crossing rare natural features (native plant areas and railroad right-of-way prairie)
	Number of crossings of designated and regulated trout streams
	Length crossing designated habitat for threatened or endangered species
Land Use	Length crossing public or private lands (federal, state, county, village/city/town, private, tribal)
	Length crossing The Nature Conservancy or conservation trust lands
	Number of pivot irrigation systems crossed
	Length crossing specific land use: non-agricultural upland (prairie/grassland, upland forest), and wetlands (forested upland, non-forested wetland)
	Length crossing C.F.R. Part 77 imaginary surfaces (FAA regulations)
	Number of communications facilities within 1/8 mile and within 250 feet
Visual/Aesthetic	Length along important viewsheds (scenic byway, scenic easements)
	Number of residences within 0–50 feet, and 50–300 feet
	Number of schools within 300 feet
	Number of hospitals within 300 feet
Cultural Resources	Number of NRHP sites within 500 feet
	Number of NRHP regions crossed

Based on data collected, public input, and advice from local governments and state agencies, route options were either considered but eliminated or kept for further evaluation. New segments were added where appropriate.

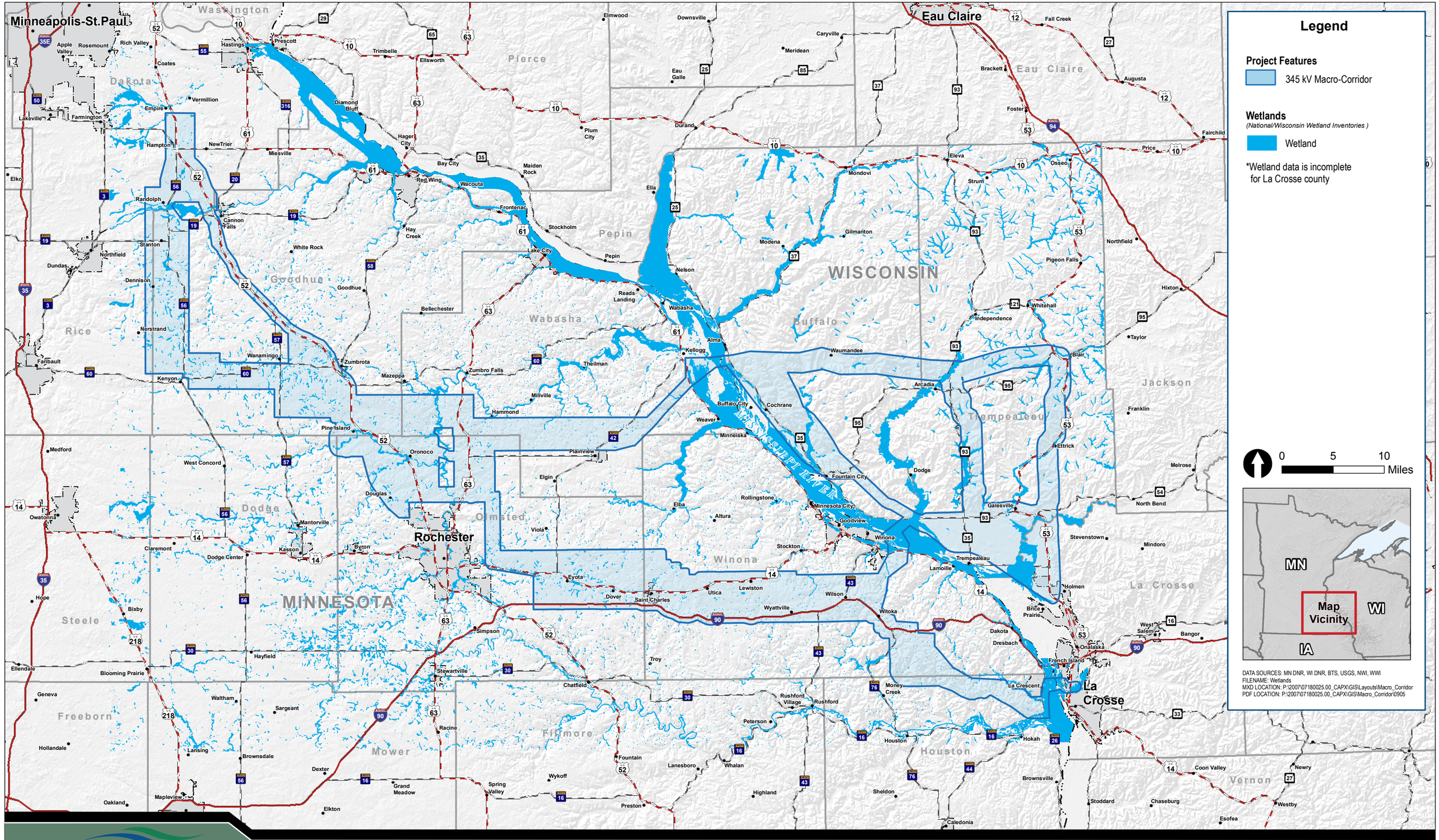

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Figure 6-10: Wetlands

Legend

Project Features

345 kV Macro-Corridor

Biodiversity
(MNDNR)

- Outstanding
- High
- Moderate
- Below

Outstanding = sites containing the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most intact functional landscapes present in the state

High = sites containing very good quality occurrences of the rarest species, high quality examples of the rarest native plant communities, and/or important functional landscapes

Moderate = sites containing significant occurrences of rare species, and/or moderately disturbed native plant communities and landscapes that have a strong potential for recovery

Below = sites lacking occurrences of rare species and/or natural features that meet MCBS standards for an Outstanding, High, or Moderate rank

0 5 10 Miles

MN WI IA Map Vicinity

DATA SOURCES: MN DNR, WI DNR, BTS, USGS, BTS
FILENAME: Biodiversity
MXD LOCATION: P:\2007\07180025.00_CAPX\GIS\Layouts\Macro_Corridor
PDF LOCATION: P:\2007\07180025.00_CAPX\GIS\Maps\Macro_Corridor\0905

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Figure 6-11: Biodiversity

8.0 References Cited

BTS (Bureau of Transportation Services, U.S. Department of Transportation). 2006. U.S. Airport Data.

———. 2003. U.S. Highway Data.

CapX2020 (CapX2020 Transmission Expansion Initiative). 2005. Technical Update: Identifying Minnesota's Electric Transmission Infrastructure Needs. October.

EPA (U.S. Environmental Protection Agency). 2001. Office of Water, Office Wetlands, Oceans and Watersheds. Functions and Values of Wetlands.

FCC (Federal Communications Commission). 2007. Communications Facilities Data.

MISO (Midwest Independent Transmission System Operator, Inc.). 2007. Rochester Area Import Prior Outage Standing Operation Guide, Revision 1.

MN DNR (Minnesota Department of Natural Resources). 2008. Scenic and Recreational River Descriptions. Online: http://www.dnr.state.mn.us/waters/watermgmt_section/wild_scenic/wsrivers/classification. Accessed February 8, 2008.

———. 2006a. Minnesota State Forest Campground, Minnesota Snowmobile Trails Data.

———. 2006b. Minnesota Wild and Scenic Rivers Data.

———. 2006c. Minnesota Biodiversity Data.

———. 2005. Regulated Trout Stream Data for Minnesota.

———. 2003. Minnesota State Park Trails, DNR State Trails, and MN Boat Access Points Data.

———. 1998. Minnesota Railroad ROW Prairies Data.

Mn/DOT (Minnesota Department of Transportation). 2007. Minnesota Scenic Byways Data.

Minnesota Land Management Information Center. 2007. Minnesota Existing Transmission Data.

NRHP (National Register of Historic Places). 2001. Registered Historic and Cultural Sites in Minnesota and Wisconsin Data.

PSCW (Public Service Company of Wisconsin). 2001. Wisconsin Existing Transmission Data.

RUS (U.S. Department of Agriculture, Rural Utilities Service). February 2002. RUS Bulletin 1794-603A, *Scoping Guide for RUS Funded Projects Requiring Environmental Impact Assessments with Scoping and Environmental Impact Statements*.

The Nature Conservancy. 2007. Minnesota and Wisconsin Nature Conservancy Holdings Data.

U.S. Census Bureau. 2000. United States Census 2000. www.census.gov. Accessed 2007.

USFWS (U.S. Fish and Wildlife Service). 1998–1994. National Wetlands Inventory Data for Minnesota.

USGS (U.S. Geological Survey). 2004. Upper Midwest Gap Analysis Program Landcover Data. Online: http://deli.dnr.state.mn.us/. Accessed 2007.

———.2001. National Land Cover Data Base. Online: http://www.mrlc.gov. Accessed 2007.

WDNR (Wisconsin Department of Natural Resources). 2007. Wisconsin Wetland Inventory Data, Buffalo and Trempealeau Counties.

———. 2005. Wisconsin State Trails Data.

———. 1998. Wisconsin Wetland Inventory Data, La Crosse County.

WisDOT (Wisconsin Department of Transportation). 2007. Wisconsin Scenic Byways Data.

Appendix A:
Summary of Public Comments

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Appendix A-1:
MN CON Public Information Meetings (September 2007)

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Comments Received

The CapX2020 utilities received comments by several different means. Commenters could submit comments by forms, letters, email, fax, phone, or the project website by the deadline of October 31, 2007. Project representatives received comments at the public informational meetings on pre-printed comment forms and as written suggestions on sheet maps. The written comments on sheet maps were primarily site-specific information or concerns regarding the notice corridors. Project representatives also recorded comments and information requests with the approval or on request by attendees wishing to comment. After the public informational meetings, representatives responded to information requests.

Approximately 80 comment forms and letters were received by project representatives either at the public informational meetings, by mail, phone call, email, or on the project website. Comment forms that were submitted by the deadline of October 31, 2007, were considered within this meeting summary. The most frequently identified issues on the comment form checklist were proximity to residences and land use, including agricultural, residential, and recreation land uses as indicated in Table 1. Other additional issues not listed in the table included decreased land and or property value, other land uses, cost and use of existing transmission line corridors, and providing more reliable power beyond the current study area.

Table 1:
Public Meeting Comment Form Responses based on Issue

Issue	Number of Responses
Proximity to Residences	41
Land Use (agricultural, residential, recreation)	38
Health and Safety	29
Visual/ Aesthetic Resources	27
Need for the Project	24
Radio or TV Interference	18
Biological Resources	24
Water Resources	21
Historical and Cultural Sites	14
Noise	11
Total	247

The comment form also included types of land use that could be checked. Table 2 identifies the number of each type of land use was checked. The most frequently identified use was residential.

Table 2:
Public Open House Comment Form Property Uses Responses

Land Use	Number of Responses
Residential	37
Livestock	17
Conservation Easement	14
Irrigated Agriculture	4

Land Use	Number of Responses
Commercial	1
Mining	0
Industrial	0
Other Uses	Grain, beekeeping, crop farming, pond, wooded area, ravine, non-irrigated agriculture, timber production, recreation, hunting, farm, timber land, Mississippi River, orchard, vineyard, trees, wetlands, Minnesota land trust, forest, and future building sites

Comment Categories

The comments received were reviewed and organized by topic. The project representatives summarized the individual comments into a set of statements that will be used to define the discussion for each topic. The comments have been divided into resources; project process, need, and public involvement; and preliminary alternatives for the project, including transmission and energy alternatives. This section also includes a summary of the comments written directly on the sheet maps.

Comments on Resources

The comments that relate to resource topics are summarized below.

Biological Resources

- Avoid and preserve sensitive biological resources, natural and critical habitat areas, rare and endangered species, conservation easements with diverse plant and animal species, areas of high biodiversity as listed in the county biological survey, Mississippi River Important Bird areas, federally protected bald eagle habitat under Bald Eagle Protection Act, and bald eagles that live in white pine forests.
- Avoid environmentally sensitive and protected land, including land with a variety of plants and animals and land features.
- Avoid fragmenting existing habitat, contiguous natural corridors, and non-fragmented critical habitat for wildlife preservations that contain protected species.
- Avoid conservation easement Evergreen Acres along the Zumbro River between Highways 52 and 63 and north of 75th St. in North Rochester, conservation easement Apple Blossom scenic drive in Winona County.
- Avoid conservation easements like Evergreen Acres that contain uncommon native plants and animal communities in proximity to each other, including 160 bird species listed as rare, threatened, or of conservation concern.
- The Minnesota Land Trust indicated that the Evergreen Acres Conservation Easement property provides an important corridor for floodplain forest plants and animals to move along the Zumbro River.
- Avoid habitat of neotropical or endangered bird species in Evergreen Acres, including areas used for migrating, resting, feeding, and nesting. Nesting bald eagles are identified in Evergreen Acres.
- Avoid the spread of non native bird species such as English house sparrows, starlings, and pigeons.
- Avoid the edge effect, i.e., fragmenting a tract of habitat that would favor common species, but harm interior dwelling species of conservation concern.

- Deliver power with minimal disruption of natural habitat.
- Fragmentation of habitat would substantially change the ecology of forested lands.
- The most sensitive resources, natural communities and rare species designated by the Minnesota County Biological Survey.
- Fragmentation of habitat is the main reason for loss of species in the U.S., including Minnesota.
- Avoid Evergreen Acres because it is recognized by residents, the Minnesota Land Trust, and the Audubon Society as a unique environment containing endangered species.
- Avoid Evergreen Acres because it contains nesting and migrating habitat for endangered birds and raptors and half the bird species found in Minnesota.
- Fragmenting continuous forest will reduce broad and desirable mixes of bird species followed by repopulation with only common species such as blackbirds and sparrows.

Cultural and Historic Resources

- Avoid cultural resources, the Prairie Island community's cultural resources, and impacts to tribal land and residences.
- Avoid the Franks' Ford Bridge, which is nominated for inclusion in the National Register of Historical Monuments, and which is adjacent to the Evergreen Acres Conservation Easement.
- Avoid Native American Indian sites of significance that may be located on Evergreen Acres.

Electrical Characteristics

- Provide information to the public on electromagnetic fields (EMF).
- Transmission lines can crackle and create light disturbances.
- Locating the power lines next to a light rail train would minimize electrical transmission loss.

Health and Safety

- Avoid impacts on health of families, people, and livestock.
- Address health and safety concerns and respond to reports that Europe has evidence of higher cancer rates.
- Concern with humans living close to lines.
- Avoid health effects of large voltage lines and magnetic fields on humans and animals.
- Address safety issues of stronger storms caused by climate change and design the line to stand up to inclement weather.
- Consider the chance of a terrorist event.
- High-power transmission lines create potential health effects for people living in close proximity to them over periods of time.

Land Use

- Avoid irrigated center pivot fields; sensitive resources, including agriculture, land use, and livestock; homes by 300 feet; residential land; urban housing; rural residential land; land close to schools; heavily populated land; land with existing rights-of-way or electric lines; small properties; prime agricultural land, timber; logging land; farmers' fields surrounding Highway 14, crops along County Road 1; and existing rights-of-way.
- Avoid land close to state parks, Nerstrand Woods State Park, and Apple Blossom Drive.

- Don't put a line where one already exists.
- Keep line as short as possible.
- Use existing corridors, transmission lines, highways, roads, major roadways, field lines, rights-of-way.
- Use property lines, instead of routing through the middle of fields.
- Avoid loss of land for right-of-way, taking 150 feet fight-of-way from landowners, and landowners as requested.
- Avoid areas with houses nearby or houses planned to be built, like the one planned for County Road 31, northwest near Oronoco, MN.
- Avoid areas that are developed or regions of probable future development.
- Avoid Douglas Trail.
- Use abandoned railway, Douglas Trail, or Highway 52 for route.
- Avoid Douglas Trail because it is low lying, usually has standing water, and has a stormwater retention pond.
- Avoid the new school planned for County Road 3 and County Road 5 in Pine Island, and new high school on 425.
- Route new lines through farmland.
- There are lots of houses built around existing 161-kV line; avoid upgrading to 345-kV.
- Avoid conservation easements, Minnesota Land Trust conservation easements, environmentally sensitive and protected land, including land with a variety of plants and animals and land features.
- Avoid Minnesota Land Trust conservation easements specifically near Zumbro River Evergreen Acres between Highways 52 and 63 and north of 75th Street in North Rochester, Apple Blossom scenic drive in Winona County, and Great River Road.
- Minimize sprawl and damaging development.
- Have discussion with the DM&E to see if transmission lines can share corridors with the railroad.
- Avoid Evergreen Acres, which prohibits development of any type.
- Avoid agricultural operations south of Redwing.
- Consider moving old transmission poles before constructing the new transmission lines.
- Avoid routing a large line on a small property to minimize impacts to property value and future development plans.
- Locate the transmission line to the north of Olmstead County Road 12; there are corridors that would not pass through heavily populated areas.
- The CapX2020 transmission lines should share a corridor with the light rail and train that would deliver coal to the power plant.

Radio and Television Interference

- Avoid radio interference and adding to existing radio interference.
- Avoid area where current Rural Electric Association (REA) line interferes with TV signals from Minneapolis.

Social and Economic Resources

- Consider the decreased land value caused by the project and the affects to property value and resale value of multiple parcels.

- Provide Lake City the benefits of the CapX2020 project of expanding transmission lines for new homes, power for industry, and general growth and development.
- Address the impacts to land value caused by proximity to high-voltage lines.
- Avoid personal income and business impacts on land used for logging, tree farms, and vineyards.
- The natural beauty is the main economic driver, in Trempealeau, WI; consider the impacts to the attraction for visitors and businesses.
- Consider the price homeowners paid for a home in the country.
- Reward electricity customers who conserve energy with a lower rate.
- Educate the public on using less electricity.
- To reduce costs, use existing easements.
- Community and citizen impacts should be considered.
- Be sure to follow through with payments to landowners.
- The Evergreen Acres conservation easement was created by a substantial commitment of money and land rights.
- The unique beauty of the Mississippi draws people to the area as tourist, residents, and employers, and has an infinite value to the 7 Rivers Region economy.
- High power transmission lines do not promote the local economy.
- Raise the price of electric service to help curtail demand.
- To assist poor and middle class income families, set a standard rate for “x” amount of electricity used. Once people go over the standard, the price would substantially increase,
- Respect the community effort to be stewards of the Evergreen Acres Conservation Easement.
- American society is dependent on cheap, reliable energy, and must create a long-term energy plan for the future.
- Transmission lines sometimes create “economic dead zones.”
- Consider a shared corridor of electrical lines, light rail, and heavy rail that would improve the economic viability of the region. Consider I-90 to Highway 52.
- Combining a transmission line and a light rail in the same corridor would reduce the total costs. The savings could be passed on to the public, who pays for the projects through their utility bills.

Vegetation Resources

- Avoid forested land, land used for logging, tree farms, and vineyards.
- Avoid conservation easements, environmentally sensitive, and protected land with diverse plant and animal species and areas of high biodiversity and unique land features.
- Avoid conservation easements that contain uncommon native plants and animal communities in close proximity of each other.
- Avoid woodland, savannahs, oak woodland, brush land with native prairie remnants, natural prairie grassland, upland forests, oak forest, mesic maplewood basswood forests, and forested wetlands characterized as floodplain forests.
- Avoid the spread of noxious weeds.
- Avoid Evergreen Acres because it contains endangered plant species and one of the only mature white pine stands in southern Minnesota.
- The Minnesota Land Trust indicated the Evergreen Acres Conservation Easement “property provides an important corridor for floodplain forest plants and animals to move along the Zumbro River.”

- Avoid critical habitat and rare and endangered plants. Avoid natural habitat and green space.

Visual and Aesthetic Resources

- Avoid visual impacts, aesthetic impacts on residential areas, and disrupting scenic views.
- The natural beauty is the main economic driver, in Trempealeau, WI; consider the impacts to the attraction for visitors and businesses.
- Don't deface or jeopardize the river bluff and the natural bluff view beauty. Avoid making the large towers prominent feature on the bluffs in the Mississippi River Valley.
- Avoid conservation easements with unique scenic beauty such as Evergreen Acres, Apple Blossom Scenic Drive, and Great River Road.
- Avoid visual impacts to the Mississippi River Valley and affecting the natural beauty, bluffs, the many other rivers feeding into the Mississippi, the wildlife refuges, and state parks.
- The transmission lines would be an eyesore visible to the entire region.
- If the river crossing was at Alma, it would run along the existing lines and within a mile of the Mississippi River for 60 miles. It would be a commanding feature in the river valley, much taller and much more visible than the 69kV and 161kV lines.
- High power transmission lines would mar the landscape.
- Large towers, 150 foot clear cuts, and transmission lines are unsightly; they are especially aesthetically undesirable in areas lacking other development.

Water Resources

- Avoid the Mississippi River corridor, Mississippi River and floodplains, wetlands, private property with wetlands, swamps, river bluffs, and new crossings of the Mississippi river.
- Consider using the existing river crossing at Alma.
- The river crossing should be at La Crescent and La Crosse.
- Avoid White Water State Park, wetland area on Zumbro River branch, and the Prairie Island wetlands
- Coordinate with the Wisconsin and Minnesota DNRs.
- Avoid conservation easement on the Zumbro River "Evergreen Acres" between Highways 52 and 63 and north of 75th St. in North Rochester.
- The Minnesota Land Trust indicated the Evergreen Acres Conservation Easement "property provides an important corridor for floodplain forest plants and animals to move along the Zumbro River."
- The Evergreen Acres property provides an important buffer for the Zumbro River as a floodplain and helps to avoid the impacts of soil erosion and high levels of nutrient inputs. The buffer also absorbs large amounts of water when the river floods, helps water quality, and reduces downstream flooding.
- River valleys, like the Zumbro River valley and river resources in general, are the most sensitive environmental resources.
- Address runoff as a potential issue related to the project.

Comments on the CapX2020 Project Need, Process, and Public Involvement

The comments that relate to the project need, process, or public involvement are summarized below.

Need

- The lines are needed and justification given at the CON public informational meetings was satisfactory.
- Extend study area to Lake City to deliver reliable power to growing development and address the black outs and brown outs.
- Currently there is no extra capacity. Consider designing the line with enough capacity for future growth and future power plants on Mississippi River.
- No other options were explored, like alternative energy sources and local supply.
- The project is needed in the Minneapolis metro area to Rochester to La Crosse, Wisconsin, but not needed in Trempealeau.
- Need for the project is caused by societies overuse of electricity. Educate the public on conservation and using less electricity.
- The power supply needs to be more reliable.
- Consider conservation of power and the lifetime of the line.
- Design for conservation and storage on a regional basis.
- Be specific about the need and address the real need throughout the process.
- Consider the current and long term needs.
- Conservation should be emphasized as a strategy as well as plans to expand the grid
- The new project will not be necessary if reduced power demands due to conservation efforts are successful.
- The need was not explained sufficiently.

Process

- The CON public informational meetings seem well planned and organized.
- Address the real need throughout the process.
- Perform an environmental impact study for the Evergreen Acres Conservation Easement.
- Consider that constructing on conservation easements would nullify the Minnesota Conservation Easement Program.
- There are many laws, regulations, and permits in the Mississippi River Valley, including bluff land preservation, shore land preservation, Highway 35 and Great River Road signing and setbacks, and Refuge and Parks preservation.
- Take landowner comments and suggestions into consideration during the transmission line-locating process.
- Use the map comments recorded at the CON public informational meetings when routing the transmission lines.

Public Involvement

- Provide personal coordination for potentially affected landowners with project representatives before any transmission lines are routed.
- Please notify landowners in study area.
- Please allow residents to express concerns and participate in the process.
- Allow additional questions to be raised after the CON public informational meetings.

- Once routes are more clearly defined, hold meetings closer to small towns, not just in Rochester. Have the meetings last later so that everyone has the opportunity to attend. The public will be more supportive if they feel they've been included.
- Provide public info on EMF.
- Include Byron Township, Olmstead County in the public process.
- Keep public and potentially affected landowners informed of potential line routes, maps, project schedule, and project updates.
- Provide reports of the CapX2020 studies and the Minnesota utilities biennial transmission plans, regulatory filings, applications, project updates and mailing notices.
- General dislike for the proposed project.
- Provide project information to individuals who could not attend public meetings.
- The CapX2020 project representatives should maintain their expressed commitment to minimizing negative impacts for those living in potential routing areas.
- The project representatives at the public informational meetings could not answer questions and seemed uninformed.
- The maps provided were vague.

Comments on Alternatives to the CapX2020 Project and Transmission Lines, and Alternative Energy Sources

The comments received that relate to alternatives to the CapX2020 project and transmission lines and alternative energy sources are summarized below.

Transmission Lines and the CapX2020 Project

- Create smaller localized lines instead of large capacity lines.
- Extend project into Lake City.
- Do not upgrade existing lines.
- Do not make new lines, upgrade and use existing lines.
- There is no need for new corridors, use current corridors and easements.
- Provide specifics as to where lines will be.
- The best route would be from southeast Minnesota to La Crosse.
- Use existing river crossings at Alma and La Crosse.
- The most practical configuration is to use the Hampton Substation instead of Prairie Island.
- The Prairie Island option would waste time in the project schedule.
- Choose alternative routes that do not cross conservation easements or critical habitat.
- Use alternative routes north of Olmstead County, particularly land between Pine Island and Zumbrota, land north of Zumbrota, or land between northern Oronoco and Pine Island, north of Zumbrota and Zumbro Falls or north of Pine Island. Use alternatives routes due east of Highway 52 between 490th Street and 500th Street. If the above is not possible, consider routes south of Rochester, north or south of Evergreen Acres.
- If the transmission line must be routed through Evergreen Acres route in the following locations: along roads, cross the 75th Street bridge, avoiding quarries, south along 18th Avenue and Hwy 63 into Rochester.
- Prefer to see proposed routes through Minnesota Highway 19 in Northfield.

- If the transmission line must be routed through Evergreen Acres route in the following locations: Cross the river at the bridge located on CO. Rd 12 at Sandy Point. Angle the 161kV through fields to Hwy 63 then south, the other 161kV could angle to Hwy 52 then into Rochester.
- Transmission lines should follow existing roads, Highway 19 east and west, and Highways 56 or 52 north and south.
- Use existing lines running to Byron and east on State Highway 14.
- Consider a shared corridor of electrical lines, light rail, and heavy rail that would improve the economic viability of the region. I-90 to Highway 52.
- Project should be routed along Highway 19 east and west of Northfield, then along Highway 52.
- Upgrade the line from Alma to Rochester; it would satisfy the needs for the Hampton–Rochester–La Crosse project and cross the Mississippi River.
- Identify new corridor options for Rochester.
- The corridor north of Rochester is too narrow, and would affect too many landowners. Choose an alternative north of Olmstead County.
- The river crossing should be at La Crescent and La Crosse.
- Provide alternatives to large transmission lines.

Energy Sources

- No other options were explored, like alternative energy sources and local supply.
- Consider connecting to renewable energy like wind, solar, and methane, which would cause less impact.
- Not in favor of connecting to wind energy, need more coal and nuclear plants.
- Need more coal, hydro, and nuclear generation plants on the Mississippi.
- Explain why building more power plants might be a better plan.
- Disperse the generation sources to match the multiple transmission lines.
- Find out how to store energy with technology instead of instant use.
- Plan for a change in the trend of power production in the future. Coal generation will be replaced by renewables like wind.
- Local production, renewable energy, and conservation should be developed whenever possible.
- Please provide suggestions on how the public can effectively express their concerns.
- Public utilities should decrease their use of nuclear and coal based energy because they are potentially hazardous and affect the climate and environment.

Comments Recorded on Sheet Maps

The comments that related to site-specific information were recorded on sheet maps provided at the CON public informational meetings and are summarized below. Each section below clarifies the counties that the comments refer to. In general, the type of information that commenters included on the maps involved environmental, cultural and historic resources, residential, and agricultural resources, recreational land uses, and existing utilities, which were not previously included on the sheet maps. The data gathered at the CON public informational meetings were digitized and included in the revised electronic maps. A map with the location specific comments can be found in Appendix B.

Dakota, Goodhue, and Rice Counties

- At the Brookings-Twin Cities and Hampton–Rochester–La Crosse project boundaries, an airstrip and home are identified.
- In Leon Township, west of Highway 52, corn and soybean farm and house locations are identified.
- In Welch Township, homes are identified both north and south of Great River Road.
- Southwest of Prairie Island, and west of existing 345-kV line that runs south out of the Prairie Island nuclear station, farm, cropland, and homes are identified.
- If the river crossing was at Alma, it would run along the existing lines and within a mile of the Mississippi River for 60 miles. It would be a commanding feature in the river valley, much taller and much more visible than the 69kV and 161kV lines. If it were to cross at La Crosse, it would only intrude visually for a short distance.
- Consider buying privately owned land for substation sites.
- In Holden Township, northwest of Kenyon, property boundaries are identified.
- North of Kenyon there is a planned natural gas storage area identified.
- East of Kenyon, a marker for seismic testing is identified.
- Northeast of Zumbrota, 119 acres of sub-rented property is identified.
- In Northfield Township, north of Nerstrand and south of Dennison, on the western side of the Rice/Goodhue County line, University of Minnesota forest land, a black walnut tree farm, and a home are identified.
- East of Nerstrand the Veblen Farm Historic Registered Building is identified.
- In Minneaola Township, northwest of Zumbrota, property boundaries and the boundaries of CRP land are identified.
- North of Goodhue, and west of Highway 56, a home is identified.
- West of Northfield and south of Randolph, area with prairie bush clover is identified.
- On both sides of the Rice and Goodhue county line, Conservation Reserve Program (CRP) land, being restored to prairie is identified.
- West of the Rice and Goodhue county line, a sod farm, two homes, and a bluff area are identified.
- West of the Rice and Goodhue county line, a 10-home subdivision is identified.
- West of the Rice and Goodhue county line, a corn and soybean farm are identified.
- East of the Rice and Goodhue county line, an experimental station, where agriculture and crop experiments are conducted, is identified.
- West of the Rice and Goodhue county line, parcels that are platted for subdivision are identified.
- West of the Rice and Goodhue county line, along Northfield Boulevard, a center pivot irrigation system is identified.
- North of Randolph, the Chicago Northwester Rail Road line is no longer in service.
- Near the Hampton Substation siting circle, private property boundaries are identified.
- North of the town of Cannon Falls, the permitted, but yet not built, Invenergy gas line location is identified.
- North of the Cannon River, and east of Cannon Falls, surrounding the Trout Brook, a Dakota County park is identified.
- Southwest of Cannon Falls, the Little Cannon River and watershed are identified.
- On the eastern side of Cannon Falls Township, restored prairie area is identified.
- Private property is identified south of Cannon Falls, and west of Highway 52.

- Northwest of the town of Dennison is an area of prairie restoration.
- North of Dennison, on county line, cattle farms were identified.
- Southwest of Dennison, a crop farm and the Dennison wastewater facility are identified.
- Near Dennison, the Chicago Northwester Railroad line is no longer in service.
- Southwest of Kenyon, the Nature Conservancy owned land and areas containing Trout Lily, an endangered plant species that grows exclusively in Minnesota, are identified.
- East of Kenyon, near the Kenyon Substation, a planned wind farm are identified
- Near Kenyon, the Chicago, Milwaukee, St. Paul, & PAC railroad is no longer in service.
- Southwest of Highway 52, the Little Cannon River and watershed are identified.
- In the southeastern corner of Rice County, home locations are identified.
- In Ellington Township, property boundaries are identified.
- In Kenyon Township, a ditch, and property boundaries are identified.

Wabasha County

- In the southern end of the county, south of Elgin, 25 acres of rented wooded land is identified.

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Appendix A-2:
Route Working Group Meetings (March and May 2008)

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Comments Received

The TRL project team received comments by several different means. Comments included in this report were submitted by March 17, 2007 using comments forms, letters, email, fax, phone, or the project website. Project representatives received comments at the public meetings as written suggestions on comment forms and sheet maps. The sheet map comments were primarily site-specific information or concerns regarding the notice corridors. Project representatives also recorded comments and information requests with the approval or on request of the participants. After the meetings, project representatives responded to information requests.

Nine completed comment forms and letters were received by project representatives at the meetings, either by mail, phone call, email, or on the project website. Comments that were submitted by March 17, 2007, were considered in this report. Table 1 shows the number of times each of these topics was checked. As shown in, the most frequently identified topics on the checklist were proximity to residences; land use, including agricultural, residential, and recreation; biological resources; water resources; and historic and cultural sites.

Table 1:
Route Working Group Meetings Comment Form Topical Responses

Issue	Number Of Responses
Proximity to residences	5
Land use (agricultural, residential, recreation)	4
Biological Resources	4
Water Resources	4
Historic and cultural sites	4
Health and safety	3
Visual/aesthetic resources	2
Radio or TV interference	1
Noise	0

Comment Categories

The comments received were reviewed and organized by topic. The project representatives summarized the individual comments into a set of statements that will be used to define the discussion for each topic. The comments have been divided into resources, comments on the route working group format, public involvement, and oral comments and questions and answers.

Comments on Resources

The comments that relate to resource topics are summarized below.

Biological and Vegetation Resources

- When siting the transmission line, be sensitive to ecological concerns.
- Minimize environmental impacts and consider environmental factors.

- Most sensitive resources are undisturbed tracks of forest, wetlands, biodiversity, large areas with trees, and sensitive habitats for sensitive species.
- The Mississippi Valley Conservancy Greenway should be considered.
- Holland sand prairie near McQ Road is a sensitive prairie remnant.
- Wetlands and forest are important to avoid.
- Avoid nesting season.
- Consider restrictions to using grasslands as easements.
- Avoid Forested CRP, bluffs, remnant Big Woods, wooded areas, and prairie restoration areas.
- Avoid rare plants and animals and consider potential impacts to fox, coyote, beaver, hawks, eagles, bald eagles, and open space.
- Consider winter construction if the project crosses CRP land.
- Avoid CRP land for 10-year restoration, including NRCS land and soil and water conservation districts.
- Consider Partners for Wildlife federal program easements and long-term agreements.

Cultural and Historic Resources

- There are scenic byways involving historic resources and the bluff country in the area.

Electrical Characteristics

- Double circuit possibilities in relation to existing lines should be clarified.
- Consider using a new gold conductor for more capacity.

Geological Resources

- Consider geotechnical issues associated with karst features (potential for sinkholes).
- Consider restrictions to constructing on slopes and bluffs.

Health and Safety

- Consider potential health problems for people who have lived close to power lines. Meeting attendee indicated that his family has lived within 75 feet of power lines and two of his children have mental illness and the other has nerve-related issues.

Land Use

- Use pre-existing corridors.
- When siting the line, be sensitive to development.
- Obtain the most up-to-date information regarding annexation and plans for new roads from county and city planners.
- Minimize effects on residences.
- Avoid commercial development and potential development. The main challenge to routing is development in the Rochester area.
- The north side of Rochester is growing quickly and the project should avoid the corridor to the east and below 100th street.
- Consider the location of new transmission lines relative to the highway right-of-way.

- Compare the proposed new line location with future WISDOT projects. Make sure to look at long range WISDOT "major" projects.
- Property owner buy-in and obtaining easements from property owners will be some of the main issues to overcome for siting the project.
- Local comprehensive plans, general development plans, future development, and road improvements are anticipated at and beyond the urban boundary of Zumbrota and other communities should be considered in the routing effort. Annexation plans, a future industrial park, an interchange and other road extensions and improvements should be considered in Zumbrota.
- Details about the planned Elk Farm development should be considered. This development may ultimately allow for 15,000 new residents.
- Consider impacts on land development potential. If land development is constrained from wetlands, floodplains, and soil type and the route also seeks to avoid such areas, then a parcel may not have any development potential after installation of the line.
- Route planning should allow existing urban areas to grow toward the transmission lines. The route selection process should not favor current edges of development.
- State and local trail networks should be mapped and considered (Rochester and Southern Minnesota Area Regional Trails (SMART) networks).
- MNDOT prepared a freight and passenger railroad corridor study about five years ago. New high-speed rail proposals that would serve Rochester may be initiated in the future and could involve corridor selection and acquisition.
- A corridor study for Highway 14 may be initiated. This may involve realignment for a four-lane facility.
- Wind energy proposals are being considered in the Dexter, Byron, Rochester, Dodge Center, and Canyon areas. Some of these proposals may be public/private initiatives involving Community Renewable Energy Bond (CREB) funding. These proposals involve local school districts and their access to this state funding source.
- Height limits associated with the Airport have been restricted all the way to Onalaska.
- Collocation with existing and planned railroad corridors should be considered.
- Use of the existing I-90 bridge after realignment would still require foundation fixes, coordination with MNDOT, crossing bluff faces, and/or long runs along the Mississippi River. The new bridge will cost $141 million. Construction is anticipated from 2014 to 2016.
- The railroad swing bridge north of the La Crescent crossing is another possibility for siting. Replacement has been considered, but there is no funding for the project at this time. It was on the state wish list 10 years ago in the seven-year plan. The Truman–Hobbs Bill provides funding to the Coast Guard for replacing structures that present a hindrance to navigation.
- A La Crosse school referendum involves a new site for a middle school in Holland.
- Over the next 50 years, urbanization is going to occur to the north of the project area.
- Myrick Park north of University of Wisconsin La Crosse should be noted—near French Island.
- There is a nine-county economic development district in the project area.
- Consider distance from homes and aesthetics from transmission lines affecting homes.
- Consider the locations of public services such as gas and phone lines underground.
- Consider locations in Rice County zoned as community/industrial for potential sites.
- Consider the South East comprehensive plan and the Rice County Comprehensive Plan
- Consider future biomass production sites.

- Consider that placing an easement on Conservation Reserve Program land would cause the land to no longer be eligible for the Conservation Reserve Program.
- Use existing electrical rights-of-way.
- Consider siting on areas where wells have been used and capped, contaminated sites, and junkyards
- Rice County preserves open space and natural resources.
- Avoid schools, churches, cemeteries, parks, proposed parks, airports, and historical sites in the Castle Rock, Minnesota area.
- Avoid mining areas.
- Most sensitive resource is farmland.
- Avoid center pivots, organic farms, and prime farmland.

Radio and Television Interference

No comments were received on radio or television interference.

Social and Economic Resources

- Traverse competing business interests in Rochester.
- The main challenge for the project is cost.
- In addition to the negative environmental impact routing the 345 kV in the Trempealeau National Wildlife Refuge and flyway would have, there is also an economic impact to be considered.
- The natural beauty of the Mississippi River Valley and its many bluffs, refuges, state parks, etc. are the centerpiece of our regions quality of life.
- The beauty of this region attracts residents, employers, tourism, and much more.
- Trempealeau National Wildlife Refuge alone accounts for a $6.52 return locally for every $1.00 spent supporting the refuge.
- Routing a 199-foot-tall widely intrusive power line directly in the midst of this scenic river valley would be an ill-advised environmental and economic mistake suffered by every generation to come.
- Home sellers must divulge that a transmission line is on their land or planned to be on their land. It has potential impacts on property values.
- Landowners would rather sell the whole parcel than a section if a transmission line crosses it.
- The profits that farms make can barely pay for the property they are located on. The easement payments cannot compensate.
- Power lines would damage property values.

Water Resources

- Most sensitive resources are river crossings, the Zumbro River, and Mississippi River Bluffs.
- Of the four proposed river crossings, it appears that three of them will directly impact the Trempealeau National Wildlife Refuge.
- The Upper Mississippi River Valley and the Trempealeau National Wildlife Refuge are a crucial part of the Mississippi River flyway, and an internationally important bird migration corridor, and the proposed 199-foot-tall towers and lines would be a significant additional threat to resident and migrating birds.
- The Trempealeau National Wildlife Refuge has power lines crossing it now, and bird kills are observed from these smaller lines and poles.

- The Friends of Trempealeau Refuge, Inc. support the overland routing from Rochester to La Crosse which crosses the river at La Crescent. This routing has the least impact on the Upper Mississippi River Valley.
- Routing a 199-foot-tall widely intrusive power line directly in the midst of this scenic river valley would be an ill-advised environmental and economic mistake suffered by every generation to come.
- Avoid soil and water conservation districts and wetland restoration projects.
- Consider effects on water quality and aquifer recycle.

Comments on the Route Working Group Meetings and Public Involvement

The comments that relate to the project need, process, or public involvement are summarized below.

Comments on Route Working Group Meetings

- The format worked well. Participants want to know more about where Xcel Energy gets their environmental input—other than the DNR.
- No specific routes were presented at the meeting. Participants want to see the specific routes as soon as they are available.
- There would have been better participation if more individuals were invited.
- Meeting was a great process. Learned more about the process and was able to give input.
- Selecting the right persons for the working groups presents a challenge. Should consider some members that have more expertise, including township representatives and trails groups.
- The meeting format was excellent.
- The meeting was done well and care was taken to solicit input from all attendees.
- Meeting staff did a good job going through siting criteria and asking for input.
- The presentation explained the siting process sufficiently.
- Make new line locations available on the CapX 2020 website.
- The meeting used an excellent relaxed format and good display items (maps, and charts) were provided at meetings.
- Make the siting criteria list available to the public.
- Show a diagram of the regulation process.

Public Involvement

- The La Crosse Bluff Alliance, Craig Thompson, should be contacted.
- Charlie Handy should be contacted regarding new development in Holman and Holland.
- Larry Kirsch or Kim Cabot from the La Crosse City Hall Planning Department should be contacted.
- Catherine Schmidt, the Holman Village Administrator should be contacted.
- Dave Bonafias is a good GIS contact.
- Greg Flogstad is the Director.
- Houston County and Caledonia have GIS data the project team should consider.
- Many local governments have great GIS data sets, including oblique aerial photography with 6-inch resolution.

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Appendix A-3:
Public Open House Meetings (May 2008)

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Comments Summary

The project representatives identified potential issues related to the projects through internal discussions during preliminary project development. The following list of potential environmental issues was identified:

- Need for the project
- Visual/aesthetic resources
- Proximity to residences
- Land use (agriculture, residential, recreation)
- Water resources (floodplains, river crossings)
- Biological resources (wildlife habitat, raptors)
- Historic and cultural sites
- Radio and television interference
- Noise
- Health and safety

This list of issues was included on the comment form and could be checked to indicate interest or concern. This list was designed to help the public frame its comments on the project and was not intended to be all inclusive or to imply predetermination of effects.

Project representatives urged participants to suggest specific issues within the above general categories, or other issues not included above, to be considered.

Additional issues were also identified by individuals, organizations, and agencies during the comment period. The comments received during the comment period are the basis of the issues described in the following sections of this report.

Comments Received

The project representatives received comments by several different means. Commenters could submit comments by forms, letters, email, fax, phone, or the project website by the deadline of June 20, 2008. Project representatives received comments at the open houses on pre-printed comment forms and as written suggestions on sheet maps. The written comments on sheet maps primarily relayed site-specific information or concerns regarding the notice corridors. Project representatives also recorded comments and information requests with the approval or on request by commenters. After the open houses, project representatives responded to information requests.

Approximately 26 completed comment forms and letters were received by project representatives either at the open houses, by mail, phone call, email, or on the project website. Comment forms that were submitted by the deadline of June 20, 2008, are considered in this report. The comment form included a list of issues that could be checked to indicate interest or concern. Table 1 shows the number of times each of these topics was checked.

The most frequently identified topic on the checklist was land use, including agricultural, residential, and recreational land use as indicated in Table 1. Other additional issues not listed in the table included

decreased land and or property value, other land uses, cost and use of existing transmission line corridors, and providing more reliable power beyond the current study area.

Table 1:
Comment Form Topical Responses

Issue	Number of Responses
Land Use (agricultural, residential, recreation)	12
Proximity to Residences	11
Health and Safety	9
Visual/Aesthetic Resources	9
Need for the Project	7
Biological Resources	7
Radio or TV Interference	5
Historical and Cultural Sites	4
Noise	4
Water Resources	3
Other	Impact on agricultural utilization and airport safety concerns

The comment form also included a list of property uses that could be checked. Table 2 shows the number of times each of these land uses was checked. The most frequently identified use was residential.

Table 2:
Comment Form Property Uses Responses

Land Use	Number of Responses
Residential	11
Conservation Easement	5
Irrigated Agriculture	5
Livestock	4
Industrial	1
Mining	0
Commercial	0
Other Uses	Residential development, recreation, and an airport

Comment Categories

The comments received were reviewed and organized by topic. The CapX2020 utilities summarized the individual comments into a set of statements that will be used to define the discussion for each topic. The comments have been divided into three categories: resources, project process, and public involvement, and comments specific to the CapX2020 or Hampton–Rochester–La Crosse project.

Comments on Resources

The comments that relate to resource topics are summarized below.

Biological Resources

- The key factors/issues you should consider for the project include wildlife and sensitive biological resources.
- The wildlife on private property should be considered when siting the project.
- Avoid raptors, bald eagles, hawks, falcons, and other species.
- Biological resources should be considered the most sensitive.
- Towers (transmission lines) could affect cattle.
- Stray voltage will affect livestock.

Cultural and Historic Resources

- Cultural resources should be considered the most sensitive.

Electrical Characteristics

- No comments were received on electrical characteristics.

Health and Safety

- Health and safety should be considered the most sensitive resource.
- We have concerns about EMF from high voltage lines and the effects on small children; avoid Fieldstone Terrace, town of Holland, Wisconsin.
- Please follow the standards of the Federal Aviation Regulation part 77.25, on structures in arrival and departure areas of small airports. Do not harm the present airport at Amsterdam Prairie Road and Garfield Road and Hanson Drive. The airport requires airspace leading to and from the runway to comply with certain height clearance areas. It is located in corridor segment HH.
- Concerned for the health of children and adults.

Land Use

- The key factors/ issues to be considered on this project include land use.
- I own land along Highway 60 between Kenyon and Wanamingo and deal with the poor location of poles, they are not right along the Hwy ROW. That makes farming the land along the highway a big problem. The spacing between the poles and Right Of Way varies, but is never enough to allow our equipment to pass between the ditch and the pole—so it becomes a weed infested, ugly edge to the property, and a waste of time, fuel, yield and money (Corridor segment F).
- Consider dense residential areas as special uses when siting the project.
- The east side of Highway 52 in the Zumbrota area is primarily residential; the area to the west of the highway is less densely populated and easier to access.
- South of Highway 52, in the Pine Island area looks like your corridor is coming through an area of new development called Elk Run owned by Tower investment.
- 60 years ago they put a line between Kenyon and Wanamingo on Highway 60 near Corridor F; the poles were put out in the fields. Now there is bigger machinery and we can't farm in that area.
- The projects' towers and transmission lines are too big to be close to homes.
- On sheetmap 3 which shows the area north east of Rochester, there is a DNR grassland refuge. The DNR is very picky about anything on that property; you can only walk on it. Our house, and several

others are close to the road,18th avenue south of 100th street. If you choose corridor I or K you have to put up new poles and you still have to put up new poles on the J 69 kV corridor.

- Route the project through less populated areas, like corridors I & K.
- Don't place large lines in close proximity to existing homes.
- Don't route line through Segments M & L, because there are more houses in these two areas than in corridor segments I & K. It seems better to use corridor segment J rather than I or K.
- Please do not route these large lines close through people yards.
- Farm drainage and soil productivity are potential issues that relate to the project.
- Place the poles next to roads to avoid disrupting farm operations.
- Route the project to minimize effects.
- On sheet map #9 the routes should be as far away from La Crescent as possible. Consider routing farther south towards Brownsville, Minnesota.
- Recreation should be considered the most sensitive resource. Avoid Kipp State Park, Apple Blossom Drive, the Trempealeau wildlife refuge, and the Onalaska Lake area.
- The corridor should cross the Mississippi River at the Alma crossing area.
- Avoid residential neighborhoods when possible.
- Follow Interstate-90, it's already a perfect corridor.
- In corridor Segment KK, Please avoid routing near Bice Avenue in the Fieldstone Terrace subdivision, in the town of Holland.
- Use Highway 52, no one is effected there.
- Consider using a corridor north of Lake Zumbro that would be helpful for those in the congested and sensitive areas to the south. I am happy to see the "blocked out" sensitive areas and the potential of siting the substation in Oronoco.
- Route the project next to existing road Right Of Ways in corridor segment E.
- Use existing roads like Highways 52 and 56.
- Follow current transportation corridors like Highway 52 and White Bridge Road.
- I feel that you have your La Crescent to La Crosse Mississippi River Crossing corridor already set as it now exists. I would greatly resist a second corridor for your new transmission line.
- Do not route on Hwy 57.
- Poles should be set on edge of fields so we can utilize our pivot (moveable) instead of using irrigation guns which use double the amount of electricity. 161 kV line is Wisconsin just north of Trempealeau Highline pole 226 & 227 are in my field. We would like to see them moved to edge of field so as to utilize above mentioned movable pivot.

Radio and Television Interference

- Transmission towers affect radio, TV, and phone lines

Social and Economic Resources

- Easements should be paid over the life of the easements.
- Easements should be based upon Kilowatts and the cost of electricity.
- Farmers or landowners with easements have their costs go up and the easements' payment would stay the same. The payment paid in 2008 would be worth much less 40 years from now.

- Keep the dependability of electricity the number one priority and the cost as low as it can be. I can not afford my utility costs to keep eating into my income.
- The cost of goods and services I buy from industries, stores, medical suppliers, and schools climb higher because their expenses go up. I pay the utilities bill there also.
- Make sure the source of electricity stays on and generation is done by the cheapest sources.
- Property value and real estate values will be decreased by the project.

Vegetation Resources

- On Sheetmap 3 which shows the area north east of Rochester, there is a DNR grassland refuge. The DNR is very picky about anything on that property; you can only walk on it. Our house, and several others are close to the road, 18th avenue south of 100th street. If you choose corridor I or K you have to put up new poles and you still have to put up new poles on the J 69 kV corridor.
- DNR property grasslands are the most sensitive resources in the study area.

Visual and Aesthetic Resources

- Use the paint color on the poles to blend it into the background environment.
- Keep the project away from scenic drives and state parks.
- My property is on County Road 1 between La Crescent and Nodine, Minnesota. County Road 1 (also Apple Blossom Drive) is a scenic byway. This road is used by tourists and residents for scenic drives and is only 10 minutes from downtown La Crosse and it needs to be preserved. People would not want to see poles and lines from the state park in Nodine.
- Route the project in low lying areas rather than on hilltops so the lines would be less visible.
- Electric poles are an eyesore.
- I don't mind seeing the 69 kV lines, but I don't want bigger ones to look at. Also don't want you cutting down any more trees.

Water Resources

No comments were received on water resources.

Comments on the CapX2020 Project Process and Public Involvement and Hampton-Rochester- La Crosse 345 kV Transmission Line Project

The comments that relate to the project process and public involvement and the project are summarized below.

Process and Public Involvement

- I'm really glad to see that you have appeared to listen to prior concerns regarding the placement of lines north of Rochester.
- Communities affected need good clear information to make good decisions.

Transmission Lines and the CapX2020 Project

- Please don't increase the project to 345kV at the Fieldstone Terrace subdivision, in the town of Holland, Wisconsin.

Comments Recorded on Sheet Maps

The comments that related to site-specific information were recorded on sheet maps provided at the CON public open houses and are summarized below. Some of the maps may represent overlapping areas, but different comments were recorded on each of the maps. Each section below clarifies the counties included. In general, the type of information that commenters included on the maps involved environmental, cultural and historic resources, residential, and agricultural resources, recreational land uses, transportation, future development, and existing utilities. The data gathered at the May 2008 public open houses were digitized and included in the revised electronic maps. A map featuring consolidated and digitized map comments from all public open houses since September 2007 is included in Appendix C.

Goodhue, Dakota, and Rice Counties

- Avoid the proposed new interchange location south of Cannon Falls on Highway 52.
- Avoid the National Historic Site north of Stanton on Highway 56.
- Avoid the golf course west of Cannon Falls.
- Avoid the Stanton Town Hall in Stanton.
- Avoid Stanton Village, west of Cannon Falls.
- Avoid the proposed new housing development in Cannon Falls.
- Avoid the proposed new pedestrian bridge in Cannon Falls.
- Avoid the Maltby Nature Preserve south of Randolph.
- Avoid the area north east of Cannon Falls that has been annexed for housing.
- Avoid the Quarry west of Randolph.
- Avoid the sewage treatment plant north east of Randolph.
- Avoid the Cannon Valley Trail, northeast of Cannon Falls near the state park area and RJD Memorial Hardwood Forest.
- There is Biodiesel development north of Cannon Falls.
- Avoid the proposed new gravel quarry off of Highway 20.
- Avoid the new planned irrigation, west of Highway 56, north of Randolph.
- Avoid the irrigated area southeast of Empire.

Rice and Goodhue Counties

- There is a potential wind development area south of Kenyon.
- Avoid the area where trees have been cleared near Highway 57.
- There is a new potential road route stemming from Highway 60 southwest of Wanamingo.
- Avoid the area where there are existing lines impacting agricultural operations off of Highway 60.
- Avoid the Dairy near Highway 60, halfway between Kenyon and Wanamingo.
- Avoid the cemetery west of Highway 60, north of Kenyon.
- There is a new proposed intersection off of Highway 52 between Cannon Falls and Zumbrota.
- An intersection will be removed from Highway 52.

Goodhue, Olmsted, and Wabasha Counties

- Avoid the Elk Ranch west of Zumbrota.

- The DNR has been tracking Muskie between Hammond and Oronoco.
- There is a proposed new interchange off of Highway 52, north of Pine Island.
- Avoid the Elk Farm near Highway 52, north of Oronoco.
- Avoid the DNR Prairie lands south of Oronoco.
- Avoid the RC airplane field north of Rochester.
- There might be a pipeline south of Evergreen Acres.

Olmsted and Winona Counties

- There might be a pipeline south of Evergreen Acres.
- Avoid the wildlife habitat near the WMA west of Rochester.
- The city of Eyota will be expanding.
- Avoid future rural residents east of St. Charles.
- Avoid the Gary Allen Runway south of Eyota.
- Avoid the new permitted 1000 head cattle farm south of Eyota near I-90.
- Avoid proposed building site near I-90, west of Eyota.
- Avoid the Harlan Moorehart Runway and the Pickett Field Runway sites near I-90, west of Eyota.
- The Quincy substation is located near Chester Woods pedestrian trail.

Olmsted and Winona Counties

- Avoid the CRP land south of Fountain City near the Mississippi River.

Winona County, Minnesota, and Trempealeau County, Wisconsin

- Avoid the CRP land south of Fountain City near the Mississippi River.
- Avoid Vineyards, and Organic Farms near the Mississippi River south and north of Trempealeau.
- There is a new subdivision called August Prairie north of Holmen.
- Avoid the Dirt Bike Trail south of Winona.
- Avoid the potential wetlands reserve area across the river from Winona.
- Avoid irrigated areas.
- Avoid the cemetery southeast of Witoka.

Houston and Winona Counties, Minnesota, and La Crosse County, Wisconsin

- Avoid the home west of Money Creek that is off the electricity grid and runs on Solar power.

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Appendix A-4:
Public Open House Meetings (December 2008)

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Comments Received

The CapX2020 utilities received comments by several different means. Commenters could submit comments by forms, letters, email, fax, phone, or the project website by the deadline of January 11, 2009. Project representatives received comments at the open houses on pre-printed comment forms and as written suggestions on sheet maps. The written comments on sheet maps primarily relayed site-specific information or concerns regarding the route options. Project representatives also recorded comments and information requests with the approval or on request by commenters. After the open houses, project representatives responded to information requests.

Approximately 233 completed comment forms and letters were received by project representatives either at the open houses, by mail, phone call, email, or on the project website. Comment forms that were submitted by the deadline of January 11, 2009, are considered in this report

The comment form included lists of specific areas and routing criteria that could be checked to indicate interest or concern. Table 1 shows the number of times each of the specific areas was checked. The most frequently identified area was the Minnesota Highway 56 and 60 Corridor.

Table 1:
Comment Form Specific Area Responses

Specific Area	Number of Responses
Minnesota Highway 56/60 Corridor	61
La Crescent Mississippi River Crossing	43
Alma Mississippi River Crossing	35
US Highway 52 Corridor	32
Rochester Area	33
Winona Mississippi River Crossing	33
Interstate Highway 90 Corridor	29
North La Crosse Substation Siting Area	25
Cannon River/Cannon Falls Area	24
North Rochester 161 kV Corridor	24
Wisconsin Corridor	21
Hampton Substation Siting Area	15
Other areas	Pine Island, Zumbro River Power Dam, Centerville, Wisconsin Highway 35, La Crosse River Marsh, Chester, Eyota, St. Charles, Section 35 of Stanton Township, Hwy 56 and Intersection 9, Warsaw Township, Stanton Airfield, Hudson Crossing, Storer Valley Road, Storer Valley, Mound Prairie Township, Houston County, Wangs' Corner, Rising Sun Drive, Elgin Township, Wabasha County, Dennison, Looney Valley, Mazeppa, Mazeppa Township, Zumbro Township, Road T-160, B1, B70, B78, B24, B26, D99, and D1011

The most frequently identified routing criteria on the checklist were land use, including agricultural, residential and recreation as indicated in Table 2.

Table 2:
Comment Form Topical Responses

Routing Criteria	Number of Responses
Land Use (agricultural, residential, recreation)	144
Proximity to Residences	134
Visual/Aesthetic Resources	122
Health and Safety	117
Water Resources	70
Biological Resources	68
Radio or TV Interference	65
Noise	51
Historical and Cultural Sites	40
Other	Wildlife, environmental destruction, local contractor bids, need, National Scenic Byway regulations, industrial feed, Great River Road, proximity to airports, livestock, renewable energy production; economic develop, Indian burials, ecological disruption, bald eagle habitat, wood land, future land use opportunities, interference with gravel mining operations, disrupting agriculture, protected wildflowers, state bike trail, ratepayers increase in electricity, cost, and air traffic

Comment Categories

The comments received were reviewed, transcribed verbatim into a database, and organized by topic. The CapX2020 utilities summarized the individual comments into a set of statements that will be used to define the discussion for each topic. The comments have been divided into three categories: resources, public involvement, and comments specific to the need or alternatives to the CapX2020 proposed Group 1 projects or specifically this project.

Comments on Resources

The comments that relate to resource topics are summarized below.

Agricultural Resource

- Prefer to use U.S. Highway 52 over Highway 56 or Highway 60. There is less farm land near U.S. Highway 52.
- Prefer to use woodlands rather than agricultural and residential land.
- Prefer to use agricultural land rather than residential areas.
- Consider using U.S. Highway 52 and other existing linear corridors to avoid impacts to agricultural use, prime farmland, farmsteads, large farm equipment, GPS and navigation systems used in farm machinery, century farms, aerial application of fungicide, foliar fungicides, farm buildings, pasture land, the Sagenta and Monsanto Research farms, tree farms and timber production, and tillable land.
- Avoid livestock operations along the Highway 56 Corridor.
- Avoid routing the transmission lines through the middle of properties or fields.
- Avoid interrupting current of future irrigation and tile drainage equipment and practices.

- Transmission lines are detrimental to livestock and crops.
- Avoid routing the line through agricultural land to avoid politically sensitive areas.
- Work with farm and land owners to place towers along existing fence lines, property lines, existing transmission and utility lines, highway rights-of-way, and non-farmable areas, instead of bisecting fields.
- Avoid taking agricultural land out of production and decreasing food production.
- Avoid stray voltage impacts to livestock and feedlots.
- Avoid impacts to and provide information on the impacts to livestock, including; the poultry, livestock, and milk industries; livestock mortality; health effects to cattle herds and other livestock; dairy farms; domestic animals; hog farms; feed lots; horse boarding facilities; beef farms; and a herd's reproduction, breeding, and feeding habits.
- Cattle, horses, and other livestock will not go near transmission lines due to stray voltage.
- Avoid fragmenting or separating existing cropland and dairy operations.
- Avoid impacts to agricultural land that is leased to a tenant; The addition of transmission lines would make it difficult to lease farm land for the top rental price.
- Avoid farmland that already hosts multiple utility easements.
- Avoid compaction of soil from construction of the transmission lines and access roads; it would take 3–5 years to restore.
- Farming around transmission towers would be extremely difficult.
- The GPS equipment used in the farm equipment would not be able to steer around transmission poles.
- Avoid impacting independently owned farmland and small rural farms as they will quickly be replaced by factory farms.

Air Quality

- The Big Stone II Project, which would connect to the CapX2020 project, might not be built due to CO_2 emissions.
- The CapX2020 project would only facilitate the use of coal fired power plants and the release of CO_2 into the atmosphere.

Biological Resources

- Avoid natural areas like the La Crosse Marsh, the Upper Mississippi River Wildlife Refuge, Mynik Marsh Station, Sandy Point, La Crosse, La Crosse Marsh Substation, the Highway 56 corridor, Storer Valley, Rooner Valley, flat topped hills around Dennsion and south of Stanton, Mississippi River Valley, Native Prairies along the Highway 56 and County Road 24 corridor, RJD Memorial Hardwood State Forest, Zumbro River, MN DNR Class 1 Special Regulation Small Mouth Bass Section on the Zumbro River, Little Cannon River and River valley, and State Department of Natural Resources Wildlife Management Areas.
- Avoid health effects, reproduction impacts, and mortalities to wildlife.
- Avoid impacts to ecosystems, habitat, prime habitat, wetlands, bluffs, rivers, parks, marshes, tree lines, eagle nests, woods, natural migration routes of birds, urban wetlands, native prairie, ponds, hardwood forests, areas used for educational surveying, bald eagle habitat, sensitive habitat, nesting patterns, areas with DNR forestry management plans in place, prairie restoration areas, native

amphibian habitat, grasslands, river bottoms, migratory paths for land animals, unspoiled natural areas, scenic and wild rivers, and land managed for sustainability by private landowners.

- Avoid impacts to rare, threatened, and state listed species and other types of wildlife including: the Dwarf Trout Lily (endangered species), migratory birds, bald eagles, swan, deer, state threatened species, federally threatened species, waterfowl, rare plants, Prairie Bush Clover, Big Blue Stem, Wild Crocus, native soft and hard woods, deer, pheasant, wild turkey, ruffed grouse, fox, wood duck, wildflowers, standing timber, rare sedge grass, compass plant, native prairie grasses, cougar, beaver, song birds, bear, Black Walnut Trees, Pine trees, Spruce trees, and Oak trees.
- Avoid cutting down trees that provides habitat for wildlife and serve as wind breaks.
- Consider combining and existing line with the new line so there is only one set of structures as it crosses the marshland and river in the La Crosse area.
- Vegetation would never restore itself to pre-construction condition.
- Follow existing easements where the land has already been ecologically damaged.
- Constructing transmission lines over the Mississippi River flyway will increase the amount of bird collisions and mortalities, especially at sunrise and sunset.
- Underground the transmission lines at the Mississippi River crossing to avoid impacts to biological resources.

Geology and Soils

- Avoid highly erodible terrain, steep hills, bluff terrain, windy ridges, areas with existing erosion problems, areas with contour farming, areas using erosion control methods, areas with historical road washouts, tillable land, steep slopes, cross slopes, ravines, large hills, high water tables, and springs.
- Avoid impacts to soils including loss of soils, permanent damage to soil structure, and compaction from construction.
- Prefer to route the line where the hills are too steep to farm.
- Consult topographic maps so that the regions terrain is better understood and incorporated into the routing process.
- Avoid removing vegetation as it contributes to soil loss and erosion.
- Avoid the River Terraces because the soil is very sandy and highly erodible.
- Explain how the bluffs with substantial iron content in the subsurface rock may impact the magnetic field from the transmission lines.
- The heavy construction equipment and semi-trucks delivering the poles and supplies would cause soil compaction. It would take three to five years to regain the existing productivity of the crop land within the right-of-way after the construction is completed.

Hazardous Materials

- The construction of the line near the La Crosse marsh will require a landfill.
- The CapX2020 project will enable coal fired power plant to be built and lead to increased mercury emissions.

Health and Safety

- Avoid impacts to human and domestic animal health that include mutation of cells, adult and childhood cancer, long term health issues, childhood leukemia, loss of sleep, mental and psychological effects, neurological effects, and accidents involving transmission lines.
- Please provide more information to the public about the health effects of transmission lines on human health. Include articles and findings from various sources including European studies, US Congress Office of Technology Assessment, Electric Power Research Institute, British Medical Journal, The Childhood Cancer Research Group at the University of Oxford, and the Mayo Clinic.
- Avoid people who are more susceptible to illnesses including small children, children with compromised immune systems, people who have been chemically poisoned, and the elderly.
- Avoid facilities and areas where people susceptible to illness are likely to be, including schools, home schools, daycares, and facilities designed for chemically poisoned individuals.
- Avoid health impacts or mortality to animals including horses, livestock, wildlife, cattle, pets, and hoofed animals.
- Avoid impacts to airports and the viability and safety of their runways specifically including the Stanton Airport, a private airstrip one mile west of Plainview, and private airstrips near Eyota, Minnesota.
- Maintain the lines so that they do not present any accident danger while in use like sparking or coming in contact with vegetation.
- Construct the lines so that they are safe in storms and inclement weather events.
- Avoid the Monsanto Corn Research facilities in Stanton, Minnesota because of the large amount of people working in the fields.
- Consider the health effects of humans working in a field, under a transmission line for 8-10 hours a day.
- Provide information on EMF and reduce the occurrence of stray voltage. Until EMF is proven to be safe, do not expose humans and animals to the potential risk.
- Avoid the Steeplechase ski area because of safety risks including the event of a downed transmission line touching a chairlift and safety issues during the snowmaking process.
- Avoid areas prone to flooding like the Storer Valley northeast of Huston, Minnesota.
- Provide information regarding the effect of EMF has on the beef, poultry, pork, and milk produced in the study area.
- Living near transmission lines would cause detrimental health effects to humans.
- Transmission lines are a security threat.

Historic and Cultural

- Avoid sites that are historically or culturally valuable or are included on the National Register of Historic Places including: the Oxford Mill, the Bunnel House Historic Site, the Stanton Airport, Wang's Fossil Site, Wang's Store, Historic Capital Highway/ High Prairie Trail, Indian Burial Mounds, century farms, fossil locations, Nansen Agricultural Historic District, Laura Ingalls Wilder Historic Sites, South Troy Church Cemetery, historic wagon trails, University of Minnesota archeological dig sites, a historic stagecoach trail north of Rochester, and Jesse James' Cave in Wabasha County.

Land Rights and Easement Acquisition

- The 5th Amendment of the U.S. Constitution provides citizens the right to private property and that right must be protected.
- Honor landowner requests to use the Minnesota Statute 216 E.12, Subdivision 4, also called “buy the farm” to purchase their property if they do not agree to the terms of the easement.
- The use of “Eminent Domain” in this project would be unfair.
- Landowners who would be able to see the new line from their property, but do not have easements and transmission poles located on their property should be compensated.
- Landowners should be contacted to discuss easements as soon as possible.
- Choose the route that requires the least amount of landowner easements and affects the least amount of landowners.
- Provide more information on the easement acquisition process, continuing land uses in an easement, and restricted land uses in an easement.
- Work with affected landowners to route the lines specifically on their land to reduce impacts to their property.

Land Use

- Avoid proliferating environmental and land use impacts by using and upgrading existing private and public right-of-ways, easements, linear corridors, US Highway 52, Interstate 90, existing roads and major highways, utility easements, property lines, field lines, Highway 12 and 247 in Olmstead county, Interstate 35, existing transmission lines, highly populated and developed areas, cities, existing or abandoned railroad, and public land.
- Work with public utilities and government agencies to co-locate and share easements.
- Prefer using US Highway 52 over Highway 56/60 corridor because US Highway 52 is shorter, already has wide right-of-ways, is already disturbed and developed, has less agricultural land, and the addition of another transmission line would not be a significant impact.
- Avoid impacts to land uses that are not compatible with transmission lines including airstrips, airports, residential property, agricultural land, sites current and future residential and commercial developments, access roads, driveways, churches, cemeteries, center pivots, railroad bed, future home sites, land conservation projects, rural land, private land, woodland, neighborhoods, towns, cities, ski areas, and places where people work.
- Avoid the city of St. Charles and reference their comprehensive plan to avoid future commercial, industrial, water and sewer, housing, and I-90 interchange development plans.
- Avoid impacts to Warsaw, Stanton, and Holden Townships, the Great Western Industrial Park, the City of Holmen annexation property, future expansion areas of La Crescent, Elk Run north of Rochester, future expansion areas of Rochester, Mazeppa and Zumbro townships, Utica, and the Storer Valley.
- Take proposals small wind farms and substations development in the Highway 56/60 area into consideration when routing the new transmission line.
- Double circuit current and new transmission lines where ever possible.
- Avoid private property that already hosts multiple utility easements so that the landowner doesn’t have to give up any more land.
- Avoid landowners who may have several alternatives on their property.

- Take access and maintenance into consideration when routing the transmission line.
- Do not cut across private property and farm fields diagonally.
- Do not route the transmission line so that it surrounds one landowner on multiple sides of their property.
- The Alma crossing is the best in terms of existing right-of-ways and less dense housing, in addition a transmission line river crossing already exists in Alma and should be utilized.
- Routing the line through Minnesota and crossing the river at La Crescent is the best route.
- Consider routing the 161 kV along the Douglas Trail.
- Avoid the Dam and Lock near the Alma Mississippi River Crossing.
- Minimize the impacts near the Northern area of Rochester by combining the 345 kV and 161 kV routes (B24 and B26).
- Use the most direct and shortest route to minimize impacts.
- Prefer to route the line in wide-open and agricultural land rather than through dense residential land.
- Avoid the Steeplechase ski area, its chairlifts, and chalet.
- Follow local, state, and federal land use codes, regulations, and guidance.
- Highway right-of-ways are meant to share easements with utilities and should be utilized.

Noise

- Minimize and avoid noise impacts being generated by the transmission lines including the constant hum.

Proximity to Residences

- Avoid current and future single, multiple and commercial residential developments.
- Avoid farm stay retreats, homes, farmsteads, yards, neighborhoods, rural neighborhoods, population centers, densely populated areas near Highway 35, Oronoco Township, Olmstead County, Wabasha County, Warsaw Township, Stanton Township, Eureka Township, Holden Township, Zumbro Township, Wanamingo, Zumbrota, Minnesota Highway 56, St. Charles, New Haven, Oronoco, and Pine Island.
- Avoid areas where there is a high density of residential homes.
- Provide information on how close in feet the new transmission line can come to a home.
- Do not route the new transmission line over the tops of houses or in front yards.
- Acquire and verify the locations of homes in the study area. Many have been omitted from the maps used at the public open houses.
- Make small adjustments in the route by working with landowners to avoid homes, impact fewer residents, and minimize impact on the residences that are impacted.
- Prefer to route transmission lines through agricultural land rather than near homes.
- Avoid residential areas to minimize impacts to families.
- Do not route the transmission line so that it surrounds one landowner on multiple sides of their property.
- Consider and minimize the effects on human settlements, including but not limited to displacement of humans.
- Consider the effects on businesses run from the home, for example: a daycare.
- Prefer to use US Highway 52 because the homes are set back farther from the road.

Radio and Television Interference

- Transmission towers will cause interference with radios, TVs, satellite dishes, cell phone towers, and GPS equipment and satellites.
- Avoid TV and cell towers.
- GPS systems in farm equipment will not be able to recognize and steer around the transmission towers, may lose power, and would not function properly.
- Transmission towers will negatively affect the electronic systems used for required record keeping for the EPA and MN Dept of Agriculture. The GPS equipment used for steering, planting, sprayer boom controls with mapping, documentation of spraying, and harvesting records are kept electronically on compact flash cards or PCMCIA Data cards.

Recreation

- Avoid impacts to recreational lands and activities including canoeing, camping, outdoor education, hunting, fishing, snowmobiling, canoeing, camping, biking, mushroom hunting, sight-seeing, horseback riding, recreational use of lakes and rivers, horse drawn sleigh riding, walking labyrinth, bird watching, skiing, and snowboarding.
- Avoid public and private recreation sites including the Douglas Trail, Zumbro River Power Damn, Lake Zumbro, Zumbro River Valley, Steeplechase Ski Area, the Wagon Wheel Bike Trail in La Crescent, and La Crosse, Wisconsin.
- Avoid Camp Victory and Woodland Camp, summer camp and retreat properties with a key interest in their natural surroundings.

Social and Economic Resources

- Explain how the project is being funded and how much tax money will be used.
- New transmission lines would create money and jobs in the local economies, give farmers extra income from easements payment, and provide needed infrastructure for new wind farms.
- Avoid and mitigate the impacts to property value, farm value, property use, resale, insurance rates, personal and business investments, future market appreciation, future home sites, infrastructure projects, loss of local business, loss of DNR license revenue, and crop production.
- Avoid and mitigate impacts to personal and business income from land leasing, agriculture, recreational farm stays, horse boarding, and timber and veneer production.
- The shorter and more direct the route, the less it will cost to construct.
- It would be very costly to construct over steep hills and rough terrain.
- Following major roadways would keep the costs down.
- Reducing materials and labor cost by double circuiting and choosing existing right of ways would reduce the overall cost of the project; consider this for route sections B24 and B26.
- Avoid impacts to agriculture in the area; the food produced in SE Minnesota is a large part of the local economy.
- Consider the cost impacts on the ratepayers.
- Homes and property near the new transmission line will not be able to be re-sold.
- Affected property owners will bear an unfair financial burden from construction and operation of the transmission lines.

- Property owners that must still live in close proximity to the transmission line, but do not have an easement on their property should be compensated.
- Avoid the Steeplechase ski area because it will decrease or eliminate resale value, property value, money input into the local economy, and local jobs.
- Avoid landowners that have existing easements on their property; their property values will decrease cumulatively with each subsequent easement.
- Compensate landowners sufficiently enough to purchase a new home and property.
- Landowners have strong emotional connections to their land and homes.
- Easement payments are unlikely to fully compensate landowners.
- Landowners stand to lose more value from their homes and property from the project than has already been lost due to the economic downturn.
- The project will not benefit people living in the study area.
- Easements payments should be made to landowners on a monthly basis.
- Provide information on the devaluation of homes and how it might be calculated.
- Tourism and Ecotourism will be affected by the additional of the transmission lines in the La Crescent area.
- Xcel should provide grants to homeowners, schools, and businesses to invest in renewable energy.

Visual and Aesthetic Resources

- Route the new transmission lines in existing utility and transportation corridors that already have visual impacts from light poles, billboards, and highway signage, to avoid new impacts to pristine and undeveloped areas.
- Avoid visual impacts to the La Crosse area, Highway 35 National Scenic Byway in Wisconsin, State WMA properties, The Little Cannon River Valley, The Great River Road, Douglas Trail, Dancing Winds farm stay retreat, Lake Zumbro, “Scenic and Wild” Rivers as designated by the WIDNR, La Crescent, Highway 56 in Minnesota, The Little Cannon Watershed and Prairie Creek Watershed Divide, Rochester, Storer Valley, Mound Prairie Township, Houston County, Pine Creek, “Skunk Hollow”, and The Wagon Wheel Bike Trail in La Crosse.
- Avoid visual impacts to scenic beauty, beautiful landscapes, rural areas, natural areas, river bluffs, and views from homes, residential areas, and populated areas.
- The proposed transmission line would be visible above tree level.
- Consider property value loss due to visual impacts.
- Consider the loss of visual resources’ impact on tourism.
- Adhere to the Bluff land Zoning Ordinances, the National Scenic Byway Regulations, and other local, state, or federal regulations and guidance to mitigate and avoid visual impacts.
- Work with property owners to route the line to minimize visual impacts.
- Prefer to place the lines near populated and developed areas that already have a cluttered view shed instead of in a rural landscape.

Water Resources

- Avoid the La Crosse Marsh Station and The Mynik Marsh station as these substations are already impacting urban wetlands in the La Crosse area.
- Avoid impacting floodplains that prevent flooding.

- Avoid impacting wetlands and contributing to the loss of habitat.
- Avoid the Trout Brook, North Branch of the Zumbro River, the Zumbro River, the Mississippi River, "Scenic and Wild" rivers as designated by the WDNR, The Black River, and the wetlands near the Wagon Wheel Bike Trail in La Crosse.
- Avoid impacts to wetlands, water resources, floodplains, and vegetation that thrives in water.
- Consider the safety risks of constructing the transmission lines in floodplains and areas prone to flooding.

Comments on the CapX2020 Project Process and Public Involvement

The comments that relate to the project process and public involvement are summarized below.

- The CapX2020 Public Open Houses and hearings should be larger, more frequent, in more locations, and better publicized.
- There should be more community opposition to the CapX2020 Project.
- The Public Open House format should include a presentation and a question and answer session.
- The Public Open House format of one on one question and answers was effective, open, informational, and well planned.
- A Public Open House and public hearing should be held in La Crosse, Wisconsin and the UW La Crosse campus; the residents of La Crosse have not been included in the process so far.
- A Public Open House should be held in downtown Rochester.
- The Public Open Houses meet legal obligations for public involvement.
- The project representatives were not listening to the public's concerns and specific concerns were not addressed at the Public Open Houses.
- The project representatives were only helpful in handing out printed materials.
- The project representatives were friendly, helpful, knowledgeable, and understanding of the public's concerns.
- The maps should be easier to read and distributed to everyone in the study area; the project representatives should hand out or mail out smaller printed versions of the maps used at the Public Open Houses.
- The information at the public open houses was only presented from the perspective of the energy industry.
- Keep the public informed of project updates and milestones.
- The CapX2020 website should be easy to use and needs to be updated and maintained with resources and links to current notices, publications, comment forms, public comment summaries, related energy news, an "Executive Summary" document, and energy topics.
- The project representatives should help to facilitate work with the MN Dept of Commerce, and township boards, MN DNR, Prairie Preservation Society, and elected officials.
- Local elected officials should be included and would like to participate in the public involvement process.
- The project representatives need to update the project mailing list as many affected landowners were omitted from the mailing prior to the December public open houses.
- Avoid holding Public Open House during the Holidays and during the daytime when people are working.

- The concerns and comments expressed by stakeholders should be addressed, the process for incorporating public comment into the project planning should be described in detail, and more time should be given to comment.
- Explain how the large contingency of "not in my back yard" stakeholders from Stanton, Holden, and Warsaw townships will affect how the project is routed and if other areas will take the brunt of the impact.
- Additional outreach activities need to be performed for the affected landowners in the areas that were added to the study area recently or after the CON proceedings.
- The community needs to be educated about the full range of impacts the project may cause.

Comments on the CapX2020 Project Need and Project Alternatives

The comments that relate to the CapX2020 project need and alternatives to the project are summarized below.

- The need for the project can be met with renewable energy sources, localized generation, sustainable technology, decentralization, and conservation.
- More effort, money, and research needs to be put forth into renewable and local energy development.
- The need for the project has not been sufficiently proved and more information should be provided on the economics and data behind the projections for energy demand and long term reliability.
- The CapX2020 project is much needed and should be completed as soon as possible, the public understands the growth and lifestyle that creates the need for the improvements to the electrical system.
- Routing should not be completed until the CON is approved.
- The project is needed to support development of coal fired power plants.
- Explain how the need for the CapX2020 project is related to coal power plant projects in South Dakota.
- The energy companies should supply less energy so the public will use less, thus eliminating the need for the project.
- The generating capacities of the existing power plants including Prairie Island nuclear plant, should be increased instead of building new energy generation and infrastructure.
- Residential power needs and consumption has decreased in the last few months, and the project is no longer needed.
- Xcel Energy and Dairyland should find alternative ways to meet the same needs of the CapX2020 project such as: local energy generation, wind, solar, and bio-fuels.
- The CapX2020 and the Hampton–Rochester–La Crosse project have not made any specific commitments to carry renewable energy on the new transmission lines.
- The utilities should be leaders and set an example for the public in promoting renewable energy and a specific commitment to support renewable energy should be made.
- The connection between improved infrastructure and the creation of new wind farms should be explained to the public; the function of the electrical transmission systems and generation sources is unclear.
- The CapX2020 project will utilize outdated technology and encourage uncontrolled consumption of energy.

- The need for the project should be met with new ideas and technology.
- Hydro electric power plants should be built along the Mississippi River as an alternative to building the CapX2020 project.
- The entire project should be buried underground like utilities are doing in Boston, Massachusetts.
- Members of the public are using solar panels and wood burning stoves to replace their need of energy from public and private utility companies.
- Transporting energy across long distances using high voltage transmission lines is outdated and inefficient and should be replaced by decentralized and local energy generation and distribution.
- There aren't currently alternatives on the Wisconsin side of the project route options. The corridor along Highway 35 represents one alternative with slight variations.
- Consider an alternative corridor away from the river to avoid impacts to USFWS land and biological resources.

Comments Referencing Regions

The commenters were asked to specify the region of the project that they were commenting on by checking a box on the front side of the comment form. This section of the report provides a summary of those region-specific comments. Comments that related to site-specific information were recorded on the sheet maps provided at the public open houses. In general, the type of information that commenters included on the maps involved environmental, cultural and historic resources, residential, and agricultural resources, recreational land uses, transportation, future development, and existing utilities. A map featuring consolidated and digitized sheet map comments from the public open houses is included as Appendix D.

Hampton Substation Siting Area

Agriculture

- Avoid using agricultural land as corridor.
- Avoid independently owned family farms.

Biological

- Avoid the A47 corridor (15 miles west of Highway 56) it would travel in or adjacent to a state WMA area.
- Avoid the woodlands, wetlands, and creeks providing natural habitat for deer, fox, owls, coyotes, and song birds.
- Prefer the Highway 52 route because it would create less disruption of the rural vistas and natural wildlife habitats.

Land Use

- Prefer to use the existing Highway to avoid impacts to land use.
- The Highway 52 proposed route already has a significantly developed corridor that would be less impacted by the addition of power lines.
- Property owners along this route already purchased or owned homes and land knowing they were located near a corridor carrying highway traffic, utilities and sites for commercial venues.

- Highway 52 seems to be the logical choice for the Hampton to Rochester corridor for the CapX2020 power-line project.

Proximity to Residences

- Don't ruin people's homesteads with the addition of these power lines.
- Avoid current and future home construction sites.

Social-Economic

- Don't devalue property with the addition of these power lines.
- Compensate landowners who are directly affected by the transmission line by loss of property values but do not host an easement.
- It makes no sense to devalue a tremendous amount of property and not compensate the property owners, when an alternative with those issues already exists.
- The route proposed along Highway 52 seems the obvious choice economically.

Visual-Aesthetic

- A major concern is looking at the transmission lines in a pristine area when there is an available corridor (Highway 52) that already has power transmission lines and a major highway. The A47 corridor would travel across beautiful rural property.
- Prefer to keep the new transmission lines along the existing highway and avoid creating new eye sores.
- Avoid creating a situation where landowners are looking directly at the proposed 170 high electric towers and losing their they have worked hard to preserve for their families and future generations.
- Prefer to use the route proposed along Highway 52, it would create less disruption of our rural vistas.

Public Process

- It is very difficult for most middle class people to get off work in the middle of the day to attend public meetings.

Cannon River and Cannon Falls Area

Health and Safety

- The Monsanto Corn Research property in Stanton, Minnesota that would be affected by A32 & A37, one of the main concerns is safety. As a corn research facility, there are a significant amount of hand laborers in the fields; 70-80 people work the fields in the summer.
- Avoid the Stanton Airport because transmission lines would seriously affect the safety and viability of the airport.

Historic-Cultural

- Avoid the historic Oxford Mill and the areas near it. The appearance of the area would be changed adversely.
- Avoid the Stanton Airport which is included on the National Register of Historic places and hosts flight training, airplane and glider rides and restoration and maintenance, and is the home of the Minnesota Soaring Club.

Land Use

- Avoid Highway 56 Boulevard because of the landowners and homes close to the road and the Stanton Airport runways.
- Follow Highway 52 because it is the most clear and direct route and already has transmission towers in its easement.
- Prefer to use Highway 52 because it already has a right of way and homes are set much farther back from the road. The new transmission line would be very disruptive on Highway 56.

Need

- Provide information on other methods of getting the power to other areas rather than the CapX2020 proposal.

Proximity to Residences

- The homes are set much farther back from the road near Highway 52, the project would be very disruptive on highway 56.

Public Process

- The open house in Cannon Falls was great and provided good information.

Social-Economic

- The project may affect businesses in the area and decrease income.
- Avoid devaluing property and keep the proposed transmission line to existing easements.

Visual-Aesthetic

- The visual aspects of the high tower would change the pristine appearance of the Little Cannon River valley.
- Avoid making the power lines visible from inside homes.
- There are already towers on Highway 52 it would seem natural to locate the new transmission towers there.

U.S. Highway 52 Corridor

Agriculture

- Avoid properties with agriculture and livestock near Highway 52 Route B68, minimize the actually amount of property loss for agriculture and hay production and pasture land.
- The 60th Avenue NW route option will run through farm land southwest of Oronoco and northwest of Rochester.

Health and Safety

- Avoid impacts to horses and livestock on the borders of New Haven and Oronoco townships.

Land Rights

- Provide information about permissible land use in easements after construction and any restrictions there might be.

Land Use

- There are already towers on Highway 52 it would seem natural to locate the new transmission towers there.
- Avoid Dennison, Minnesota.
- Route the transmission line completely down Highway 52.
- Avoid the new church that will be built on 200 Avenue in Pine Island within the cities limits.

Noise

- Avoid noise impacts in Dennison, Minnesota.

Proximity to Residences

- Avoid route B68 and homes near the township borders of New Haven and Oronoco.

Public Process

- Distribute smaller maps of the proposed routes to landowners.
- Notify all property owners of the transmission line project and provide information about the project.

Recreation

- Avoid the Woodland Camp, a non-denominational youth camp dedicated to positive outreach. The 345 kV line would definitely ruin the work they have been doing since 1967.
- Avoid the Zumbro River Power Dam as there are many campers in the area.

Social-Economic

- Highway 52 is also the most direct route and should cost less as there would be less mileage of line to construct.

Visual-Aesthetic

- Avoid visual impact to the Dennison, Minnesota area.
- Avoid visual impacts to Route B68 for the 161 kV line.
- Avoid visual impacts by locating the towers on Highway 52 where there are already towers, it would seem natural to put them there.

Minnesota Highway 56 and 60 Corridor

Agricultural

- Avoid Highway 56 because agricultural land and wetland would be impacted, instead use approved right-of-way on Highway 52.
- The transmission lines will be detrimental to livestock and crops.

- Reconsider the routes paralleling Highway 56 in Stanton and Warsaw Townships in Goodhue County. Confining the transmission lines to existing corridors along Highways will reduce the negative impact on prime A1 farmland in Warsaw Township.
- Consider the Highway 52 corridor over the Highway 56 corridor and avoid proposed routes through prime agricultural farm land.
- Avoid the 37A route corridor; it goes within 200 feet of a 200 cow Dairy Farm.
- Avoid routes A117, A38, A111 & A115; they pass near a family owned farm that raises 6500 hogs.
- Avoid the Highway 56 corridor because of both Beef cattle and hogs farms, High Voltage Power Lines can cause health effects on livestock.
- Power lines do not create a good environment for a dairy operation.
- Proposed routes passing through a farm would severely impact the operations now and in the future.
- Avoid impacts to rich agricultural land, the poles will be placed in the middle of fields and will lead to a decrease in production which will lead to less food being yielded.
- Prime productive agricultural land should not be used for the project.
- Take a straight shot right down Highway 52 to avoid farms.

Biological

- Wild life would be disrupted because of stray voltage.
- The proposed electrical transmission line routes for Mazeppa and Zumbro is in an area that supports habitat for various forms of wild life ranging from cougar, beaver, deer, turkey, bold eagle, song birds and even and occasional bear.
- Avoid the many rivers, rolling hills, and wooded areas that provide excellent wildlife habitat.
- Avoid routing the line where it would cause degradation of wildlife habitat and possibly threaten wildlife reproduction due to noise and stray voltage.
- Our many rivers, rolling hills, and wooded areas provide excellent wildlife habitat.
- Avoid wet lands.

Geology and Soils

- Avoid steep slopes and large hills that will probably not work well into your plan.
- Geology studies of this area suggest unstable land.

Health and Safety

- Many residents have health concerns. The public is being told that EMF has limited to no health effects, and the public was told the same about radiation from nuclear testing, lead levels, and mercury levels only to find out later that is was dangerous. It seems we are continually finding out that some original position by companies are based more on business than concern for health.
- High Voltage Power Lines can cause health effects on humans.
- Would you allow your children to play or sleep near transmission lines? Future health risks could occur when people are exposed to such intense electrical voltage.
- Health effects of small children are of prime concern.
- Research the statistics in Europe on health effects from EMF. Avoid a situation having to admit there are health effects in 20 years when it's too late.

- Avoid the Stanton Airport because transmission lines would seriously affect the safety and viability of the airport.
- Concerned about practical long term health risks that are unknown for those living near power lines.
- The transmission lines will be detrimental to our livestock.

Historic-Cultural

- Avoid the Stanton Airfield because it is on the National Register of Historic Places and is the home of the Minnesota Soaring Club.
- Avoid the cave in which Jesse James once resided in Wabasha County; it has been a subject of The University of Wisconsin archeology/anthropology surveys.

Land Rights

- Provide information on using the land in an easement and any restrictions there may be.

Land Use

- Avoid agricultural and wetlands near Highways 56 and 60 when there is already a right-of-way on Highway.
- Avoid the Stanton Airport and runways by at least one mile.
- The Highway 52 corridor is the shortest and best way to get to Rochester.
- Highway 52 corridor is a much better option than Highways 56 and 60.
- It would be better to put the project on the Highway 52 corridor, it already has electrical transmission systems, a right-of-way and it's shorter.
- Avoid the use of Highway 56 and Highway 60 corridors.
- Lines should not cross private property and should be built in right-of-way areas.
- Avoid the new biotechnology complex known as Elk Run on Highway 52 near the Oronoco, Pine Island, Rochester area.
- The Highway 56 and 60 corridors should be moved south, and the project should use existing land-use corridors such as road right-of-ways.
- If a line is going to be built it should go along Highway 52 as there is already a wide open, compared to Highways 56 or 60.
- Highway 52 is the most direct route and should cost less as there would be less mileage of line to put in.
- The project should plan to use the MN DOT Highway 52 right-of-way to carry the power. It is a developed corridor and should be used as the route as a measure of fairness to all.
- Prefer that the project follow field boundaries rather than putting towers in the middle of fields.
- Prefer to follow the Highway 56 and 60 routes to pick up the proposed wind projects in that area.
- Highway 52 is the most direct, clear, and practical route for this project.
- Highway 52 already has a right of way and homes are set much farther back from the road, and existing power poles, and any new power poles. The project would be very disruptive on Highway 56.
- What can the land in an easement be used for after a transmission line is constructed, are there restrictions?
- Avoid the city of Dennison, and route the project near Highway 52.
- Use Highway 52 and avoid rural.

Noise

- Avoid noise impacts in Dennison.

Proximity to Residences

- Highway 52 already has a right of way and homes are set much farther back from the road, the project would be very disruptive on Highway 56.
- Avoid Highway 56 because the homes are close to the road.
- Avoid the numerous houses along A84 between Wanamingo and Zumbrota. Prefer to use some other route such as A72, it would be better to have lines across farmers' fields rather than near houses.
- Avoid route 37A it goes within 50 feet of Farm Home.

Public Process

- The staff was knowledgeable and good information was presented.

Radio-TV

- The project will interfere with radio and TV reception.

Recreation

- Avoid the four campgrounds (Bluff Valley Campground, Camp Victory, Ponderosa Campground and Max's Park Place) in Mazeppa and Zumbro townships within one to five miles of each other. They provide the local population (which includes Rochester), as well as people from throughout the upper Midwest, with entertainment, relaxation and recreation.
- People enjoy hunting, fishing, snowmobiling, canoeing, camping, biking, mushroom hunting, viewing the fall colors or our hardwoods, and horseback riding in the Highway 56 and 60 area.
- It's hard to visualize families, children, and pets playing under high voltage lines.
- Mazeppa and Zumbro Townships have a very important role in the economical development of the Rochester area. These townships provide the recreation for the people who will be considering employment with IBM, the Mayo Clinic, and Elk Run.

Social-Economic

- Avoid impacts to personal income.
- The project will not benefit people in the Highways 56 and 60 area.
- The project will decrease the value of the land.
- Considerable revenue is generated for local businesses catering to the many snowmobilers, hunters and fisherman that come to the area. Revenue is also generated through the sale of DNR Licenses. Many of the dollars generated in this area also help support our smaller communities such as the towns of Mazeppa, Zumbro Falls, and Hammond.
- Mazeppa and Zumbro Townships have a very important role in the economical development of the Rochester area. These townships provide the recreation for the people who will be considering employment with IBM, the Mayo Clinic, and Elk Run.
- Using existing land-use corridors such as road right-of -ways would create a considerable cost savings.
- Avoid devaluing a tremendous amount of property without compensation.

- The route should be along the main roads Highways 52 and Interstate 90 where there is already a right of way, meaning the utilities would have to buy less land. It's easier and cheaper to run it in a straight line.
- The infrastructure enhancements this project provides are much needed and will enable the proposed wind farms in the area. A lot of money will flow into these communities if the project gets built and the wind farms are developed.

Visual-Aesthetic

- Avoid visual impacts to views from homes.
- Avoid disrupting the natural beauty of the area.
- Avoid visual impact of these tall towers by routing the project on Highway 52 where there are already transmission towers.

Water

- Avoid wetlands along Highway 56 corridor by routing near the Highway 52 corridor.
- The proposed transmission corridor near Highways 56 and 60, segment B1, lies within 1/2 mile of where 3 waterways meet: the Trout Brook, the North Branch of the Zumbro River, and The Zumbro River. This is a water sensitive area that attracts people and wildlife.

Rochester Area

Biological

- Avoid interference or impacts to wildlife including Bald Eagles and their nesting locations.
- Avoid eagle nests near the Zumbro River.
- Avoid impacts to the many natural habitats and the beauty of our rural area.

Health and Safety

- Avoid impacts to health.
- Provide information on the potential health effects and the nature of EMF.

Land Use

- Avoid impacts to land use.
- Consolidate the 161 kV and 345 kV routes because it will lessen the negative impacts on current land use in the area.
- The route permit criteria used states that existing right of ways should be considered.

Noise

- Avoid noise impacts in the Rochester area.

Proximity to Residences

- Verify the locations of homes in the Rochester area, many have been omitted from the maps and overlooked during the mailings.
- Make route adjustments to reduce impacts to residential areas.

- The permit criteria states that impacts to human settlement should be minimized.
- Use the County Roads 12 and 247 from Oronoco to Plainview to avoid the most densely populated east-west route in the area which includes Township 160 and Township 158.
- The B78 line is routed within 750-1000' homes and farms, that is too close.
- Avoid cutting through rural neighborhoods to save costs.

Public Process

- The public open houses were very informative and helpful.
- The meetings were not well publicized. The maps were vague so that landowners could not be sure whether or not they were in the corridor.
- Public open houses should be in the evenings.
- There was very informational and helpful staff on hand at the public open houses.
- Many landowners were not notified that the project would be on their property.
- Many landowners are not aware of the project or the impact it would have on their lives and property.
- Not informing landowners of the project was intentional to reduce resistance.
- Provide each landowner with a smaller map of their property.
- Conduct public open houses in the evening. The Oronoco meeting was in the afternoon on Thursday December 11, and one can only speculate that the intent was to follow the law, but not really to inform.
- The public open houses were held during the normal business week and many interested parties were not able to attend.

Radio-TV

- Avoid interference with Radio and TV signals.

Recreation

- Avoid impacts to the land and operation of the Woodland Camp, which is a youth camp dedicated to positive outreach. If the 345 kV line came through Woodland Camp it would definitely ruin the property and camp. Routes B18 and B19 goes directly through the buildings and campsites, and would undoubtedly put them out of business.
- Avoid Camp Victory, the large and growing summer camp for children and adults year around retreats. There is primitive tent camping all along the bluff terrace where route B18 is proposed.
- Avoid the Zumbro River which is used for canoeing.
- The proposed 345kV lines along Camp Victory's property would be detrimental to the natural environment. The proposal would be in close proximity to the campsites and would render them useless.

Social-Economic

- Property values for the Rochester area could be affected by route option B70.
- Property value, resale, and future residence development potential will be substantially impaired with the power line on the property.
- In this time of limited financial resources at the state, federal, local, and private levels, there are concerns about the routing choices made in the segment B24 area. Consolidating the proposed B24

line with the currently existing north/south B26 lines is a wise and financially responsible choice. This consolidation would use the existing cleared right of way thus saving on labor and land purchase costs.
- A 345kV transmission in the viewshed of a home that was built in a wooded area will most likely influence its value.
- Avoid affects to home values, especially when it is a family's main investment.
- Avoid impacts to property values and resale value.

Visual-Aesthetic

- Township 158 west of the Zumbro River and Township 160 east of the Zumbro River are the most populated roads that go east and west. Most homes face south toward the sun so they will all be looking at the proposed power line.
- Avoid visual impact in homeowners' backyards, living rooms, and windows.
- Consider the effect of visual impacts on property values.
- Avoid using some of the most scenic areas of Rochester for transmission lines, especially the Zumbro River.

Water

- Avoid impacts to water resources.

Interstate Highway 90 Corridor

Agriculture

- Address concerns about how close the transmission lines could be located to dairy farms and cattle.

Health and Safety

- Avoid impacts to the safety of runways and private airstrips in the Interstate 90 corridor near Eyota, power lines would render the airstrip useless.
- Address maintenance concerns of existing transmission lines with landowners before proposing the addition of new lines.

Land Use

- Use the Interstate 90 corridor and avoid impact to land use.
- Avoid future home sites and future residential development.
- Double circuit transmission lines as much as possible to reduce land used.
- From the City of St. Charles the lines look to be located to the North of Interstate 90. The city is looking to incorporate commercial and industrial development along the Interstate 90 interchange access. The City has previously spent over $500,000 in water and sewer facilities up to and underneath Interstate 90 for future development. The land east of the Interstate 90 interchange also has proposed planned housing developments with a frontage road and truck bypass route for St. Charles. Many of these components are being incorporated in the city's Comprehensive Plan.

Proximity to Residences

- Clarify the distance from homes the project can be constructed.
- Use the Interstate 90 right-of-way as it would eliminate all the disruption to this land.
- Avoid current and future home sites.

Public Process

- Make an effort to keep the public informed of project updates and news.
- Provide plenty of public notice.
- The public open houses were very informational and had helpful staff on hand.

Social-Economic

- The project is essential for economic development in southeast Minnesota. There is a need for infrastructure to support the wind farms that are proposed for the area. The job creation of lines would be a boost to the area. The pole and wire companies would be utilized. Farmers would have a source of revenue from the crossings of their land.

Winona Mississippi River Crossing

Biological

- Avoid impacts to the Federal Wildlife Refuge including impacts on migratory birds.

Land Use

- Work with landowner to route the line on their property so as to cause the least amount of impact.
- The Alma Crossing makes the most sense in terms of using an existing system of right of ways.

Proximity to Residences

- The Alma Crossing makes the most sense in terms of a less dense housing area.

Public Process

- There has been plenty of public notice.
- The staff at the public open houses was very knowledgeable and helpful.
- The open houses at the Riverport have been very informational and thoughtfully planned; project staff are very helpful & seemed to be very knowledgeable.
- Public open houses were informative.
- Staff helpers had trouble finding locations, and were only helpful in handing out printed material.

Social-Economic

- The project is an essential item for economic development in SE Minnesota and in Winona. There is a need for infrastructure to support the wind farms that are proposed for the area. The job creation of lines would be a boost to the area. The pole and wire companies would be utilized. Farmers would have a source of revenue from the crossings of their land.
- Avoid impacts to property value.

- The project would be very detrimental to the value of homes and property with the issues that would accompany the 161KV line.

Visual-Aesthetic

- Avoid visual impacts to the Federal Wildlife Refuge.
- Hwy 35 or the Great River Road has a 300 foot scenic easement on both sides of the road. Landowners are not allowed to make any new construction in that right of way, and utilities shouldn't either. It would be a waste of time and effort to make this plan only to have it denied.

La Crescent Mississippi River Crossing

Biological

- Avoid any additions to the Mynik Marsh station. The wetland habitats here are extremely important to both wildlife and people. It creates valuable habitat and provides an incredible amount of flood control. Any amount of disturbance to this habitat is unacceptable.
- Avoid the transmission lines crossing the bluffs, the river, and going through our parks and marshes.
- Avoid impacts to wetlands.

Hazardous Waste

- The energy and power lines will not actually benefit the residents in La Crescent here, and it is inefficient to make energy travel as far as the proposed routes.

Health and Safety

- Avoid health impacts from the high voltage.

Land Use

- Use the shortest route possible.
- If the project were located along the interstate, fewer concerns would be heard from landowners, as other types of lines are already present.

Proximity to Residences

- Avoid properties that already have transmission lines of utility easement on them.

Public Process

- Consider having public hearings in La Crosse, possibly on the University of Wisconsin campus. There should have been meetings in La Crosse because it affects the residents there. There was not enough effort to involve and inform the residents of La Crosse.
- The public open houses were run well. The project representatives were helpful, polite, and knowledgeable.

Recreation

- Avoid impact to recreational areas including the bluffs, the river, and the parks and marshes.

Social-Economic

- The energy and power lines will not actually benefit the residents here.

Visual-Aesthetic

- About 8–10 miles to the west of La Crescent is Storer Valley, it is secluded and the beautiful. When the flood happened 2 years ago, the valley residents worked together cleaning up the valley to return it to its appealing scenery. To have lines running through it doesn't benefit the residents.

Water

- Avoid the Mynik Marsh station, it provides an incredible amount of flood control.
- Avoid routing the lines across the river and marshes.

Alma Mississippi River Crossing

Biological

- Property lines near Alma are often tree lines and contain prime habitat for wildlife. Shifting the project to one side or another will eliminate or cause the loss of habitat.
- Avoid impacts on migratory birds.
- Avoid impacts on the Federal Wildlife Refuge, including impacts on migratory birds.

Geology and Soils

- Avoid property lines near Alma that area often tree lines which help reduce wind erosion.

Land Use

- Alma makes most sense crossing because of the prescence of existing transmission lines.
- Use the existing right-of-way, the Alma river crossing, and continue to La Crosse using the Wisconsin corridor.
- Avoid the Dam and Lock on the Mississippi River in Alma, Wisconsin.

Public Process

- This process is difficult and landowners usually have emotional concerns. The mailing and information made available were well received, and your meeting was handled well. The meetings went well due to the informative tools used and knowledgeable staff.
- One on one interaction is the best way to receive and transmit information.
- The public open houses were very informative.
- Public Open House staff had trouble finding locations, and was only helpful in handing out printed material.

Social-Economic

- Avoid impact to property and home values from health, visual, and livestock sensitivity.

Visual-Aesthetic

- Avoid visual impacts and loss of property value near the B32 route.

- Avoid impacts to the aesthetic qualities of National Scenic By Way, Highway 35, in Wisconsin, the regulations of the National Scenic Byway need to be studied and understood. Highway 35 or the Great River Road has a 300 foot scenic easement on both sides of the road.
- Avoid impacts to the Great River Road.
- Avoid visual impacts on the Federal Wildlife Refuge.

North La Crosse Substation Siting Area

Biological

- The La Crosse Marsh substation and crossing impacts the most significant urban wetland in the state of Wisconsin. The negative impacts of the project include, wetland loss, flooding, impacts to the migratory flyway, and State threatened species.

Health and Safety

- The option crossing through North La Crosse and the La Crosse River marsh should be dropped from further consideration. Crossing through the city has enormous human health effects.

Recreation

- The La Crosse Marsh substation and crossing impacts the most significant urban wetland in the state of Wisconsin and includes impacts to recreation.

Visual-Aesthetic

- The option crossing through N. La Crosse and the La Crosse River marsh should be dropped from further consideration. Crossing through the city has enormous visual impacts.

Water

- The La Crosse Marsh substation and crossing impacts the most significant urban wetland in the state of Wisconsin, its negative impacts include wetland loss and flooding.

Wisconsin Corridor

Biological

- Avoid impacts to migratory birds and the impact on the Federal Wildlife Refuge.
- Consider an alternative corridor away from the river to avoid impacts to USFWS land and biological resources.

Public Process

- Public Open House staff had trouble finding locations, and was only helpful in handing out printed material.

Social-Economic

- Avoid impact to the value of homes and property from the visual, health, and animal sensitivity issues that would accompany the 161KV line.

Visual-Aesthetic

- Avoid impacts on the Federal Wildlife Refuge, including visual impacts.
- Hwy 35 or the Great River Road has a 300 foot scenic easement on both sides of the road. Landowners are not allowed to make any new construction in that right of way, and utilities shouldn't either. It would be a waste of time and effort to make this plan only to have it denied.
- Avoid visual impacts to the Great River Road.

North Rochester 161 kV Corridor

Agriculture

- Farming around these towers would be severely difficult, not to mention the electromagnetic interference to the GPS systems now in much of the farming equipment.
- Avoid going across the middle of farm fields instead of following road easements like has been done in the past.
- Avoid actual property loss for agriculture, hay production, and pasture land. Consider an alternate route if possible.
- Avoid the 60th Avenue Northwest route option that would run through existing farm land.
- Continue to use existing utility easements and upgrade them instead of making new routes across productive farm land.

Biological

- The project would severely disrupt the wildlife and habitat, including the eagles, that the residents of Rochester enjoy.

Geology and Soils

- Avoid constructing the project on highly erodible terrain and steep hills because it would cause a severe loss of soil.
- If you ran the lines through steep terrain, how would you safely and quickly do repairs or maintenance?
- A topographical map should be consulted to better understand the terrain of the proposed route, not just plat maps.

Health-Safety

- Route B68 would be detrimental home and property values because of human and animal health sensitivity issues that would accompany the 161KV line.

Historic-Cultural

- The proposed route would destroy what remains of the historic stagecoach trail that crosses Gene Swanson's land.

Land Rights

- When cell towers are erected, the landowners are paid monthly for the lease of the land used. Consider providing similar compensation for these transmission towers.

Land Use

- Use Highway and road right-of-ways instead of creating new ones.
- An easily accessible route, like Highway 52 or an existing railroad or former railroad bed, would seem to be much more sensible and feasible.
- Using a present roadway route provides for quick and easy accessibility.
- Avoid going across the middle of farm fields instead of following road easements.
- Continue to use existing utility easements and upgrade them instead of making new routes.
- If the 161-KV corridor follows the B26 corridor it would be the best option because it won't cut across property diagonally.
- Prefer to use the Douglas Trail routing option for the 161 kV line between Rochester and Pine Island because it would be the lease disruptive to the surrounding land owners. The 60th Avenue north west option will run through existing farm land, residential property, and future residential development.
- Use the Highway 52 route.
- Route the 161 kV on the Douglas Trail.
- Avoid the new church's building site on 200 Avenue in Pine Island.

Proximity to Residences

- B38 route option would be a better choice than the B40 route option because it would follow property lines instead of divide sections. The B38 route option is the farthest away from residences on that line.
- Prefer to use the Douglas Trail routing option for the 161 kV line between Rochester and Pine Island because it would be the lease disruptive to the surrounding land owners. The 60th Avenue north west option will run through existing farm land, residential property, and future residential development.

Public Process

- Nearly all of these meetings took place during work hours and did not allow for great attendance. An individual would have to take time off from work to attend which is very unfair.
- Smaller maps of proposed routes need to be distributed to landowners in the project area.

Radio-TV

- Avoid electromagnetic interference to the GPS systems that are now equipped in much of the farming equipment.
- The field of interference generated by a high power line of this magnitude would be as disruptive as sun spots have been in the past, but this disruption would be constant.

Recreation

- Avoid the Woodland Camp, a youth camp dedicated to positive outreach to young people. If this 345 kV line came through the Woodland Camp property it would ruin the work put into the camp since 1967.
- Use 60th Avenue for routing the 161 kV instead of the Douglas Trail.

Social-Economic

- Avoid impact to property value from cutting a swath into the woods for the power line towers. Someone looking for property in the country would not want to buy land with those huge towers crossing it and the ditches caused by the resultant erosion from the clear cutting.

Visual-Aesthetic

- Residents usually live in rural areas for the undisturbed beauty and quiet.
- Avoid visual impacts near the B68 route.

Appendix B:
Project Fact Sheets

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CapX2020

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Central Minnesota Municipal Power Agency
Dairyland Power Cooperative
Great River Energy
Minnesota Power
Minnkota Power Cooperative
Missouri River Energy Services
Otter Tail Power Company
Rochester Public Utilities
Southern Minnesota Municipal Power Agency
Wisconsin Public Power Inc.
Xcel Energy

Minnesota regulatory process for high voltage transmission lines

This fact sheet provides an overview of the regulatory process associated with major approvals necessary before a high voltage transmission line can be built in Minnesota. CapX 2020 utilities have prepared similar fact sheets for each of the jurisdictions involved in the CapX 2020 projects. Visit www.capx2020.com for updated project information.

Minnesota Regulatory Process

Two major approvals must be obtained from the Minnesota Public Utilities Commission (MN PUC) before a high voltage transmission line can be built: a Certificate of Need (CON) and a Route Permit. The CON proceeding examines whether the proposed facilities are necessary and what the appropriate size, configuration and timing of the project should be. In a separate Route Permit proceeding, the MN PUC determines the route and design of the line.

Certificate of Need

Minnesota Statutes 216B.243 and Minnesota Rules 7849, 7829, 7849.0010-0110 and 1405 govern the CON process, which starts with filing an application.

Completeness review: The MN PUC reviews the application and identifies any additional information needed to begin the review process. The MN PUC issues notice of a comment schedule; anyone can comment on the application's completeness. Once the application is found complete, the MN PUC refers the case to an independent Administrative Law Judge (ALJ), who presides over the hearing process, sets hearing schedules and intervention deadlines, and addresses other procedural matters.

Intervention: Anyone can attend meetings and hearings, file written comments and present written or oral testimony without being listed as an official intervening party. Parties who formally intervene typically are represented by an attorney (not required) and present a formal case that includes filing written testimony, cross examining witnesses and filing post hearing briefs. Parties must request intervener status from the ALJ.

Environmental Report scoping public meetings: The Minnesota Department of Commerce, Office of Energy Security (OES) prepares an Environmental Report (ER), which examines the land use and natural resource considerations associated with the MN PUC's need-related decisions. Public meetings are conducted to describe the process and gather comments on issues and alternatives that should be addressed. The ER is the only environmental document where issues of size, type and timing are reviewed. Written comments may also be submitted to the OES.

Scoping decision: Before the OES prepares the ER, it reviews all public input and publishes its Scoping Decision, which outlines the issues to be addressed in the ER.

Environmental Report: The OES gathers information, then prepares and publishes the ER, which must be done before public hearings on the CON can take place. Anyone can provide written or oral comments on the document during hearings.

Hearings on the CON: The MN PUC requires a series of public hearings that are presided over by the ALJ. Notice is published in local newspapers prior to the start of the hearings. Anyone can present testimony and express opinions concerning the utility's proposal or alternatives and the CON. After hearing testimony and comments, the ALJ provides a report summarizing the hearing process and makes recommendations to the MN PUC.

MN PUC need decision: In making a determination, the MN PUC considers all information and hears comments at one of its regular weekly public meetings. In some cases, a second meeting is scheduled so commissioners have the necessary time to deliberate prior to making a decision.

Route Permit

A Route Permit is also needed from the MN PUC prior to building a high voltage transmission line in Minnesota. Once a Route Permit application is filed, the regulatory process begins.

Pre-application route development phase: Route development generally occurs in three stages during which utilities:

- Identify a study area; gather land use and resource information from federal, state and local agencies and governments; prepare maps.
- Identify routing options based on technical considerations, routing criteria and resource mapping.
- Compare and evaluate the routing options; select two or more routes, including a preferred route, to be included in the Route Permit application.

Route Permit process: After the utility files a Route Permit application, the process specified in MN PUC regulations begins.

Public meetings: Upon receiving an application, the OES schedules public meetings to introduce the proposed project and the Route Permit process. Scoping for an Environmental Impact Statement (EIS) begins at these meetings.

Scoping and routing additions: A full EIS is prepared by the OES. The first step of the Route Permit process is to establish the scope of the environmental analysis. Prior to preparation of an EIS, public comments are accepted on issues that should be examined in the EIS. Alternate routes to those proposed by the utility can also be proposed; however, the OES has specific regulations that must be followed. Once the OES scope of the EIS is published, no new routing options will be considered in the EIS.

Citizen advisory task force: The MN PUC may choose to establish an advisory task force committee (local government and interest group representatives) to help determine the EIS's scope and examine whether routing options should be added to those proposed by the utility.

Draft EIS: The OES prepares and publishes a Draft EIS that examines the land use and environmental issues associated with the proposal as well as the alternatives that were identified in scoping.

EIS comment period and public meetings: Once the Draft EIS is published, the OES establishes a period to receive comments on the document. The OES also holds public meetings to obtain comments on the document.

Public hearings: The ALJ conducts public hearings, which are designed to receive comments, opinions and supporting evidence on where the proposed lines should be located and how potential impacts of the line should be addressed. The ALJ prepares a report summarizing the hearings and may make routing and mitigation recommendations to the MN PUC. Notice is published in local newspapers prior to the hearings.

Final EIS: The OES takes all comments on the Draft EIS, responds to them, revises the draft accordingly and then prepares a Final EIS.

MN PUC Route Permit decision: At the end of the process, the MN PUC considers all material and conducts one or two public meetings. If two meetings are held, the first is used to receive oral comments and ask questions of the participants; the second is to deliberate and make a decision. Sometimes the two meetings are combined into one. A Route Permit decision cannot be made until after a CON is granted. If a Route Permit is granted, the MN PUC permit supersedes local jurisdictions as to the route itself; however, the utility may still be subject to other local, state and federal ordinances, such as Minnesota Department of Natural Resources stream crossing permits.

Concurrent permitting in other states: Similar permitting processes are overseen by regulatory bodies in neighboring states.

North Dakota Public Service Commission

- Certificate of Public Convenience and Necessity
- Certificate of Corridor Compatibility
- Transmission Facility Permit

Public Service Commission of Wisconsin

- Certificate of Public Convenience and Necessity

South Dakota Public Utilities Commission

- Facilities Permit

Federal environmental review: Before federal agencies grant loans or issue permits for transmission lines, the utilities must comply with National Environmental Policy Act requirements. Depending on the circumstances and the application of federal regulations, an Environmental Assessment or EIS may be prepared. Federal environmental review is usually done concurrently or jointly with state environmental review.

Stay Informed

The best way to participate is to stay informed. Follow progress on the individual agency websites and on the CapX 2020 website at www.capx2020.com. To view CON documents, go to the MN PUC's website at www.puc.state.mn.us, click on "eDockets & eFilings" on the left-hand side and then click on "Search Documents" and search for docket 06-1115. Use "06" for the year (when the first CapX 2020 document was filed) and "1115" in the second field, then press the search button. All filings in the CapX 2020 eDocket will be listed. The MN PUC can also be reached at 1-800-657-3782.

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Understanding Easements and Rights-of-Way

When people talk about building new transmission lines, they often refer to an 'easement' or a 'right-of-way' (ROW). Although the terms often are used interchangeably, they are distinct concepts.

What is an easement?

An easement is a permanent right authorizing a person or party to use the land or property of another for a particular purpose. In this case, a utility acquires certain rights to build and maintain a transmission line. Landowners are paid a fair price for the easement and can continue to use the land for most purposes, although some restrictions are included in the agreement. The easement instrument is the legal document that must be signed by the landowner before the utility can proceed.

What is a right-of-way?

A right-of-way is the actual land area acquired for a specific purpose, such as a transmission line or roadway.

What is the difference between an easement and a right-of-way?

Simply put, an easement is a land right and a right-of-way is the physical land area upon which the facilities (transmission line, roadway, buildings, etc.) are located.

How long does an easement last?

Easements are perpetual and are not subject to termination or expiration. Once an easement is signed, it becomes part of the property record. The utility, the landowner who signed the easement and all future owners of the property are bound by the terms of the easement agreement. The utility can, at some point, choose to release the easement rights if it removes the transmission line and abandons the right-of-way.

How are landowners paid for an easement?

Landowners typically are given a one-time payment based on fair market value for easement rights to their land. Landowners can elect to spread the payment out over time. For instance, landowners can choose to receive installments with interest paid annually on the remaining balance. Traditionally, the easement payment is based on a percentage of the appraised land value. Also, of course, the majority of land still is usable, particularly in agricultural settings where farmers can continue to use the land for raising crops or as pasture.

Landowners also are eligible for reasonable compensation for property damage that may occur when the transmission line is constructed and in the future during repair and maintenance, as described in the easement document.

Who pays property taxes for the right-of-way on which the transmission line is constructed?

The landowner continues to pay property taxes on the right-of-way, although some states, including Minnesota, may provide landowners a property tax credit in proportion to the length of the transmission line that crosses their property.

What easement rights will be needed for the construction of a power line?

The CapX 2020 projects will require easements that allow for surveying, construction, operation and maintenance of a transmission line across a defined right-of-way located on the landowner's property. These easements will include the right to clear, trim and remove vegetation and trees from within the right-of-way, as well as tall and dangerously leaning trees adjacent to the right-of-way that may threaten the line if they fall.

What activities are allowed within the easement area?

Land within the right-of-way may be used for any purpose that does not interfere with the construction, operation or maintenance of the transmission line. In agricultural areas, the land may be used for crop production and pasture. In areas where the land will be developed, streets, lawn extensions, underground utilities, curbs and gutters, etc., may cross the right-of-way with prior written permission from the utility.

Why are there restrictions on the land?

Providing electrical energy is an essential public service, and some restrictions are necessary within the right-of-way to maintain reliability. Utilities have determined that the best way to prevent outages is to restrict the placement of structures within the right-of-way. If a building or structure in the right-of-way caught fire, it could burn into the power line and take the line out of service for an extended time. Additionally, buildings or other structures in the right-of-way can hamper maintenance crews from accessing the line if an outage occurs.

What are the main building and plant restrictions in the easement?

Conditions will vary, but the primary building and planting restrictions within the right-of-way are in place to ensure that a utility has the necessary clearance for operation and maintenance, and to comply with the National Electrical Safety Code. Restrictions within the right-of-way strip prohibit constructing buildings and structures, storing flammable materials and planting tall-growing trees.

Why doesn't the utility just buy the land instead of negotiating an easement?

Utilities' main interest is in simply acquiring the rights to a piece of land in order to build and maintain a transmission line. Owning the land is not required to do this.

Landowners, for the most part, prefer to retain ownership of the property so they can maintain better control over its use within the easement restrictions. Often, retaining ownership allows the landowner continued use of the property for things such as agricultural operations, yard extensions or open space, allowing the property to continue to contribute positively and productively to the owner and the public. Most adjacent uses pose no threat to the line and do not create a public hazard.

Generally, how large is the area covered by an easement or a right-of-way?

The voltage and the type of transmission structure being built determine the size of the right-of-way. For 345-kV lines, the typical right-of-way is up to 150 feet wide.

What happens when the landowner and utility cannot agree on the easement or payment?

If an agreement cannot be reached, a utility may pursue a state-governed process called condemnation, under which a judge and a panel of impartial individuals decide whether the easement is needed and its value. The condemnation process varies from state to state. In general, states establish strict procedures for determining the amount a landowner should be paid by a utility for acquiring a right for construction and maintenance of a transmission line. A government's right to acquire – or authorize the acquisition of – private property for public use, with just compensation being given to the owner, is called eminent domain.

In some states when a transmission line crosses a rural property, a landowner, under certain conditions, may request that the utility purchase the entire property.

* *This fact sheet is not a legal document. It is meant to provide general information about easements and rights-of-way. Individual state statutes differ and each utility has its own process.*

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Electricity usage continues to climb

Plus, thirteen simple ways to save both energy and money

Why does the electric transmission grid need to be expanded? The simple answer: Because we're using more electricity than we did just a few years ago – and it's expected to grow another 40 percent by 2030 (U.S. Energy Information Administration).

In the Midwest, for example, sub-zero temperatures pushed electricity demand to an all-time winter peak of 103,254 megawatts in mid-December 2008.

Our electricity demand has risen in proportion both to the growing number of electronic items and appliances we depend on and to the increasing size of our homes. While our electricity usage has increased, our expectations have remained constant: We expect reliable power when we need it.

Meanwhile, the electric transmission grid in the Upper Midwest hasn't had a major upgrade in nearly 30 years. The CapX2020 proposed transmission lines would address these growing electric needs.

Americans are using more electricity

- In 2007, the average household had 25 consumer electronic products, such as computers, DVD players, video game consoles, cordless phones, digital cameras and high-definition televisions. In 1975, the average household had less than two (Consumer Electronics Association).
- More than 80 percent of Americans have a cell phone and most are recharged daily (CEA consumer survey).
- Statistics aren't necessary to show the dramatic increase in the number of appliances and electronics found in American homes. Consumers just need to look at their monthly utility bills. According to the U.S. Department of Energy, washers and dryers, computers, water heaters and other appliances and electronics account for 20 percent of the total energy bill in an average American home.
- "Phantom loads" refers to the energy used by appliances and electronic devices – TVs, DVD players, microwaves and computers, to name a few – when they're plugged in but not turned on. In the average U.S. home, 75 percent of the energy used to power electronics is consumed while the devices are turned off (U.S. Department of Energy), costing the average household up to $1,000 annually.
- Computer always on? If so, it uses as much power as an energy efficient refrigerator, 70 to 250 watts.

Larger homes use more electricity

- The average single-family home in the Midwest is nearly 45 percent larger today than it was in 1980 (2008 Buildings Energy Data Book).
- The percentage of homes with central air conditioning in Minnesota more than doubled in the past 25 years – jumping from just 27 percent in 1983 to 66 percent in 2006 (2006 Xcel Energy Minnesota Home Use Study).
- All homes – both new and existing – have more electric appliances than ever before. Thirty percent of homes in 1970 had an electric clothes dryer; in 2007, that number nearly tripled to 80 percent of households.

continued on back

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Average homes have more TVs than people

- Today, 99 percent of U.S. households own a TV; two-thirds have three or more.
- Computers and televisions now account for 10 percent of a home's electricity use. The average household energy bill is expected to grow between 12 and 15 percent by 2015 because consumers are switching to plasma, LCD and projection televisions.
- A 42-inch plasma television also uses two-and-a-half times more electricity than a standard 27-inch TV.
- Entertainment centers – TVs, cable or satellite boxes, DVD players and game consoles – can have an energy price tag of $200 annually. Compare that to the $30 price tag to operate a regular 28-inch TV each year.
- In January 2007, 41 million U.S. households owned a home theater system, more than double January 1998's 18 million (Consumer Electronics Association).

WAYS TO SAVE ENERGY

Looking for ways to save energy and a little money doing so? Follow these tips.

- Turn lights off when they're not needed. The average household spends 10 percent of its budget on lighting (U.S. Department of Energy). Switching to compact fluorescent lamps (CFLs) could save between 50 and 75 percent on monthly lighting costs, or $30 per bulb over a CFL's life. Changing out just five 100-watt incandescent light bulbs can save $7.50 per month.
- Water heating can account for up to 30 percent of your energy bill. Save up to 10 percent by lowering your water heater temperature 20 degrees, from 140 to 120 degrees.
- Shave up to 20 percent off your energy bill annually by installing a programmable thermostat. Set it back 10 to 15 percent for eight hours a day. Your best bet: Install it away from drafty areas, like windows and doors, so your heating system doesn't run too often.
- During heating season, clean or replace your furnace filters monthly.
- Open window coverings during the day to let warm sunshine in; close them at night to keep the heat in and the cold out.
- Plug air leaks in your home using inexpensive foam strips or caulking, which can cut heating and cooling costs by 5 to 30 percent.
- Washing clothes? Opt for the cold-water cycle – 90 percent of the energy used for washing is for heating water – and save up to $60 per year.
- Install energy and water-saving showerheads and aerators.
- Turn off the digital photo frame – it costs about $9 per year to power – and the cable or satellite set-top box, which costs another $27. That's about half of what an Energy Star refrigerator consumes.
- Turn off your computer, which loses about 50 percent of its energy as heat. Even simply putting it to "sleep" can save about $60 per year.
- Plug home electronics into powerstrips, and turn them off when the equipment isn't in use.
- Unplug your microwave. It uses more energy when it's not in use than it does when it is.
- Get rid of the second refrigerator or freezer.

For other energy-saving tips, visit the following Web sites:

http://www.xcelenergy.com/SiteCollectionDocuments/docs/UsingElectricityAtHome.pdf

www.responsiblebynature.com

http://xeenergysmart.xcelenergy.com.evohst.org/flash-page

http://www.mnpower.com/powerofone/one_home/do_at_home/index.htm

http://apps1.eere.energy.gov/consumer/

http://www.energysavers.gov/

Transmission planning through construction: A decade-long process

Public utilities have a legal obligation and responsibility to assess the electric system and plan and build the facilities necessary to deliver reliable electric service to customers. Building new transmission facilities to carry electricity isn't a quick and simple process. It can take up to 10 years to assess needs, plan and study alternatives, prepare and file regulatory documents, host public meetings, negotiate easements, and engineer and construct the lines. Numerous regulatory agencies are also involved in the process. Below is an in-depth look at the timeline in Minnesota.

System assessment (ongoing)

Transmission planners continually evaluate the transmission system, and based on load growth forecasts (customer electricity use) and other factors identify system additions or enhancements that need to be made. Some factors include: system performance, reliability standards, interconnection requests for new customers and power plants, need for replacement of aged or undersized facilities, eliminate constraints, and regulatory and legislative energy policy goals. Most utilities update their plans every year.

Evaluate alternatives (1-2 years)

Planners use sophisticated computer models that simulate the operation and performance of the transmission system under various scenarios. When system needs or inadequacies are encountered during evaluation, alternatives are identified – upgrading a line to a higher voltage, adding substations or proposing new transmission lines, for example – and improvements are made to ensure the system continues to deliver reliable electricity. Planners work with neighboring utilities and other stakeholders to identify preferred upgrades and alternatives. Cost and environmental and social impacts are considered. Planners work with the Midwest Independent Transmission System Operator (MISO) and the Mid-Continent Area Power Pool (MAPP) to conduct this planning, including open forums attended by regulatory agency staff and other interested persons and organizations.

Project scope (six months)

After evaluating the alternatives, utilities develop detailed project scopes, including budget, engineering details and timing. Both preferred and alternative projects and/or routes are further developed.

Preparation of regulatory documents (1-1.5 years)

In Minnesota, the most common document required for regulatory approval of a transmission line is a Certificate of Need (CON) application, which includes a project overview with specific details on need, project descriptions, electric projections, system configuration, policy issues, alternatives, general routes, cost and environmental information. Similar regulatory approval processes are required in all states.

Certificate of Need application (1-1.5 years)

Depending on the project's scope, a state regulatory agency can take 12 months or more to review the application. In Minnesota, an administrative law judge (ALJ) is appointed by the Public Utilities Commission (PUC) to oversee the proceedings, including scheduling, filing of testimony, intervenor involvement, and public and evidentiary hearings. After hearings are complete, the ALJ reviews all documents, testimony and public comments, and makes a recommendation to the PUC on whether the CON should be granted. Both written and verbal comments, as well as attendance at environmental scoping meetings, are taken throughout the proceedings and included in the official record. The PUC makes the final determination on the need for the proposed transmission lines.

Route proposal development/route application filing (1-3 years)

Route development teams use state-mandated criteria to develop at least two route options. The PUC evaluates the application, holds public hearings on the potential routes and certifies the final route. In Minnesota, the Department of Commerce, Office of Energy Security will develop an Environmental Impact Statement. Public comments can be submitted throughout the process. In some cases, the Route Permit application is combined with the Certificate of Need application into a single proceeding.

Agency filings (1 year)

Depending on the type of land that could be impacted, various federal agencies may be involved in reviewing and approving environmental aspects of the transmission line proposal. In most cases an Environmental Assessment Worksheet is prepared. In others, a more detailed Environmental Impact Statement is prepared.

Easements (1 year)

When a Route Permit application is approved, utilities begin negotiations with landowners to acquire easements for construction and maintenance of the project.

Engineering/surveying (1 year)

Detailed, site-specific surveying is done concurrent with easement negotiations.

Materials acquisition (1 year)

Construction materials – concrete, transmission line towers and conductor/wire – can often take up to one year or more to obtain. During this time, preparation for construction occurs, including scheduling construction crews and identifying staging areas.

Construction (1-2 years)

Depending on the line's scope and size, construction can take two years or more.

Energizing the line

The newly constructed line is connected to the existing transmission grid and tested for reliability and safety. Once it passes all testing requirements, it is energized to deliver electricity.

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Upper Midwest High Voltage Transmission Projects 1967-2007

The last significant additions made to the high voltage transmission system in Minnesota and the surrounding areas were about 25 years ago.

The following is a list of major transmission line construction projects from the last 40 years. This list does not include short sections of transmission line or some conversions from single circuit to double circuit.

1967	King power plant, Oak Park Heights, MN to Eau Claire, WI, 103 miles (345-kV AC)
1967-1973	Minneapolis Metro Loop and initial outlets King, Sherburne County Units I&II, Monticello and Prairie Island Units I&II (345-kV AC)
1967-1979	Taconite Development, NE MN, 420 miles (230-kV AC)
1968	Maple River, ND to Wahpeton, ND, 55 miles (230-kV AC)
1970	Maple River, ND to Winger, MN, 61 miles (230-kV AC)
1970	Grand Forks, ND to Winger, MN, 59 miles (230-kV AC)
1970	Grand Forks, ND to the Canadian Border (Manitoba Hydro), 79 miles (230-kV AC)
1970	Center, ND to Maple River, ND, 211 miles (230-kV AC)
1974	Big Stone Unit I – Outlets (Commercial 1975) To Hankinson, ND, 70 miles (230-kV AC) To Gary, SD, 33 miles (230-kV AC)
1975	Stanton, ND to Ft. Thompson, SD, 244 miles (345-kV AC) Stanton, ND to Watertown, SD, 283 miles (345-kV AC)
1977	Square Butte, Center, ND to Duluth, MN, 465 miles (250-kV DC)

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1978	CU Line, Underwood, ND to Delano, MN, 430 miles (400-kV DC)
1979	Winger, MN to Wilton, MN, 53 miles (230-kV AC)
1979	Canadian Border (Ridgeway) to Moranville, MN, 116 miles (230-kV AC)
1979	Dorsey, Manitoba to Chisago, MN, 680 Miles (500-kV AC)
1979	Center, ND to Maple River, ND (The 211 mile Center – Maple River line was energized in 1970. A voltage conversion to 345-kV that involved no new line construction was completed in 1979)
1981	Beulah, ND to Center, ND, 35 miles (345-kV AC)
1983	Harvey, ND to Underwood, ND, 72 miles (230-kV AC)
1984	Beulah, ND to Huron, SD, 299 miles (345-kV AC)
1993	Dorsey, Manitoba to Chisago, MN, upgrade (The Dorsey-Chisago line was energized in 1979 with a capacity of 800 MW. In 1993 the power transfer capacity of the line was increased to 1,400 MW with the addition of series compensation. This increase in capacity did not involve new transmission line construction.)
2002	Harvey, ND to Glenborough, Manitoba, 97 miles (230-kV AC)
2007	Duluth, MN to Weston, WI, 220 miles (345-kV AC)
2007-2008	Lakefield Junction, MN to Split Rock, SD, 88 miles (345-kV AC)

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CapX 2020 Proposed Transmission Line Infrastructure

CapX 2020 Group 1 proposed projects

Bemidji-Grand Rapids (230-kV)

Fargo-Alexandria-St. Cloud-Monticello (345-kV)

SE Twin Cities-Rochester-La Crosse (345-kV)

Brookings, SD-SE Twin Cites (345-kV)

How do the pieces fit together?

The conductors are attached to the structures by insulators that prevent contact between the conductor and the structure, because contact between the two could result in a short circuit, potentially interrupting the power supply. The foundation, structure and insulators must be strong enough to support the weight of the conductor and any wind and ice loads. Shield wires attached to the top of the structures provide protection against lightning strikes, minimizing the possibility of storm-related outages.

Terms to know

Conductor: A wire made up of multiple aluminum strands around a steel core that together carry electricity. A bundled conductor is two or more conductors connected to increase the capacity of a transmission line.

Circuit: A continuous electrical path along which electricity can flow from a source, like a power plant, to where it is used, like a home. A transmission circuit consists of three phases with each phase on a separate set of conductors.

Phase: One element of a transmission circuit that has a distinct voltage and current. Each phase has maximum and minimum voltage peaks at different times than the other phases.

Single circuit: A circuit with three sets of conductors.

Double circuit: Two independent circuits on the same structure with each circuit made up of three sets of conductors.

Shield wire: A wire connected directly to the top of a transmission structure to protect conductors from a direct lightning strike, minimizing the possibility of power outages.

Structures: Towers or poles that support transmission lines.

Insulator: An object made of a material like glass, porcelain or composite polymer that is a poor conductor of electricity. Insulators are used to attach conductors to the transmission structure and to prevent a short circuit from happening between the conductor and the structure.

Right-of-way: Land area legally acquired for a specific purpose, such as the placement of transmission facilities and for maintenance access.

Substation: A facility that monitors and controls electrical power flows, uses high voltage circuit breakers to protect power lines and transforms voltage levels as needed to further distribute the energy into the electrical grid.

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Proposed CapX 2020 transmission line characteristics

The conductors, structure type, configuration, right-of-way parameters and other design characteristics of the 345-kilovolt (kV) and 230-kV lines proposed by CapX 2020 will be considered by the Minnesota Public Utilities Commission and other relevant regulatory bodies in Wisconsin, North Dakota and South Dakota, as part of the approval process. The characteristics of any associated 161-kV lines will be decided by either the relevant state regulatory agency or a local governmental authority.

In addition to line voltage (i.e. 345-kV, 230-kV), typical determining factors in deciding the type and configuration of a structure are conductor number and size, wind or ice loads, terrain, structure spacing, right-of-way width and existing buildings adjacent to the corridor for the proposed lines.

Transmission substation

H-frame structure

345-kV line characteristics

CONDUCTORS. Each phase would consist of bundled aluminum stranded, steel core conductors sized to carry the appropriate amount of electricity. CapX 2020 proposes that the same conductor and bundled configuration be used for all of the 345-kV single circuit and double circuit transmission lines in the Group 1 projects.

STRUCTURES. For 345-kV lines, single steel poles are suitable for single or double circuits and wooden or steel H-frame structures can be used for single circuits.

Single pole structures are made of self-weathering or galvanized steel and placed on concrete foundations. Single circuit steel poles vary in height from 120 to 150 feet and double circuit structures vary from 140 to 170 feet. Spans (or distance) between structures range from 800 to 1000 feet.

H-frame structures are two wood or steel poles with wood or steel cross bracing and conductor supports. They can be embedded in the ground without a foundation and vary in height from 100 to 150 feet, depending on the span between structures. These structures are suitable only for single circuit configurations.

RIGHT-OF-WAY. A single or double circuit 345-kV line typically requires a 150-foot wide right-of-way. A narrower right-of-way may be acceptable where a transmission line is located adjacent to a pre-existing line, road or pipeline corridor.

Single circuit single pole structure

230-kV line characteristics

CONDUCTORS. Each phase would consist of bundled aluminum stranded, steel core conductors sized to carry the appropriate amount of electricity.

STRUCTURES. For 230-kV lines, single steel poles are suitable structures for single or double circuits and wooden or steel H-frame structures can be used for single circuits. Single circuit steel poles vary in height from 75 to 120 feet and double circuit steel poles vary from 95 to 145 feet. Spans between structures range from 600 to 900 feet. H-frame structures for 230-kV lines vary in height from 90 to 120 feet, depending on the span between structures.

RIGHT-OF-WAY. A 230-kV line typically requires a 125-foot right-of-way.

Double circuit single pole structure

Why don't the CapX 2020 proposals include underground lines?

The proposed CapX 2020 Group 1 projects call for overhead lines. Underground lines usually are used only in heavily congested urban areas and when there is no viable overhead corridor, such as near an airport. Lines normally are buried only for short distances – a few miles at a time.

The two biggest difficulties with burying lines are cost and the time required to make repairs if there are failures. An equivalent underground line can cost more than 10 times the amount of an overhead line, and it creates technical and operational challenges. Significantly more time is necessary to locate and diagnose a problem on an underground line, and repairs can disrupt service for extended periods. Installing underground lines also can have a considerable environmental impact.

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Birds and Power Lines

Utilities use several strategies to reduce the number of birds that are injured and killed when they contact power lines or electrical equipment. The strategies are:

- **Preventive** – conducting risk assessments and using avian-safe design standards where possible.
- **Reactive** – documenting mortalities, notifying resource agencies and applying remedial measures where appropriate.
- **Proactive** – educating employees and being involved in organizations that conduct avian interaction research.

Some basic information regarding bird power line interactions is provided below. For more information go to www.aplic.org.

Roosting and Nest Management

Utility structures and equipment are attractive to birds for roosting and building nests. Utilities try to minimize the risk of electrocution or injury to birds, of damage to electrical equipment and of outages to customers that may result when birds come in contact with power lines and structures. Perch discouragers are used to try to keep birds from perching or roosting on utility equipment. Nest management programs include installing nest boxes or platforms in safe areas on or near utility structures, where warranted. Additionally, utility personnel are educated on nest reporting, nest removal and platform construction.

Nest management

Electrocution

Electrocution of birds typically is not associated with transmission lines greater than 138 kilovolts (kV) because generally the electrical components are far enough apart to avoid a bird making contact with two of them and fatally completing a circuit. Problems that do arise can be corrected in two primary ways:

1) **Isolation:** Moving the components farther apart to get the necessary clearance.
2) **Insulation:** Using covers on various electrical components to prevent contact with the component that would cause the electrocution.

Collisions

Many factors can affect the likelihood of bird collisions with power lines:

- Habitat (does the line bisect critical habitat)
- A bird's size and maneuverability
- Flight altitude
- Bird behavior (chasing prey, interactions within or between species, flocking)
- A bird's age and gender
- Time of day
- Weather (fog, high winds, heavy precipitation)
- Land use (refuges, agricultural fields, landfills, cooling ponds)
- Topography
- Line configuration (grounding wire is thinner and harder to see; lines configured vertically tend to be less visible that those configured horizontally)
- Human disturbance (hunting, agricultural and recreational activities)

Clamp-on markers

Collision Minimization Measures

Pre-construction efforts

- Use vegetation, topography or man-made structures to shield lines
- Cluster lines together
- Site lines away from obvious flyways if possible

Post-construction efforts

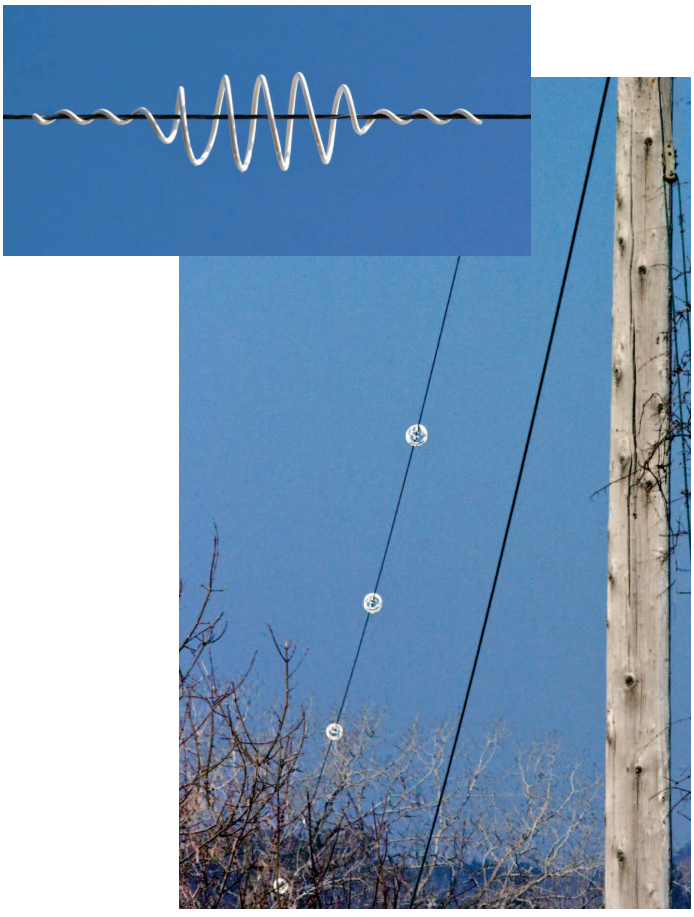
- Modify habitats
- Create habitats on the same side of the power line to minimize crossings
- Minimize human activities/disturbance near the line (educational process)

Marking Lines

Marking lines with various types of markers can decrease but not eliminate bird collisions. The different types of markers vary in effectiveness. Devices include bird and swan flight diverters and clamp-on markers. Examples of these devices are shown in the photos.

Utilities have used a variety of these markers on their lines. The decision to use them is based on:

- Effectiveness
- A line's voltage rating
- The markers' weight
- Wind/ice loading factors
- Durability
- Ease of installation
- Effect on the viewshed
- Susceptibility to vandalism



Bird flight diverters

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Southern Minnesota Municipal Power Agency
Wisconsin Public Power Inc.
Xcel Energy

CapX 2020 Proposed Transmission Line Projects

Delivering reliable electricity for the future

CapX 2020 is a joint initiative of 11 transmission-owning utilities in Minnesota and the surrounding region to expand the electric transmission grid to ensure continued reliable service to 2020 and beyond. The CapX 2020 utilities include cooperatives and investor-owned and municipal utilities.

Project need

The region is experiencing tremendous job and population growth, leading to a steady increase in electricity usage. In Minnesota alone, electricity consumption has nearly doubled since 1980, according to data from the state's Department of Commerce. The last major upgrade of the electric transmission infrastructure in the Upper Midwest took place nearly 30 years ago.

Planning studies show that customer demand for electricity will increase by 4,000 to 6,000 megawatts (MW) by 2020 – more than today's system has the capacity to deliver. The proposed new transmission lines would be built in phases designed to meet the growth in electricity demand, as well as to support renewable energy expansion. The first group of CapX 2020 projects (see map) is made up of three proposed 345-kilovolt (kV) transmission lines, one 230-kV line and associated substations. Group 1 proposed projects include:

- A 200-mile, 345-kV transmission line between the Brookings, SD, area and the Southeast Twin Cities, plus a related 345-kV line between Marshall and Granite Falls, MN
- A 250-mile, 345-kV transmission line between Fargo, ND, and St. Cloud and Monticello, MN
- A 150-mile, 345-kV transmission line between the Southeast Twin Cities and Rochester, MN, continuing to La Crosse, WI
- A 70-mile, 230-kV transmission line between Bemidji and Grand Rapids in North Central Minnesota

Minnesota Certificate of Need (CON) process

The regulatory process for these lines is under way. The CapX 2020 utilities filed a Certificate of Need (CON) application in August 2007 with the Minnesota Public Utilities Commission (MN PUC) for the three 345-kV projects. A separate CON application was filed for the 230-kV transmission line in March 2008.

As part of the CON process, the utilities provide data concerning the projections of electric usage to demonstrate the need for the proposed lines. The MN PUC will consider this information in determining whether the lines are needed.

The CON approval process generally takes 15 to 18 months and provides many opportunities, including public meetings and hearings, for individuals, interested parties and governments to provide input to the MN PUC, as well as to receive information from CapX 2020 about the proposals. Regulators in North Dakota, South Dakota and Wisconsin also will determine whether portions of the proposed lines in their states are needed.

Project routing

While the MN PUC is assessing the need for the transmission lines, the utilities are working with local governments, landowners, electric cooperatives and other stakeholders to evaluate potential routes. In addition to state approval

of the need for the projects, each project also requires regulatory approval for the specific routes for the lines.

In Minnesota, a Route Permit application must be filed with the MN PUC for each project, proposing a recommended route and alternatives. The MN PUC makes the final decision on routes for the lines, taking into account recommendations from all participating parties. Similar review, permit and approval processes are required for project lines and facilities from the North Dakota, South Dakota and Wisconsin commissions.

Federal approval

Permits and approvals are required from several federal agencies before the lines can be built. Federal agencies will prepare Environmental Impact Statements before they issue permits.

The CapX 2020 utilities are committed to working with all interested parties during the need and routing processes.

Stay Informed

The best way to participate is to stay informed. Follow progress on the individual agency Web sites and on the CapX 2020 Web site at www.capx2020.com.

Minnesota PUC: To view CapX 2020 filings, go to the PUC's Web site at www.puc.state.mn.us, click on E-documents on the left-hand side, click on Search documents, and search for docket 06-1115. In the search field, "06" stands for the year 2006 (when the first CapX 2020 document was filed). Use "06" for the year and "1115" in the second field, then press the search button.

North Dakota Public Service Commission: Can be contacted at (701) 328-2400 or by visiting www.psc.state.nd.us

South Dakota Public Utilities Commission: Can be contacted at (605) 773-3201 or via the Web at www.puc.sd.gov.

Public Service Commission of Wisconsin: Can be contacted at (888) 816-3831 or www.psc.wi.gov

Contact information

SE Twin Cities–Rochester–La Crosse (345-kV)

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Fargo–Alexandria–St. Cloud–Monticello (345-kV)

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Jim Musso – Manager, Siting and Land Rights
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Brookings, SD–SE Twin Cities (345-kV)

Project Development Manager: Great River Energy

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Xcel Energy

Wisconsin Regulatory Process for High Voltage Transmission Lines

This fact sheet provides an overview of the regulatory process associated with the major approvals necessary before a high voltage transmission line can be built in Wisconsin. The CapX 2020 utilities have prepared similar fact sheets for each jurisdiction involved in the CapX 2020 projects. Visit www.capx2020.com for updated project information.

Wisconsin Regulatory Process

The determination of need and routing for approving a transmission line are combined in Wisconsin. The Public Service Commission of Wisconsin (Commission) reviews project applications and, if approved, grants a Certificate of Public Convenience and Necessity (CPCN). When reviewing a transmission project, the Commission considers alternative plans to address the need and alternative locations or routes, as well as need, engineering, economics, safety, reliability, individual hardships and environmental factors. The Commission's decision is based on a hearing record.

The Wisconsin Department of Natural Resources (DNR) Office of Energy is a partner in the Commission review process. Project applications include information needed for the DNR to assess the likelihood that any required DNR permits can be granted. Other state agencies may also participate in the Commission process.

Certificate of Public Convenience and Necessity (CPCN)

Wisconsin Statutes § 1.12 (6), 196.491 and 30.025 and Wisconsin Administrative Code Chapters PSC 2, 4, 111 and 112 govern the CPCN process. A CPCN is required for transmission projects that are:

- 345 kilovolts (kV) or greater; or
- less than 345 kV, but greater than or equal to 100 kV, more than one mile in length and require some new rights-of-way (ROW).

All other transmission line projects must receive a Certificate of Authority (CA) from the Commission if the project's cost is above a certain percent of the utility's annual revenue [Wis. Stat. 196.49 and Wis. Adm. Code PSC 112].

Pre-application route development phase: Route development generally occurs in three stages during which utilities:

- Identify a study area; gather land use and resource information from federal, state and local agencies and governments; prepare maps.
- Identify routing options based on technical considerations; routing criteria and resource mapping.
- Compare and evaluate the routing options; select two or more routes to be included in the CPCN application.

CPCN applications must include at least two viable routes for proposed projects. Prior to filing an application, the applicant may hold public meetings to encourage the public to provide information and comments on the proposed transmission line before making routing decisions.

Pre-application Commission and DNR consultation: The Commission and DNR staff provide guidance regarding the type of information required in the CPCN and DNR permit applications. This can include wetland delineation work and biological surveys as well as information on project need, engineering design and project alternatives.

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Application requirements are defined by Wis. Adm. Code 111. In addition, the Commission, DNR and Department of Agriculture, Trade and Consumer Protection provide filing requirements that are posted on the Commission website.

CPCN process: After the utilities file a CPCN application, the process specified under Commission regulations begins.

Application filing and completeness review: When an application for a CPCN is filed with the Commission, applications are also filed with the DNR for any permits required for either of the two routes proposed. Commission and DNR staff examines the application during a 30-day completeness review, notifying applicants by letter whether the application is complete or what further information may be required. Copies of the application are distributed to local libraries and officials and can be viewed on the Commission website. All documents and transcripts will be available through the Commission's electronic filing system.

Commission public notification letter: Once an application is filed, the Commission sends a public notification letter to property owners on or near the proposed ROW, local government officials, local libraries, the media, and other agencies and interested parties that the review process is beginning. Comments and questions are solicited.

Intervention: Anyone can attend meeting and hearings, file written comments and present written or oral testimony without being listed as an official intervenor or party to the case. Individuals and groups who want to be more involved in the process may request party status by writing to the Commission Administrative Law Judge before a hearing. Full parties may cross-examine witnesses and write briefs. Parties have a number of responsibilities that are described on the Commission website.

Scoping and public meetings: As part of the environmental review, Commission and DNR staff prepare either a draft Environmental Impact Statement (EIS) or an Environmental Review (EA) to determine if an EIS is needed. Wis. Adm. Code PSC 4 and the PSC Wisconsin Environmental Policy Act (WEPA) coordinator determine the type of review. Generally, transmission lines 345 kV or greater and at least 10 miles long require an EIS. In order to prepare an EIS, the Commission conducts scoping, which may be achieved through interagency correspondence, workshops, surveys or public meetings in the proposed project area.

Draft Environmental Impact Statement (DEIS): If an EIS is necessary, Commission and DNR staff will utilize information from the application, field review, scooping and other sources to prepare the document. The Commission must issue the DEIS for review with a comment period of at least 10 days.

Agricultural Impact Statement (AIS): Section 32.035 of the Wisconsin Statutes, pertaining to eminent domain (the right to condemn property), requires the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) to prepare an AIS for projects. This is required when the acquisition of farmland is subject to condemnation as described in state law, even if the applicant does not believe condemnation will occur. The purpose of the AIS is to assess the impact on individual farm operations when a proposed land acquisition involves the potential for condemnation under Wisconsin eminent domain statutes. For transmission line projects, if more than five acres will be taken from any farm operation, an AIS is required. Projects requiring five or fewer acres from each farm operator may, as the DATCP's discretion, have an AIS prepared. The DATCP has 60 days to prepare an AIS from the date all information is received. The applicant cannot negotiate with landowners until 30 days after an AIS is published. When as AIS is required for a project that requires Commission approval, the process is coordinated with the Commission in order to adequately inform the Commission's decision.

Final Environmental Impact Statement (FEIS): Once comments on a DEIS are received, Commission and DNR staff prepare an FEIS. The FEIS may vary from the DEIS in scope, based on comments received on the DEIS or other pertinent information. The Commission must distribute copies of the FEIS and announce its availability at least 30 days prior to holding a public hearing on the project.

Commission hearing: All projects that require a CPCN require a public hearing. A Notice of Hearing is sent to everyone on the Commission project mailing list, and hearings are held in the area of the proposed transmission line project. Hearings are run by a Commission Administrative Law Judge (ALJ). If someone from the public wants to testify at the hearing, legal counsel is not required. Those who want to testify fill out appearance slips and are called on by the ALJ when it is their turn. Comments can also be written or submitted on the Commission website. The Commission makes decisions based on the hearing record.

Commission decision and route selection: The Commission makes the final decision on proposed transmission lines after reviewing testimony from the applicant, DNR staff, full parties, Commission staff and the public. The Commission discusses the transcripts, exhibits, briefs and the issues raised at the hearings in meetings open for public observation but not for public comment. The decision includes whether the line will be built, how it is designed and where it will be located. The Commission then issues an order.

Wis. Stats. 1.12 (6) outline the following order of priorities for the Commission to consider for new transmission line routes:

1. Existing utility corridors (such as transmission lines, electric distribution lines or natural gas pipelines).
2. Highway and railroad corridors.
3 Recreational trails.
4 New corridors or paths representing new ROW.

The Commission selects the route when it grants the CPCN. The final decision may be the applicant's preferred route, a combination of reasonable routes or a variation of a route suggested by the public.

DNR permitting: The CPCN review and determination is a joint process between the Commission and the DNR. Any specific DNR permits required (i.e. for wetlands, waterways or storm drainage management) are usually identified in the pre-consultation process. The applicant must file for those permits at the same time a CPCN application is filed. DNR staff work with the Commission from the pre-consultation phase through the decision-making process. DNR permits for the project, if approved, are issued within 30 days from the date a CPCN is issued.

Concurrent permitting in other states: Similar permitting processes are overseen by regulatory bodies in neighboring states.

Federal environmental review: Before federal agencies grant loans or issue permits for transmission lines, the agencies must comply with requirement of the National Environmental Policy Act. Depending on the circumstances and the application of federal regulations, an EA or EIS may be prepared. Federal environmental review is usually done concurrently or jointly with state environmental review.

Stay informed

The best way to participate is to stay informed. Follow progress on the individual agency websites and on the CapX 2020 website at www.capx2020.com.

Public Service Commission (PSC) of Wisconsin: To view CapX 2020 filings, go to the PSC's website at www.psc.wi.gov. Search for docket 5-CE-136 under "link directly to a case" on the homepage. The Commission can be contacted at (608) 266-5481 or via the web.

Minnesota Public Utilities Commission (PUC): To view CapX 2020 filings, go to the PUC's website at www.puc.state.mn.us. Click on "eDockets & eFilings;" then click on "search documents" and search for docket 06-1115.

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Electric and Magnetic Fields (EMF): the Basics

Electric charges are present in all matter, but most objects are electrically neutral because positive and negative charges are present in equal numbers. When the balance of electric charges is altered, electrical effects are experienced, such as the attraction between a comb and our hair or the drawing of sparks after walking on a synthetic rug in the wintertime. The voltage on an electrical wire is caused by electric charges that can exert forces on other nearby charges, and this force is called an 'electric field' (E). When charges move they produce an electric current that can exert forces on other electric currents, and this force between electric currents is called a 'magnetic field' (M).

EMF exists wherever electricity is produced or used, and EMF surrounds any electrical appliance or wire that is conducting electricity. Everyone is exposed to these fields at home when you turn on a lamp, e-mail a friend, or use an electric oven or microwave to cook your dinner. In all likelihood, you're surrounded by EMF from electrical equipment in your workplace, too.

The electric power we use daily is a 60-Hertz (Hz) alternating current, meaning that electric charges move back and forth 60 times a second. We use 'EMF' in this fact sheet in reference to these 60 Hz fields, called 'extremely low frequency' or 'power frequency' fields, which are distinct from the much higher frequency fields associated with radio and TV waves, and cell phone signals.

What are electric and magnetic fields?

Electric fields are created by voltage – the higher the voltage, the stronger the field. Anytime an electrical appliance is plugged in, even if it isn't on, an electric field is created in its vicinity. But these fields are easily blocked by walls, trees, and even your clothes and skin, and the farther away you move from the source of the electric field, the weaker it becomes. Moving even a few feet away from an appliance makes a big difference in the strength of the field that you're exposed to. Electric fields are measured in kilovolts per meter (kV/m).

Magnetic fields, measured in milliGauss (mG), are produced by electric current and only exist when an electric appliance is turned on – the higher the current, the greater the magnetic field. As with electric fields, the strength of a magnetic field dissipates rapidly as you move away from its source. However, unlike electric fields that are easily blocked by ordinary materials, magnetic fields do not interact with and are not affected by walls and clothes and other barriers.

Research studies on the biological effects of EMF often focus on magnetic fields because they are not blocked by ordinary materials and because power line magnetic fields can create weak electric currents in the body by a process called 'induction'. Induced currents from 60 Hz EMF are weaker than the natural currents found in the body, such as those from the electrical activity generated by your brain or your heart. Such induced currents are also much weaker than the currents you might experience from a mild electric shock.

Why are you calling them electric and magnetic fields instead of electromagnetic fields? Is there a difference?

These terms are often used interchangeably, and both electric and magnetic fields from power lines and electromagnetic fields may be abbreviated as EMF. However, there are important differences between power line EMF and radio waves.

The frequency (i.e., the rate of time variation) of fields produced by the generation, transmission and use of electricity – typical of most household and office appliances and power lines – are low, and electric and magnetic fields exist separately. At higher frequencies, such as with radio or TV signals, the fields are interrelated, and are more accurately described by the term 'electromagnetic'.

Radio and TV electromagnetic waves are meant to transmit away from the antenna and carry radio frequency energy to the receiver. The EMF from power lines is too low in frequency to carry energy away, and the electric power stays on the utility lines.

Thus, the EMF from power lines should not be called radiation or emissions. More importantly, neither power line EMF nor radio electromagnetic waves should be confused with ionizing radiation, such as X-rays. Because of its dramatically higher frequency, ionizing radiation (like X-rays) has enough energy to alter chemical bonds and damage biological molecules, something that lower frequencies in the electromagnetic spectrum (power lines, radio, TV, microwaves, infrared) cannot do.

What are some of the things in my home and at work that produce EMF?

Anything that generates, distributes or uses electricity creates electric and magnetic fields. Below is a list of some appliances and machines commonly found in homes or offices and the magnetic field levels found nearby.

Figure 1. **Typical 60 Hz magnetic field levels from some common home appliances**

	Magnetic field 6 inches from appliance (mG)	Magnetic field 2 feet away (mG)
Electric shaver	100	–
Vacuum cleaner	300	10
Electric oven	9	–
Dishwasher	20	4
Microwave oven	200	10
Hair dryer	300	–
Computers	14	2
Fluorescent lights	40	2
Faxogram machines	6	–
Copy machines	90	7
Garbage disposals	80	2

Source: National Institute of Environmental Health Services / National Institutes of Health: EMF Associated with the Use of Electric Power

We also encounter a wide variety of EMF in other ways – natural and man-made. The earth's atmosphere creates slowly varying electric fields, and thunderstorms produce very intense electric fields that are occasionally discharged by a lightning bolt. The earth's core produces a steady magnetic field, as can easily be demonstrated with a compass needle. This magnetic field has a strength of about 550 mG, and this knowledge provides a perspective on the size of the magnetic fields produced by an electric transmission line.

Magnetic fields from the earth or from small magnets exert forces on electric currents or on other magnetic objects, as when a compass needle orients toward a magnet. Magnetic fields are common in our lives. Many children's toys contain magnets and many of us use refrigerator magnets, generating fields of abouty 100,000 to 500,000 mG. An increasingly common diagnostic procedure, magnetic resonance imaging (MRI), uses fields of about 20,000,000 mG. If you were to spin a magnet at a rate of 60 times a second, you would get an alternating magnetic field like the fields produced by power lines.

How can I find out what EMF levels I'm exposed to at home and at work?

You can monitor your daily exposure to magnetic fields by wearing a personal exposure meter (called a magnetometer or gaussmeter) or by keeping one close to you. This is the most accurate way to measure your true exposure to magnetic fields during the course of your normal activities. Other meters can be put in a location – like your kitchen or home office – to measure typical EMF levels in that spot. This type of measurement isn't an accurate measure of personal exposure, however, because it doesn't take into account your distance from the source of the fields or the amount of time you might spend in that place.

Contact your local electric service provider. Most utilities offer a free measurement service to customers for their homes or businesses.

What are 'typical' residential exposures to magnetic fields?

Exposure levels vary from individual to individual and from home to home, but a study by the Electric Power Research Institute (EPRI) puts the background levels of power line magnetic fields in the typical U.S. home at between 0.5 mG and 4 mG with an average of 0.9 mG. Levels rise the closer you get to the source of the field. Most people are exposed to greater magnetic fields at work than in their homes. See Figure 1.

What EMF levels are found near transmission lines?

All transmission lines produce EMF. The fields are the strongest directly under the lines and drop dramatically the farther away you move. Contact your local utility to find out EMF information about a particular transmission line near you. See Figures 2a-c.

Figure 2a. **Typical EMF Levels for a 161-kV Transmission Line**

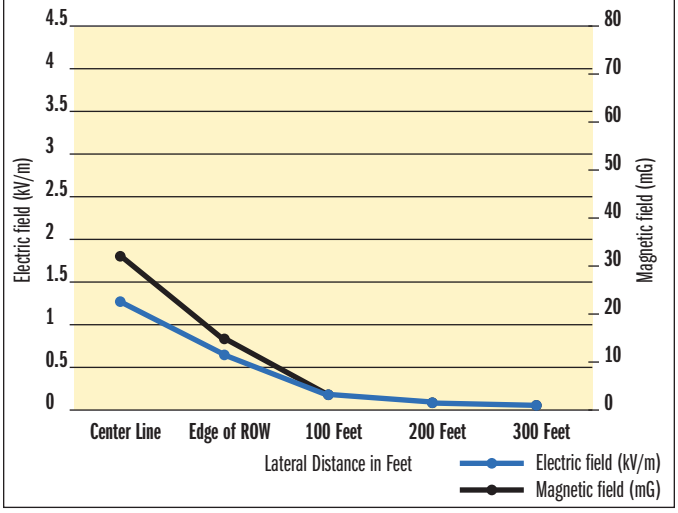


Figure 2b. **Typical EMF Levels for a 230-kV Transmission Line**

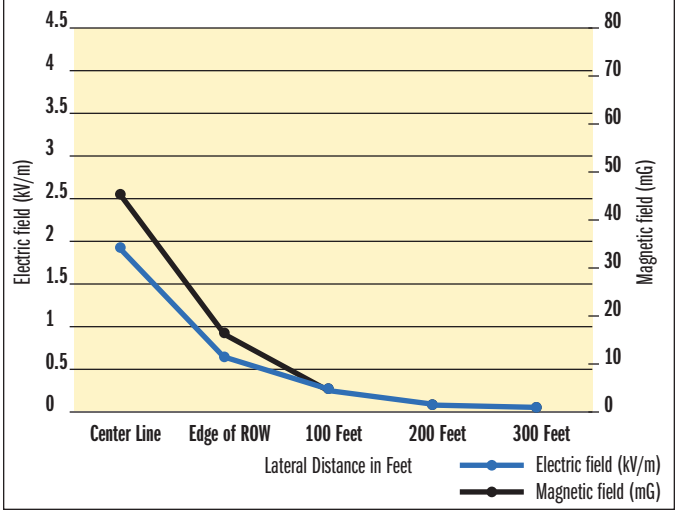
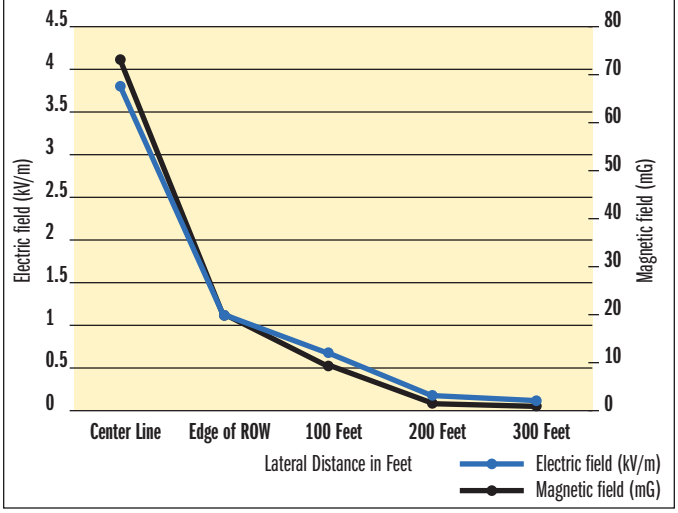


Figure 2c. **Typical EMF Levels for a 345-kV Transmission Line**



Source: CapX 2020 Certificate of Need application to the Minnesota Public Utilities Commission for three 345-kV transmission line projects (8/16/2007, MPUC Docket No. ET02, E-002/CN-06-1115)

Do underground lines reduce EMF levels?

Because magnetic fields are unaffected by ordinary materials, burying power lines won't keep the fields from passing through the ground. Additionally, underground lines can produce higher levels of magnetic fields directly above them at ground level because these lines are located closer to you than overhead lines, although the strength of the magnetic field from underground lines falls away more quickly with distance than from overhead lines. But, compared to overhead lines, underground lines are significantly more expensive to install, more difficult to repair and can have greater environmental impacts. Since current research results provide no conclusive connection between EMF exposure and health effects, burying lines isn't a reasonable alternative.

Are there state or federal standards for EMF exposure?

There are no federal standards limiting residential or occupational EMF exposure. The EMF levels produced by appliances vary from manufacturer to manufacturer and model to model. The designs of many newer model appliances, in general, often produce lower fields than older models. There is no federal certification program on EMF levels so beware of advertisements on appliances making claims of federal government certification of low or zero EMF levels.

Do exposures to power line EMF affect my health?

This issue has been studied for more than 30 years by government and scientific institutions all over the world. The balance of scientific evidence indicates that exposure to EMF does not cause disease. (See the **Sources and useful links** section of this fact sheet for more information on studies about EMF and health.)

In 2002 the Minnesota Department of Health released "A White Paper on Electric and Magnetic Field Policy and Mitigation Options." Regarding the links between EMF and health effects, the report states:

"The Minnesota Department of Health concludes that the current body of evidence is insufficient to establish a cause and effect relationship between EMF and adverse health effects." (page 36)

- The entire 2002 report is available at www.capx2020.com/documents.html.

Does EMF interfere with pacemakers or other medical devices?

High levels of power line EMF can interfere with a pacemaker's ability to sense normal electrical activity in the heart. Most often, the electric circuitry in a pacemaker might detect the interference of an external field and direct the pacemaker to fire in a regular, life-preserving mode. This isn't considered hazardous and is actually a life-preserving default feature. There have been cases with dual-chamber pacemakers triggering inappropriate pacing before the life-preserving mode takes over.

The American Conference of Governmental Industrial Hygienists (ACGIH) issued guidelines for EMF exposure for workers with pacemakers or implantable defibrillators. Maximum safe exposure for workers with these medical devices at 60 Hz (the frequency of most transmission lines) is 1 G (1,000 mG) for magnetic fields and 1 kV/m for electric fields.

Nonelectronic metallic implants (artificial limbs, screws, pins, etc.) can be affected by high magnetic fields like those produced by MRI devices but are generally unaffected by the lower magnetic fields produced by most sources.

How can I reduce my exposure to EMF?

If you wish to reduce EMF levels in your vicinity you can do so by recognizing that your exposure is determined by the strength of the magnetic fields given off by things around you, your distance from the source of the field and how much time you spend in the field.

Creating distance between yourself and the sources of EMF is the easiest way to reduce exposure. Standing back – even an arm's length away – from appliances that are in use is a simple first step. Remember, EMF decreases dramatically with distance. This is more feasible with some appliances than with others, but the following simple recommendations will help you reduce your EMF exposure at home:

- Move motor-driven electric clocks or other electrical devices away from your bed.
- Be aware that electric motors change electricity into mechanical energy by using magnetic fields, so any motorized appliance (e.g., hairdryers, shavers, fans, vacuum cleaners, air conditioners) will produce magnetic fields.
- Stand away from operating appliances that use a lot of electricity.
- Sit a few feet away from the TV and at least an arm's length from the computer screen. Liquid crystal or plasma displays (LCDs), however, produce very low levels of EMF compared to the older cathode-ray tube (CRT) displays.
- Limit the time you're exposed to a magnetic field by turning appliances, like computer monitors, off when you're not using them.

Sources and useful links

The following are links to more information and studies on EMF:

- The National Institute of Environmental Health Services (NIEHS) offers information on a variety of EMF topics. In June of 2002 they prepared *EMF: Electric and Magnetic Fields Associated with the Use of Electric Power, Questions and Answers.* This booklet, along with other helpful links, can be found at www.niehs.nih.gov/health/topics/agents/emf/.
- "A White Paper on Electric and Magnetic Field Policy and Mitigation Options," prepared by the Minnesota Interagency Working Group on EMF Issues. www.capx2020.com/documents.html
- Electric and Magnetic Fields: Facts, Western Area Power Administration. www.wapa.gov/newsroom/pdf/emfbook.pdf
- "Electromagnetic fields and public health," World Health Organization fact sheet, www.who.int/mediacentre/factsheets/fs322/en/index.html. More general information on EMF can be found at www.who.int/peh-emf/en/.
- "Unproven Risks – Non-Ionizing Radiation" (2008), The American Cancer Society. www.cancer.org/docroot/NWS/content/NWS_2_1x_The_Environment_and_Cancer_Risk.asp

Appendix C:
Correspondence between USFWS and Xcel Energy

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Upper Mississippi River National Wildlife and Fish Refuge
51 East Fourth Street - Room 101
Winona, Minnesota 55987

IN REPLY REFER TO:

February 19, 2008

Pamela Jo Rasmussen
Lead, Siting and Permitting
Xcel Energy
P.O. Box 8
Eau Claire, Wisconsin 54702-0008

Dear Ms. Rasmussen:

In follow-up to our meeting on January 25, 2008, on the proposed Rochester to La Crosse 345-kV transmission line, we offer some initial feedback on Mississippi River crossing options being considered.

My staff and a representative of the Fish and Wildlife Service's Ecological Services program met February 13, 2008, to weigh the various crossing options and other line routing considerations. Staff included managers or staff from the Winona and La Crosse Districts of the Upper Mississippi River National Wildlife and Fish Refuge and Trempealeau National Wildlife Refuge.

We have two overall recommendations: 1) that any crossing considers use of existing energy company rights-of-way or easements, and 2) that any new connecting lines are kept away from the Mississippi River corridor.

Based on these overall recommendations, we believe the Alma crossing may pose the least environmental impact. Since there already exist two permanent rights-of-way or easements for the existing lines (copies attached), with total right-of-way of 180 feet, this route may need no further right-of-way permit from the U.S. Fish and Wildlife Service depending on project design. This route is also least likely to impact migratory birds since it is some distance from known bird concentration points. There is, however, an active eagle nest in or adjacent to the existing powerline on the Minnesota side of the refuge. Appropriate avoidance measures would need to be taken to minimize disturbance to this nest, especially when active.

Our second choice would be the La Crosse crossing since it could follow an existing 69-kV powerline (right-of-way attached). However, this route is of concern due to its proximity to an active eagle nest and great blue heron colony approximately 0.3 miles north (Wisconsin side) and an important heron and egret feeding area adjacent to the line (Minnesota side). There is also a bike/pedestrian trail proposed within the existing right-of-way (Wagon Wheel Trail Bike/Pedestrian Trail) just to the north on land owned by the City of La Crescent and the Service. This proposed trail would be located on a dike just south of the existing 69-kV towers and is known locally as former Stagecoach Road or Minnesota Avenue.

We also believe that an alternative I-90 corridor using a buried line should be considered with this option in light of above concerns. We suggest a buried line due to the large number of eagles, egrets, herons, and pelicans cross back and forth over the interstate bridges as they use the various sloughs and channels on either side. There is also concern that larger towers and more lines may come into conflict with the La Crosse Airport and Federal Aviation Administration guidelines.

We do not believe the proposed Winona or Trempealeau crossings are worthy of further consideration. Each would likely involve new rights-of-way across portions of national wildlife refuges, and such rights-of-way would likely not be approved since Service policy and regulations do not allow new uses that fragment habitat on refuges. We also have migratory bird concerns with any increase in tower number, size, height, or line configuration within Trempealeau National Wildlife Refuge.

In regard to our second overall recommendation, we believe that lines leading to or from river crossings should use existing line corridors away from the river. For the Alma crossing, we recommend the existing 161-kV line to Waumandee to Blair to Holmen. This or a similar route using existing power line corridors would present the least impacts to migratory birds and other wildlife that concentrate on refuges or state wildlife management areas in or near the river or tributary corridors. This is also in line with our recent recommendation that wind turbines not be located within 10 miles of the floodplain edge due to migratory bird use patterns. We have also enclosed for your information a copy of the existing right-of-way on refuge land across the Black River. For the La Crosse crossing, we would recommend a corridor from Rochester along Interstate 90 since this freeway already presents a known habitat, wildlife, and visual disturbance.

As you move forward with planning, we also encourage you to consider and document the option of arcing or burying crossing lines below the river, removal of existing lines (especially across refuge or wildlife management lands) if no longer critical or doubling is possible on any new line, and discussion on future wind power development or plans. If wind power generation expands in southern Minnesota, how will this play into the proposed 345-kV line and the route selected? Our concern is that wind power generation could fuel the need for another line and crossing, thus causing cumulative impacts beyond the one line being considered at this time.

Finally, this input is to provide you information for planning purposes and does not represent agency endorsement of the proposed project. It also reflects the views of refuges in the project area. Our Ecological Services office has been, and will continue to be, involved in overall review of the project and will likely offer separate feedback and comment as project planning proceeds. Also, there are still concerns with active eagle nests, and interest in reviewing construction methods and timing, tower and line design, required maintenance, and other aspects of the project that are yet unknown. We will continue to review and comment on plans as they develop to ensure minimal impact to refuges and fish and wildlife resources.

If you have any questions concerning these comments, please feel free to contact me at (507) 494-6218 or via e-mail at don_hultman@fws.gov.

Sincerely,

Don Hultman
Refuge Supervisor/Manager

Enclosures

cc: Matt Cummings, EDAW, Inc.
Chuck Thompson, Dairyland Power
District Managers, La Crosse and Winona
Trempealeau NWR
Twin Cities ES Office

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Upper Mississippi River National Wildlife and Fish Refuge
51 E. Fourth Street - Room 101
Winona, Minnesota 55987

IN REPLY REFER TO:

May 4, 2009

Thomas Hillstrom
Supervisor, Siting and Permitting
Xcel Energy
414 Nicollet Mall (MP 8A)
Minneapolis, Minnesota 55401

Dear Mr. Hillstrom:

On February 11, 2009 we met with you and others to discuss preliminary planning for the CapX 2020 345-kV transmission line. On March 18, 2009, I had a conference call meeting with District Managers of the Upper Mississippi River National Wildlife and Fish Refuge and biologists from our Migratory Birds and Ecological Services programs to discuss the proposed line.

This letter provides you follow-up information, and a series of considerations and questions, to assist you and contractors as you proceed with the development of alternatives and their evaluation. As noted in earlier correspondence, this letter does not represent agency endorsement of the proposed project nor a decision on whether any needed right-of-way permits through the Upper Miss or Trempealeau national wildlife refuges will or will not be granted.

Regulations and policy governing uses on national wildlife refuges prohibit new uses or projects which fragment habitat and such projects include roads, bridges, and powerlines. The one exception is for minor expansion of existing rights-of-way. "Minor" is not defined and left to the discretion of the refuge manager based on professional judgment taking into account refuge-specific conditions and anticipated impacts.

Based on discussions with staff, a review of our regulations and policy, and a review of your preliminary right-of-way pole configurations, I do not believe the various options would involve a minor expansion of any of the existing rights-of-way. Most of the options involve a 75 percent or more expansion of right-of-way width to be viable. Therefore, I would have to recommend to our Regional Director (the deciding official on new or expanded right-of-way requests) that no expansion of existing right-of-way be granted and that any design option be restrained or confined to existing right-of-way width.

We want you to be aware of this restraint up-front to avoid alternatives and design configurations that will likely be rejected later.

Please find enclosed Attachment 1 which is a cursory analysis of the alternative crossings for your information. This information helped us get our arms around the alternative routes being considered and may prove useful to you and your biological assessment contractors.

Finally, Attachment 2 is a series of considerations and questions for your use in preparing documents and analyses associated with the CapX 2020 project. Again, feel free to share this with your contractors.

If you have any questions, please contact me or Assistant Refuge Manager Rick Frietsche.

Sincerely,

Don Hultman
Refuge Manager

Attachments (2)

cc: Chief, Refuges, Region 3
District managers

Attachment 1.

Upper Mississippi River National Wildlife and Fish Refuge
Trempealeau National Wildlife Refuge
May, 2009

CapX2020
Routing Alternatives – Analysis of Refuge Habitats That Would Be Impacted

Route	Length of route through refuge property	Area of open water/marsh*	Area forested and type*	ROW existing width, permitted width, dates of establishment and expiration, and stipulations/restrictions
Alma	5,670 feet	10 acres open water/1.9 acres marsh	9.6 acres	Existing 125', permitted 180', established 12/23/48, indefinite, general stipulations
Winona	13,540 feet	45.7 acres	7.8 acres	Existing less than 100'; permitted 100', indefinite (on Trempealeau NWR). New metal poles installed 2003. There is also an unused ROW (Dairyland) across Trempealeau NWR approx. 1.5 miles east of above, established 5/18/79, 250', indefinite, general stipulations.
Black River Bottoms	4,320 feet	18.3 acres	11.8 acres	Existing 80' with "danger trees" removed on either side; permitted width is "within 20' on both sides of centerline"; issued March 28, 1951 and expired in 2001; general stipulations
La Crosse	6,510 feet	15.5 acres	10.9 acres	Existing less than 100'; permitted width is 100'; issued June 6, 1967 and expires in 50 years (June 5, 2017); general stipulations

* A 300 foot wide corridor was used for the purpose of this preliminary summary/analysis only and may or may not reflect actual proposed or approved width.

Supplemental Information on Each Route, Significant Resources

Alma

The current Dairyland Power crossing near Alma, WI traverses the refuge at the Zumbro River bottoms in Wabasha County, Greenfield Township (T110N-R10-9W Sec's 31 & 32). The crossing extends approximately 2,000 feet on the Minnesota side of the main channel. In Wisconsin, if the new alignment is to the south of the current line, it would impact the refuge for 2,500 feet, if it is to the north, it will be outside the refuge boundary.

Forest inventory data collected at points near the crossing during 2002 and 2005 indicate a mature floodplain forest dominated by silver maple and green ash with Eastern cottonwood and swamp white oak. River birch, hackberry, and American elm were also noted. The associated marshes and the main corridor are dominated by reed canary grass. The corridor was photographed at random points on February 17 and 18, 2009 (photos are available).

Two active eagle nests are located in the vicinity of the corridor. The oldest nest, which is immediately adjacent to the line on the Minnesota side of the main channel, was mapped on previous documents provided to Xcel in January 2008. A new eagle nest was discovered during a site visit on February 18, 2009 approximately 1,800 feet from the corridor, also in Minnesota.

The CapX2020 program provided biodiversity maps dated January 24, 2008 for public review. These maps indicated that the Zumbro River has outstanding biodiversity (index provided by Minnesota Department of Natural Resources). An outstanding biodiversity classification is defined as "*sites containing the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most intact functional landscapes present in the state.*"

Minnesota's Comprehensive Wildlife Conservation Strategy (January 2006), mapped the Species of Greatest Conservation Need (SGCN) in the state. Greenfield Township has 101-400 validated records of SGCN since 1990, the second highest occurrence rating in the state.

Winona

The only refuge land this route would cross is on Trempealeau National Wildlife Refuge (islands in the Mississippi River are owned either by the City of Winona or the state). This alternative would follow an existing 100 foot-wide right-of-way adjacent to the Canadian National Railroad line for approximately 2 miles then veer ESE for another 1.5 miles before heading north to Wisconsin State Highway 35.

This route crosses the expanse of wetland that makes up most of the 6,226-acre refuge. Due to this predominantly wetland habitat crossing the importance of the refuge to wetland-dependent migratory birds, this alternative is opposed by the U.S. Fish and Wildlife Service (see letter to Xcel Energy dated February 19, 2008).

Black River Bottoms

Permit issued to Dairyland Power Cooperative in 1951 expired 50 years later in 2001. Dairyland has applied for a new permit. Some question as to the permitted width. FWS records show permitted width is "within 20' on both sides of centerline." According to Ron Severson, Senior Right-of-Way Agent for Dairyland, their records do not authorize a width. Severson indicated Dairyland's crews are maintaining a corridor 80' wide and also removing "danger trees" outside the 80'. According to Severson, maintenance was completed in the last year; work is done in winter when there is better access. Refuge Special Use Permits have not been issued for maintenance.

One active bald eagle nest is located is located in proximity to the transmission line (≤.2-mile). Another active nest is located about .75-mile from the line.

The Black River Bottoms was designated Resource Classification A during the development of the Upper Miss Refuge Master Plan in the 1980s. This designation is defined as "high value fish and wildlife habitat which is unique and irreplaceable on a national basis or in the ecoregion. This area is one of only of handful of sites in Wisconsin providing habitat for the eastern massasauga rattlesnake, Wisconsin's most endangered reptile. Massasaugas are a candidate species for the federal list and are listed as endangered in Wisconsin. The bottoms also provide habitat for the Blanding's turtle, a species listed as threatened in Wisconsin.
Red-shouldered hawks, another threatened species in Wisconsin, are also found in the Black River Bottoms. The loss and fragmentation of large blocks of forest, particularly riparian forests, is a continuing concern.

La Crosse

Excel Energy is the current owner. About 3,720' of transmission line in Minnesota; poles are located on land owned by the City of La Crescent but immediately adjacent to Refuge land. About 2,790' of transmission line is located on the Refuge in Wisconsin.

One active bald eagle nest is located about .5-mile from the transmission line along French Slough. Four former nests were located along the transmission line corridor, ranging from <.1-mile to about .75-mile.

In Minnesota, Refuge and City of La Crescent-owned wetlands along the transmission line were designated Resource Classification A during the development of the Upper Miss Refuge Master Plan in the 1980s. This designation is defined as "high value fish and wildlife habitat which is unique and irreplaceable on a national basis or in the ecoregion. Refuge lands and waters along the corridor in Wisconsin were designated Resource Classification B, or "valuable fish and wildlife habitat which is relatively scarce or becoming scarce on a national basis or in the ecoregion.

An active rookery, containing great blue heron (381 active nests in 2007 from aerial survey), great egret (153 nests in 2007 from aerial survey), and double-crested cormorant nests, is located along the East Channel in Wisconsin upriver from the railroad and transmission line. This

rookery covers a large forested area located about .35 to .75-mile from the line. Although population estimates are not available, a large number of double-crested cormorants roost in the trees along the East Channel in September and early October. This roost is located upriver from the line.

The proposed 5,440' Wagon Wheel bicycle/pedestrian trail, connecting the City of La Crescent (MN) with Shore Acres Road, would be built on an old dike directly under the transmission line. Planning for the project has begun with construction scheduled in 2011. This segment is part of the eventual goal of linking the Root River State Trail (MN) to the La Crosse River and Great River Trail Systems (WI).

Attachment 2.
Upper Mississippi River National Wildlife and Fish Refuge

CapX2020 Considerations and Questions

Using the existing permitted ROW, describe the height and design of structures that would be required to traverse each of the refuge crossings. Include all structures that would be located on the Refuge ROW and use designs that are recommended to minimize bird strikes.

If the river crossing at Alma was used, how will the transmission lines routed along the Wisconsin boundary of the refuge impact birds using the refuge and what would be the visual impact of the lines to the landscape? How will the structures differ from the existing?

Describe the pros and cons of using underground crossings. Please include in the description the costs, infrastructure, and on-going maintenance that are needed for this type of crossing.

Expanded and newly cleared rights-of-way will create avenues of entry for invasive species. What are the anticipated impacts of invasive plants (reed canary grass, crown vetch, purple loosestrife, and others)? How will impacts be mitigated or prevented?

What are the advantages and disadvantages (for birds and other wildlife, and people/companies) of various power line configurations such as taller poles with lights, shorter poles without lights, and expanded widths of rights-of-way?

The Refuge assumes that migrating waterfowl and raptors (probably other waterbirds also) follow the river corridor within a yet to be determined distance from the river floodplain. What is that distance for the majority of the birds? Can the power line route be at least that far from the river floodplain?

We cannot consider the river crossing location in isolation. What are the advantages and disadvantages of each crossing in terms of impacts to migratory birds and bats created by installation of a line within a mile of the river floodplain versus more than ten miles? For example, what are the impact differences between the Alma crossing and going to Blair, Wisconsin? and a line paralleling the river to Trempealeau and beyond?