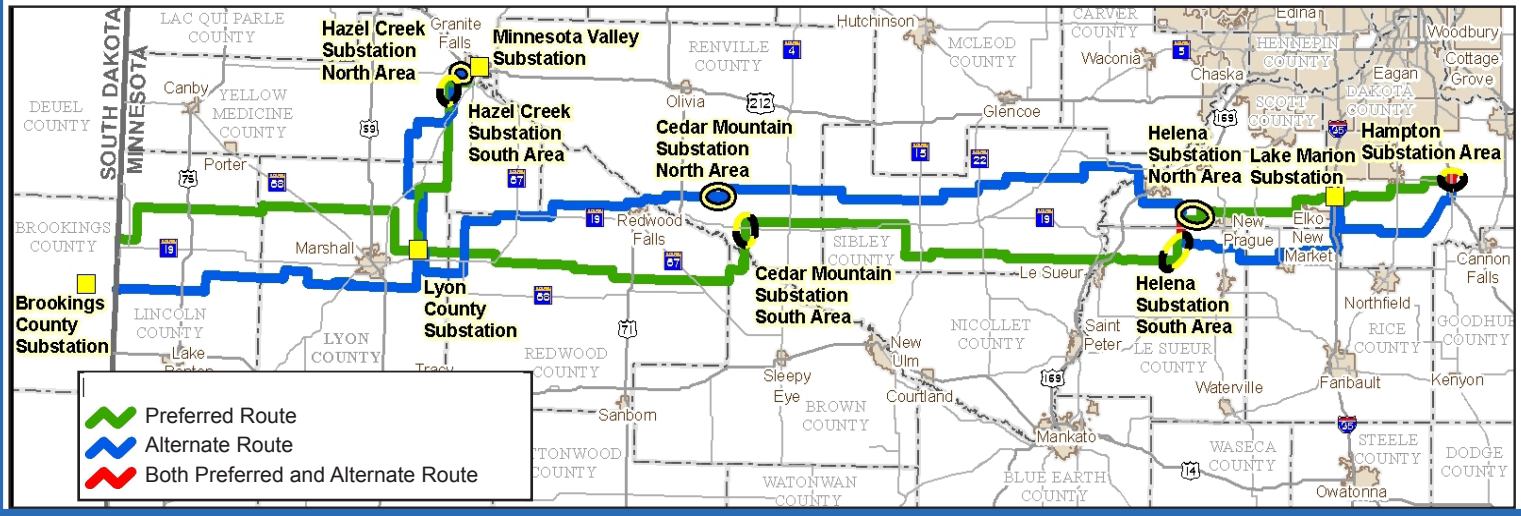

Application to the Minnesota Public Utilities Commission for a Route Permit for the Brookings County - Hampton 345 kV Transmission Line Project

Docket # ET2/TL-08-1474

December 29, 2008

CapX2020

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List of Acronyms

Abbreviation	Meaning
AADT	Annual Average Daily Traffic
AC	Alternating Current
AIMP	Agricultural Impacts Mitigation Plan
AMSL	Above mean sea level
APE	Area of Potential Effect
AWOS	Automated Weather Observation Stations
BCC	Birds of Conservation Concern
BMPs	Best Management Practices
BNSF	Burlington Northern Santa Fe
BWSR	Board of Water and Soil Resources
CapX2020	Capacity Expansion 2020
CMMPA	Central Minnesota Municipal Power Agency
Commission	Minnesota Public Utilities Commission
CREP	Conservation Reserve Enhancement Program
CRM	Coordinated Resource Management
CRP	Conservation Reserve Program
dB	Decibels
dBA	A-weighted sound level in decibels
DNR	Minnesota Department of Natural Resources
ECS	Environmental Classification System (Minnesota DNR)
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Fields
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute, Inc.
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FM	Frequency Modulated
FMA	Fish Management Area
FmHA	Farmers Home Administration
FMV	Friends of the Minnesota Valley
FNAP	Farmland and Natural Area Program
FSA	Farm Service Agency
GAP	Gap Analysis Program
GBCA	Grassland Bird Conservation Areas
GIS	Geographic Information System
GPS	Global Positioning System
HU	Hydrologic Unit
HVTL	High Voltage Transmission Line
IBA	Important Bird Areas
kV	Kilovolt
kV/m	Kilovolts per meter

Abbreviation	Meaning
LGU	Local Government Unit
Ma	Milliamperes
MBTA	Migratory Bird Treaty Act
MCBS	Minnesota County Biological Survey
METC	Metropolitan Council
mG	milliGauss
MnDOA	Minnesota Department of Agriculture
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MRES	Missouri River Energy Services
MRO	Midwest Reliability Organization
MSNRA	Metro Significant Natural Resource Area
MUSA	Metropolitan Urban Service Area
NAC	Noise Area Classification
NEMA	National Electrical Manufacturers Association
NERC	North American Electric Reliability Corporation
NESC	National Electric Safety Code
NHIS	Natural Heritage Information System
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service (soil database)
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
OES	Office of Energy Security, Minnesota Department of Commerce
OTP	Otter Tail Power Company
PCBs	Polychlorinated biphenyls
PDA	Project Development Agreements (CapX2020)
PPSA	Power Plant Siting Act
PSCW	Public Service Commission of Wisconsin
PWI	Public Waters Inventory
RIM	Reinvest in Minnesota
ROC	Region of Comparison
ROW	Right-of-way
SF_6	Sulfur Hexaflouride
SHPO	Minnesota State Historic Preservation Office
SNAs	Scientific and Natural Areas
SWCD	Soil and Water Conservation Districts
SWPPP	Stormwater Pollution Prevention Plan
TH	Trunk Highway
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture

Abbreviation	Meaning
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOR	Very High Frequency Omni-directional Radio Range
WCA	Wetland Conservation Act
WHO	World Health Organization
WMA	Wildlife Management Area
WPA	Waterfowl Protection Area

EXECUTIVE SUMMARY

APPLICANTS

Great River Energy, a Minnesota cooperative corporation ("Great River Energy"), and Northern States Power Company, a Minnesota corporation ("Xcel Energy"), (jointly, "the Applicants"), are applying for a Route Permit to construct the Brookings County – Hampton 345 kilovolt ("kV") transmission project ("Project"). Construction on the Project is expected to begin in the fourth quarter of 2011 and be completed by the second quarter of 2013.

NEED

The Project is one of three 345 kV transmission projects designed to improve the reliability of the bulk electric system serving Minnesota and portions of neighboring states. Significant infrastructure additions are needed to meet the forecasted growth in demand of several thousand megawatts over the course of the next decade. The Project will also enhance customer service capabilities in western Minnesota and the southern suburbs of the Twin Cities. Communities such as New Ulm, Redwood Falls, Apple Valley, and Lakeville, Minnesota, will all significantly benefit from the addition of a new 345 kV source. Additionally, the Project will provide generation outlet capability of several hundred megawatts in the Buffalo Ridge area. The Applicants' request for Certificates of Need for the Project is pending before the Minnesota Public Utilities Commission ("Commission"). In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and others for Certificates of Need for the Cap X 345-kV Transmission Projects, Docket No. ET-2, E-002, et al./CN-06-1115 ("Certificate of Need Application"). A decision on the Certificate of Need proceeding is anticipated in spring 2009.

THE PROJECT

The Project consists of 345 kV transmission line facilities and substation connections between the existing Brookings County Substation near White, South Dakota, and a new Hampton Substation near Hampton, Minnesota and between the Lyon County Substation near the City of Marshall, Minnesota, and the Minnesota Valley Substation near Granite Falls, Minnesota. The proposal includes the construction of associated facilities including four new substations, expansion of four existing substations and related transmission line interconnections. The specific facilities are as follows:

- Brookings County Substation – Lyon County Substation 345 kV transmission line section will be built with double circuit structures, with one circuit strung at the time of installation. A second circuit can be added to this "double circuit capable" transmission line in the future when conditions warrant.
- Lyon County Substation – Hazel Creek Substation – Minnesota Valley Substation 345 kV transmission line sections will also be constructed as double circuit structures with one circuit strung at the time of installation. The Hazel Creek Substation – Minnesota Valley Substation section will be initially operated at 230 kV.
- Lyon County Substation – Cedar Mountain Substation – Helena Substation 345 kV transmission line sections will be constructed as double circuit facilities, *i.e.* two circuits strung upon installation.

- Helena Substation – Lake Marion Substation – Hampton Substation 345 kV transmission line sections will be constructed as double circuit structures with one circuit strung at the time of installation.
- A new Hazel Creek Substation south of Granite Falls, Minnesota.
- A new Helena Substation near New Prague in the Helena and Derrynane township areas, Minnesota.
- A new Cedar Mountain Substation near Franklin, Minnesota.
- A new Hampton Substation near Hampton, Minnesota.
- Modifications and additions to four existing substations to accommodate the new transmission line facilities.
- Transmission system interconnections between the Cedar Mountain Substation and the existing Minnesota Valley – Franklin – New Ulm 115 kV transmission line; the Helena Substation and the existing Wilmarth – Blue Lake 345 kV transmission line; and the Hampton Substation and the existing Prairie Island – Blue Lake 345 kV transmission line.

The 345 kV transmission line facilities will be constructed primarily with single-pole self-weathering rust-colored steel structures. The height of the poles will range from 130 to 175 feet and spans between poles are expected to average 1,000 feet. The typical right-of-way ("ROW") for the 345 kV transmission line will be 150 feet. There may be limited circumstances where specialty structures will be used and a greater ROW of up to 180 feet may be required. The 115 kV transmission line facilities connecting at the Cedar Mountain Substation will be constructed with wood or steel horizontal post structures. The height of the poles would be 65 to 90 feet and spans are expected to average 350 feet. The ROW for the 115 kV facilities will be up to 100 feet.

ROUTE PERMITTING PROCESS/PROPOSED ROUTES

This Application is submitted under the Full Permitting Process Minn. Stat. § 216E.03; Minn. Rules 7849.5200-7849.5340. The applicable statutes and rules require that an applicant provide at least two proposed routes for a project and state a preference for one of the proposed routes Minn. Stat. § 216E.03, subd. 3; Minn. Rules 7849.5220, Subp. 2(C). A "route" is defined as "the location of a high voltage transmission line between two end points," up to 1.25 miles wide. Minn. Stat. § 216E.01, subd. 8.

The Applicants spent more than a year analyzing and evaluating segments and gathering input from stakeholders. The Project team hosted open houses and routing work group meetings throughout the Project area and met with State and federal agencies, local governments and Project area landowners. The Project team also evaluated Geographic Information System data from local, State, and federal agencies, reviewed aerial photographs, and made numerous visits to the Project area to gather additional site-specific information. Through this process, the Applicants developed two routes, the "Preferred Route" and the "Alternate Route." Both routes follow existing ROWs and agricultural field lines, where possible. In each case, the Applicants identified a route width of 1,000 feet for the majority of the route length. In some specific areas, including the areas around new substations, a wider route width of up to 1.25 miles is requested to accommodate site-specific concerns and system interconnections.

A general description of each route is presented below and a map showing both routes is included at the end of this Executive Summary. In-depth analyses of each route, along with detailed land use maps, are presented in other chapters in this Application and appendices.

Preferred Route

The Preferred Route includes six 345 kV transmission line sections between the South Dakota border and a proposed Hampton Substation near Hampton, Minnesota. The approximate length of the Preferred Route is 237 miles and the estimated cost is $700 million (2007 dollars). Moving from west to east, the Preferred Route begins near Hendricks, Minnesota, passes north of Marshall, and then takes a southerly route via Franklin and Le Sueur. The Preferred Route then heads north of New Prague and Elko New Market to terminate at the proposed substation near Hampton. The Lyon County–Hazel Creek–Minnesota Valley section of the Preferred Route heads north from the existing Lyon County Substation and follows an existing 115 kV transmission line corridor north to connect into a new Hazel Creek Substation. The route then crosses the Minnesota River near Granite Falls ("Granite Falls crossing") to connect into the existing Minnesota Valley Substation. The Preferred Route also crosses the Minnesota River southeast of Franklin ("Brown County crossing") and just north of Le Sueur ("Le Sueur Treatment Pond crossing").

Alternate Route

The Alternate Route is composed of six 345 kV transmission line sections between the South Dakota border and a proposed Hampton Substation near Hampton, Minnesota. The approximate length of the Alternate Route is 262 miles and estimated cost is $755 million (2007 dollars). Moving from west to east, the Alternate Route begins near Hendricks, Minnesota, passes south of Marshall, and then takes a northerly route via Redwood Falls, Franklin and Belle Plaine. The Alternate Route then heads south of New Prague and Elko New Market to terminate at the proposed Hampton Substation. The Lyon County-Hazel Creek-Minnesota Valley section of the Alternate Route heads north from the Lyon County Substation along an existing 69 kV transmission line for seven miles and then follows field lines and roads and connects to a new Hazel Creek Substation, crosses the Minnesota River at the Granite Falls crossing, and then connects into the existing Minnesota Valley Substation. The Alternate Route also crosses the Minnesota River north of Redwood Falls ("Redwood crossing") and north of Belle Plaine ("West Belle Plaine crossing").

ENVIRONMENTAL IMPACTS

The new transmission facilities will traverse primarily agricultural land. It is estimated that permanent easements totaling between 4,300 and 4,800 acres of land will be required for the transmission line. In addition, the Applicants will also seek to acquire up to 40 acres of land for each new substation and up to 20 acres of land for each substation expansion. No displacement of homes or businesses is expected to occur.

A significant environmental resource affected by the Project is the Minnesota River. The transmission line will cross the Minnesota River at three different locations. The specific crossing locations are dependent on the route selected. Impacts to the Minnesota River area will be minimized by using crossing locations with existing infrastructure where possible and constructing specialty structures such as H-frames or triple circuit poles.

REQUESTED ACTION

The data presented in this Application demonstrate that Project construction along the Preferred Route or the Alternate Route would comply with the applicable standards and criteria set out in

Minnesota Statutes Section 216E.03, subdivision 7, and Minnesota Rules 7849.5900 and 7849.5910. Construction of the Project will support State goals to conserve resources, minimize environmental and human settlement impacts and land use conflicts, and ensure the State's electric energy security through the construction of efficient, cost-effective infrastructure.

The Applicants request that the Commission grant a Route Permit for the Preferred Route because it impacts fewer homes within 500 feet of the proposed route centerline, makes better use of existing ROWs, minimizes impacts to prime farmland, minimizes impacts to natural resources and identified archaeological sites and has fewer overall transmission line miles. With fewer overall transmission line miles, the Preferred Route impacts less land, including agricultural land, and reduces overall costs.

NEXT STEPS

The Commission will determine whether this Application is complete and, if so, refer the matter to the Office of Administrative Hearings. An administrative law judge will preside at a contested case hearing and make a recommendation to the Commission as to whether the Route Permit should be granted and, if so, for what route. As part of the routing proceeding, the Minnesota Department of Commerce, Office of Energy Security, Energy Facility Permitting Staff will prepare an Environmental Impact Statement ("EIS"). The administrative law judge's recommendation and the EIS will be forwarded to the Commission for consideration in making its decision.

COMPLETENESS CHECKLIST

The content requirements for an application with the Commission under the Full Permitting Process are identified in Minnesota Rules 7849.5220, Subparts 2 and 3. The rule requirements are listed in Table ES-1 with references indicating where the information can be found in this Application.

Table ES-1. Route Permit Application Completeness Checklist

Authority	Required Information	Where
Minn. R. 7849.5220, Subp. 2	Route Permit for High Voltage Transmission Line	
A.	a statement of proposed ownership of the facility at the time of filing the application and after commercial operation;	1.1
B.	the precise name of any person or organization to be initially named as permittee or permittees and the name of any other person to whom the permit may be transferred if transfer of the permit is contemplated;	1.2
C.	at least two proposed routes for the proposed high voltage transmission line and identification of the applicant's preferred route and the reasons for the preference;	Executive Summary, 2.0, 4.0
D.	a description of the proposed high voltage transmission line and all associated facilities including the size and type of the high voltage transmission line;	2.2, 3.1
E.	the environmental information required under Minn. R. 7849.5220, Subp. 3;	See Minn. R. 7849.5220, Subp.3 (A)-(H) below.
F.	identification of land uses and environmental conditions along the proposed routes;	6.0, 7.0, 8.0, 9.0
G.	the names of each owner whose property is within any of the proposed routes for the high voltage transmission line;	Appendix L
H.	United States Geological Survey topographical maps or other maps acceptable to the commission showing the entire length of the high voltage	Appendix A

Authority	Required Information	Where
	transmission line on all proposed routes;	
I.	identification of existing utility and public rights-of-way along or parallel to the proposed routes that have the potential to share right-of-way with the proposed line;	3.2, Appendix A
J.	the engineering and operational design concepts for the proposed high voltage transmission line, including information on the electric and magnetic fields of the transmission line;	3.1, 3.4
K.	cost analysis of each route, including the costs of constructing, operating, and maintaining the high voltage transmission line that are dependent on design and route;	2.6
L.	a description of possible design options to accommodate expansion of the high voltage transmission line in the future;	3.1.2
M.	the procedures and practices proposed for the acquisition and restoration of the right-of-way, construction, and maintenance of the high voltage transmission line;	3.3
N.	a listing and brief description of federal, state, and local permits that may be required for the proposed high voltage transmission line;	11.0
O.	a copy of the Certificate of Need or the certified high voltage transmission line list containing the proposed high voltage transmission line or documentation that an application for a Certificate of Need has been submitted or is not required.	1.3
Minn. R. 7849.5220, Subp. 3	Environmental Information	
A.	a description of the environmental setting for each site or route;	6.0, 7.0, 8.0, 9.0
B.	a description of the effects of construction and operation of the facility on human settlement, including, but not limited to, public health and safety, displacement, noise, aesthetics, socioeconomic impacts, cultural values, recreation, and public services;	6.2, 7.1.2, 8.2, 9.1.2
C.	a description of the effects of the facility on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;	6.3, 7.2.3, 8.3, 9.2.3
D.	a description of the effects of the facility on archaeological and historic resources;	6.4, 7.1.4, 8.4, 9.1.4
E.	a description of the effects of the facility on the natural environment, including effects on air and water quality resources and flora and fauna;	6.5, 7.1.5, 8.5, 9.1.5
F.	a description of the effects of the facility on rare and unique natural resources;	6.6, 7.1.6, 8.6, 9.1.6
G.	identification of human and natural environmental effects that cannot be avoided if the facility is approved at a specific site or route;	Various portions of Chapters 6.0, 7.0, 8.0, and 9.0
H.	a description of measures that might be implemented to mitigate the potential human and environmental impacts identified in items A to G and the estimated costs of such mitigative measures.	Various portions of Chapters 6.0, 7.0, 8.0, and 9.0

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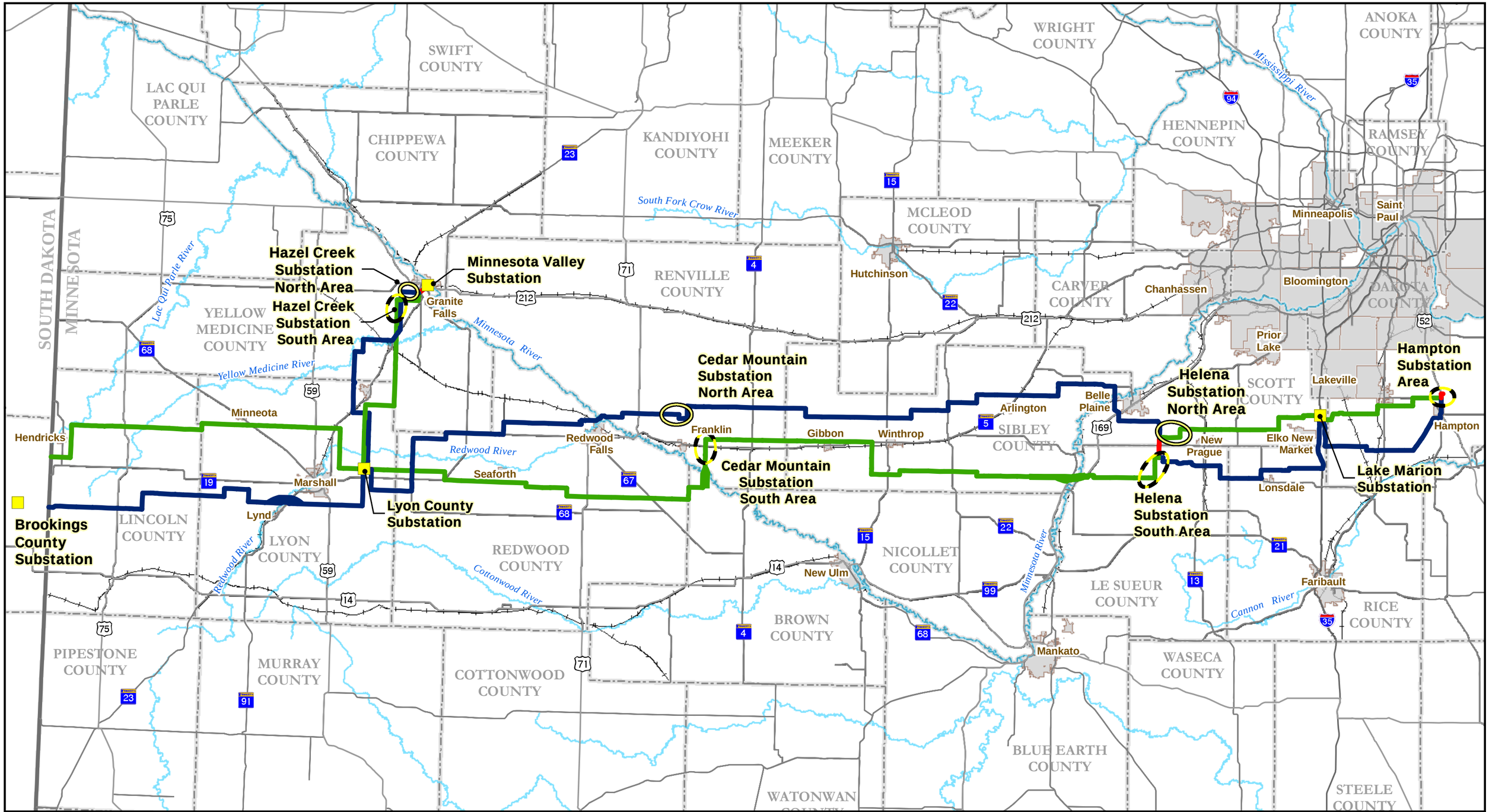

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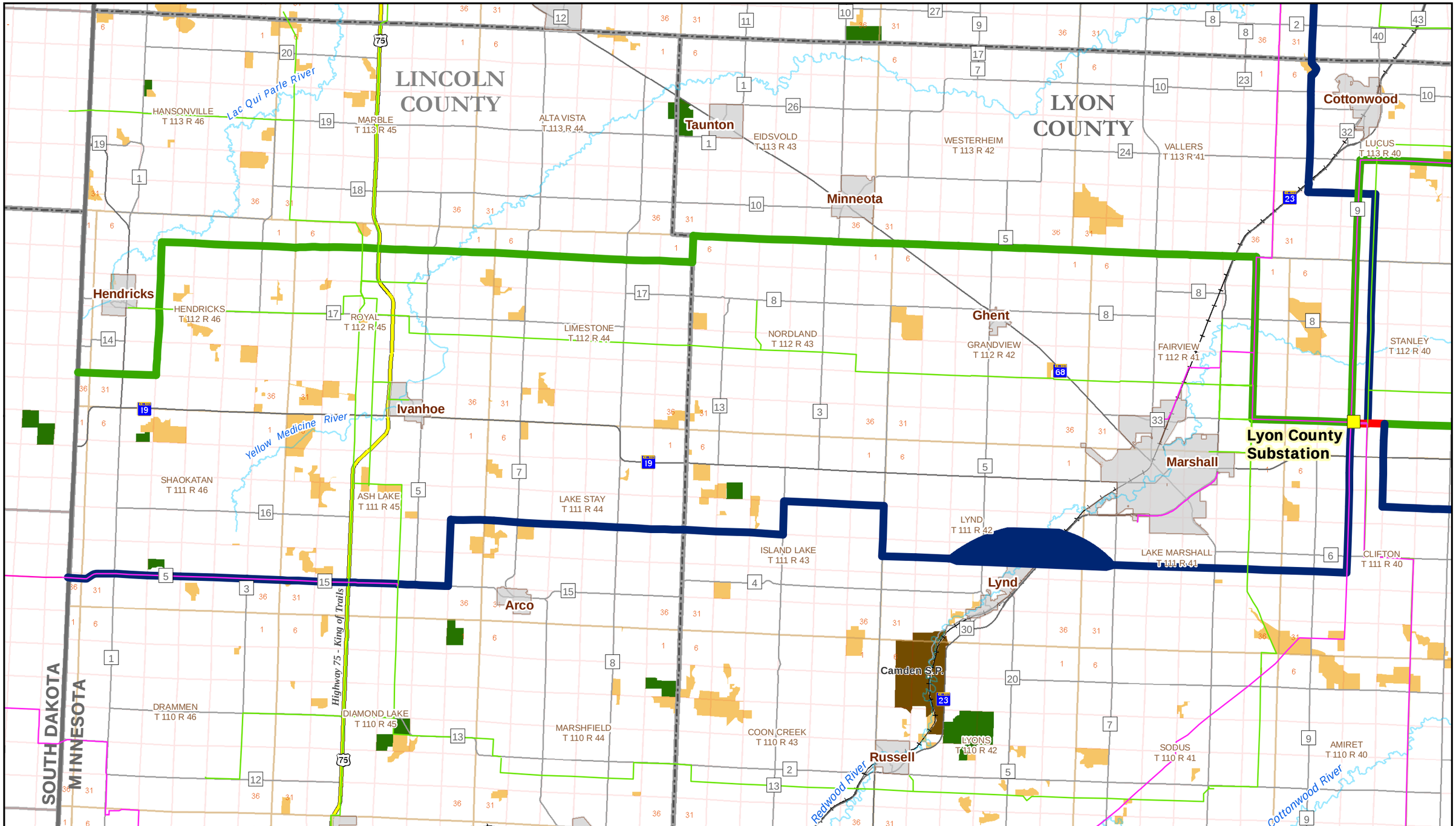
Figure ES-1
Project Overview Map

Route Permit
Brookings County - Hampton
345 kV Transmission Line

Map Document: (\\mspe-gis-file\GISProj\GRE\64620\map_docs\mxd\Route_Permit\document\Executive Summary\map_11x17_L_overview_all_areas_120108.mxd) 12/19/2008



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0 2.5 5 Miles

Project Substations
Preferred Substation Area
Alternate Substation Area
City
Scenic Byway

Transmission Lines
69 kV - Existing
115 kV - Existing
230 kV - Existing
345 kV - Existing

Routes
Preferred
Alternate
Both Preferred & Alternate

Tribal Lands
MN SNA
MN State Park
MN WMA
USFWS WPA

Figure ES-2
Overview Map
Brookings County Substation to Lyon County Substation

Route Permit
Brookings County - Hampton
345 kV Transmission Line

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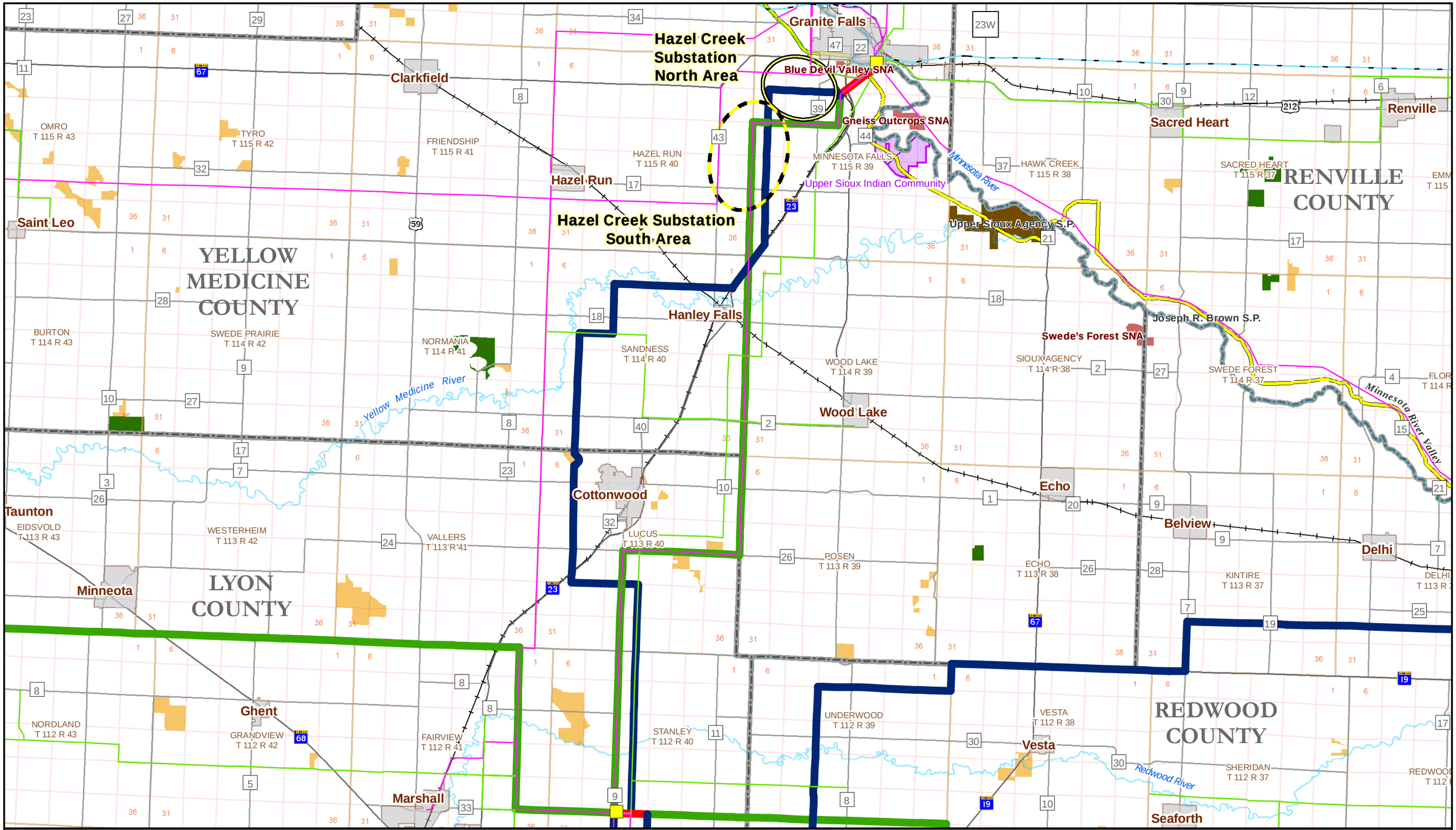

CapX2020
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0 2.5 5 Miles

Project Substations
Preferred Substation Area
Alternate Substation Area
City
Scenic Byway

Transmission Lines
69 kV - Existing
115 kV - Existing
230 kV - Existing
345 kV - Existing

Routes
Preferred
Alternate
Both Preferred & Alternate

Tribal Lands
MN SNA
MN State Park
MN WMA
USFWS WPA

Figure ES-3
Overview Map
Lyon County Substation to Minnesota Valley Substation

Route Permit
Brookings County - Hampton
345 kV Transmission Line

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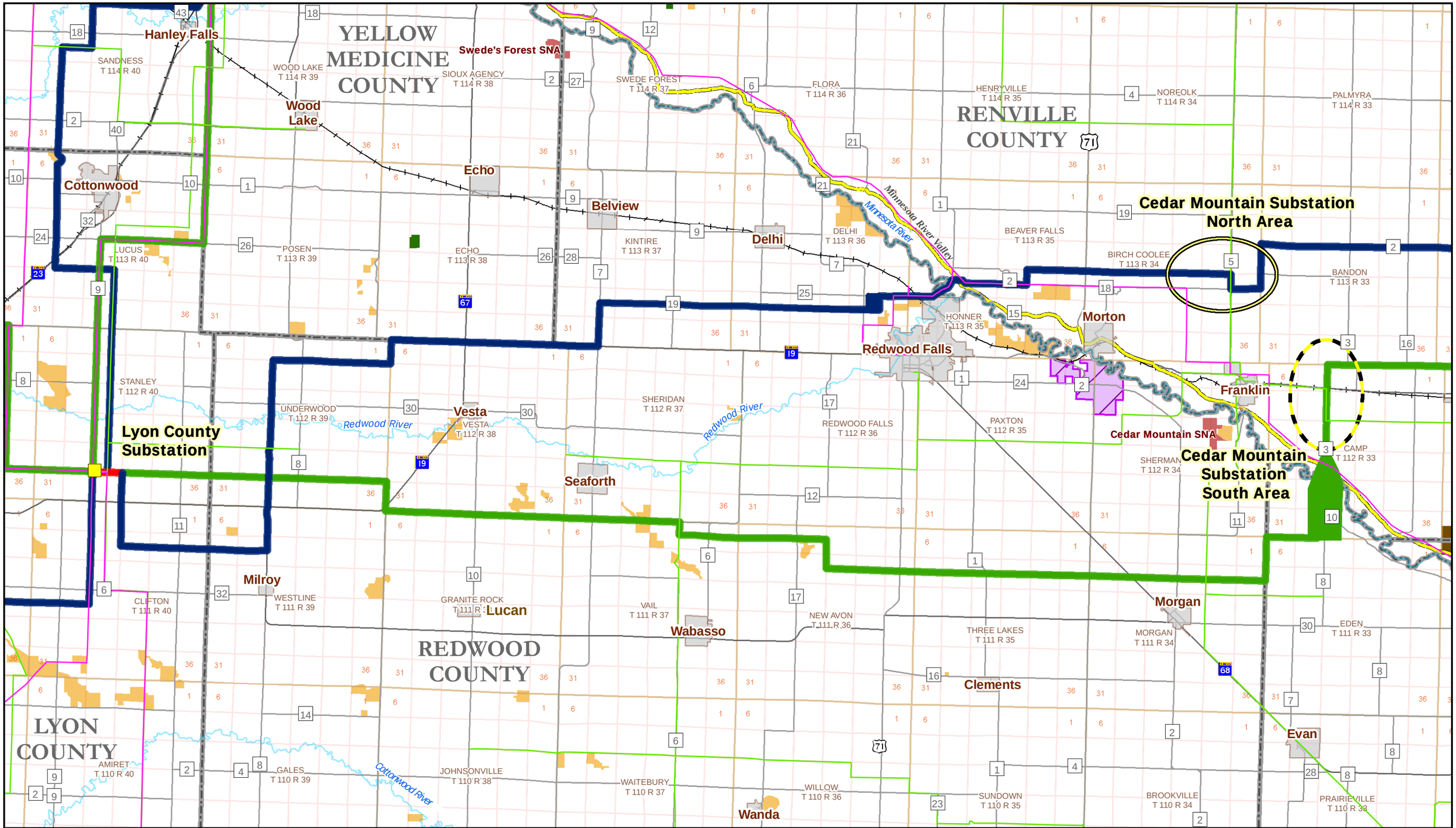

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0 2.5 5 Miles

Project Substations
Preferred Substation Area
Alternate Substation Area
City
Scenic Byway

Transmission Lines
69 kV - Existing
115 kV - Existing
230 kV - Existing
345 kV - Existing

Routes
Preferred
Alternate
Both Preferred & Alternate

Tribal Lands
MN WMA
MN State Park
MN SNA
USFWS WPA

Figure ES-4
Overview Map
Lyon County Substation to Cedar Mountain Substation Area

Route Permit
Brookings County - Hampton
345 kV Transmission Line

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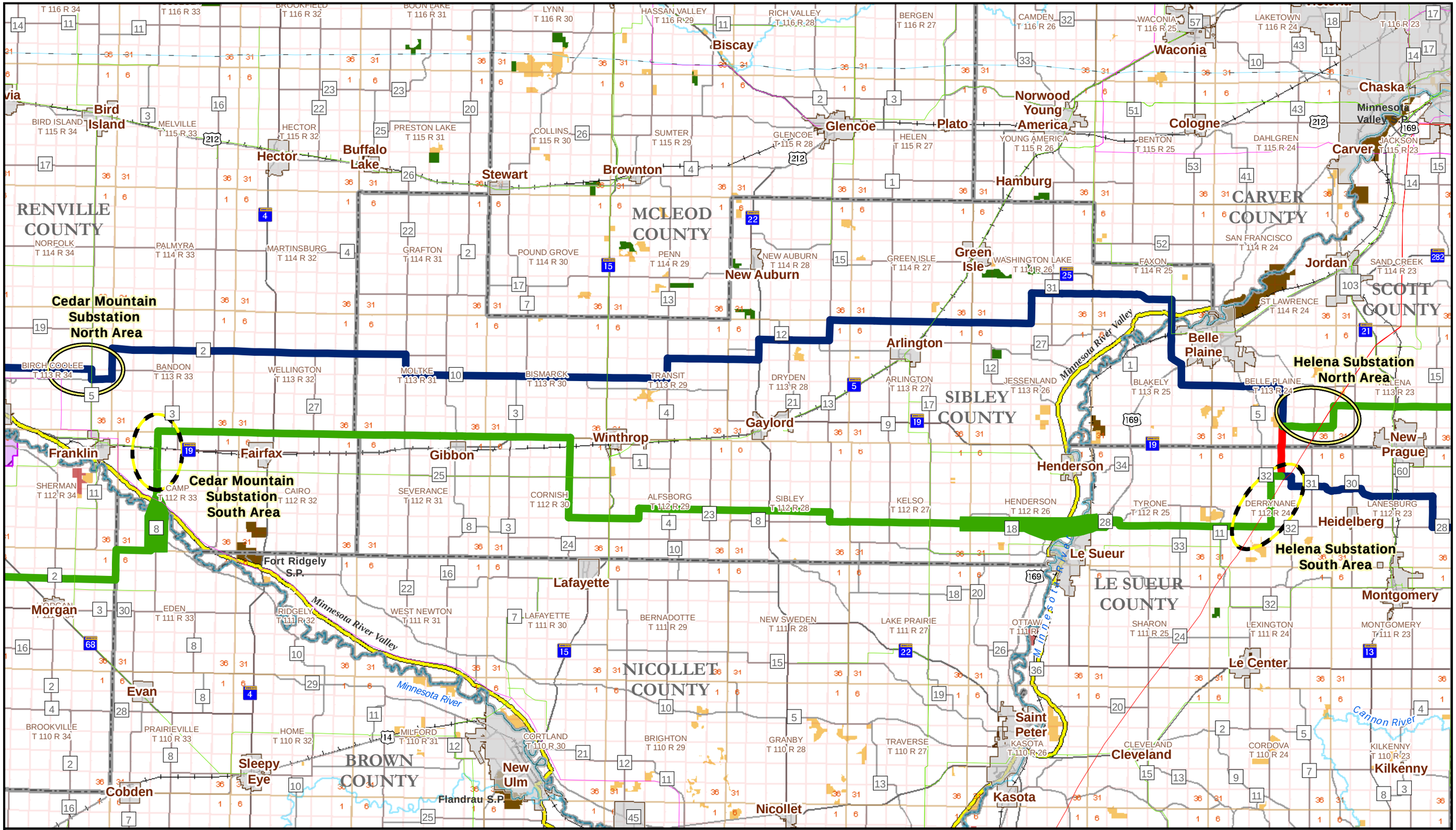

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0 2.5 5 Miles

Project Substations
Preferred Substation Area
Alternate Substation Area
City
Scenic Byway

Transmission Lines
69 kV - Existing
115 kV - Existing
230 kV - Existing
345 kV - Existing

Routes
Preferred
Alternate
Both Preferred & Alternate

Tribal Lands
MN WMA
MN State Park
MN SNA
USFWS WPA

Figure ES-5
Overview Map
Cedar Mountain Substation Area to Helena Substation Area

Route Permit
Brookings County - Hampton
345 kV Transmission Line

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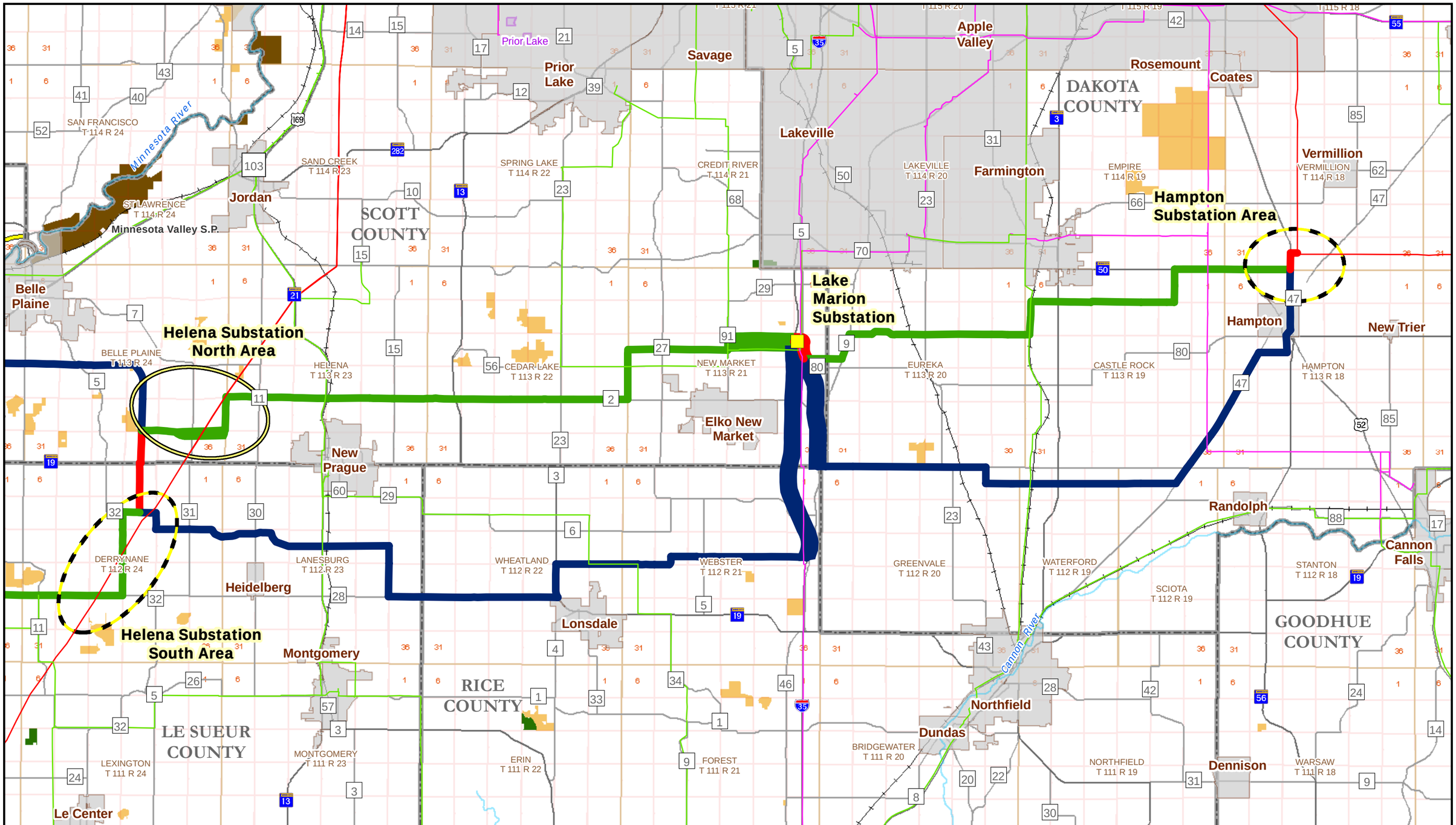

Figure ES-6
Overview Map
Helena Substation Area to Hampton Substation Area

Route Permit
Brookings County - Hampton
345 kV Transmission Line

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