

GREAT RIVER ENERGY

and

MINNESOTA POWER

APPLICATION TO THE
MINNESOTA PUBLIC UTILITIES COMMISSION
FOR A
CERTIFICATE OF NEED and ROUTE PERMIT

MENAHGA AREA 115 KV PROJECT

DOCKET NOS.

ET2, E015/CN-14-787

ET2, E015/TL-14-797



January 15, 2015

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TABLE OF CONTENTS

1	SUMMARY OF THE APPLICATION	1-1
1.1	Introduction.....	1-1
1.2	Great River Energy	1-1
1.3	Minnesota Power	1-3
1.4	Project Contact.....	1-3
1.5	Proposed Project	1-3
1.6	Project Need and Purpose	1-7
	1.6.1 Load-Serving Need	1-7
	1.6.2 MPL Need.....	1-7
1.7	Proposed Route	1-9
1.8	Alternatives	1-9
1.9	Potential Environmental Effects	1-9
1.10	Public Involvement	1-10
1.11	Conclusion	1-11
2	GENERAL PROJECT INFORMATION	2-1
2.1	Certificate of Need Requirement	2-1
2.2	Route Permit	2-1
2.3	Regulatory Process.....	2-2
2.4	Public Participation.....	2-4
2.5	Other Permits/Approvals	2-5
	2.5.1 Local Approvals.....	2-5
	2.5.2 State of Minnesota Approvals.....	2-6
	2.5.3 Federal Approvals.....	2-7
	2.5.4 Other Approvals.....	2-8
3	APPLICANT INFORMATION	3-1
3.1	Proposed Ownership	3-1
3.2	Organization and System Background.....	3-1
	3.2.1 Great River Energy	3-1
	3.2.2 Minnesota Power	3-1
3.3	Existing System	3-2
	3.3.1 Hubbard–Verndale 34.5 kV System	3-2
4	PROPOSED PROJECT	4-1
4.1	Project Description.....	4-1
	4.1.1 Transmission Line.....	4-1
	4.1.2 Associated Facilities	4-9
4.2	Estimated Costs.....	4-11
	Total Project costs are estimated to be approximately \$23 million dollars.	4-11
	4.2.1 Great River Energy	4-11
	4.2.2 Minnesota Power	4-13
	4.2.3 Transmission Line Construction Costs	4-13
	4.2.4 Operation and Maintenance Costs	4-13

4.3	Effect on Rates	4-13
4.4	Project Schedule.....	4-14
4.5	Estimated Line Losses	4-14
4.6	Construction Practices	4-15
4.7	Operation and Maintenance Practices.....	4-15
4.8	Work Force Required.....	4-16
5	PROJECT NEED AND PURPOSE	5-1
5.1	Summary of Need	5-1
	5.1.1 MPL Pump Station Need	5-1
	5.1.2 Load-Serving Need	5-3
5.2	Relationship Between Proposed Project and Overall State Energy Needs.....	5-7
5.3	Data Exemptions.....	5-9
5.4	Affected Load Area.....	5-10
5.5	Peak Demand and Annual Electrical Consumption.....	5-11
	5.5.1 Peak Demand	5-11
	5.5.2 Annual Electrical Consumption.....	5-12
5.6	Forecasts	5-13
	5.6.1 Methodology	5-13
	5.6.2 Demand Forecast Results.....	5-21
	5.6.3 Consumption Forecast Results.....	5-21
	5.6.4 System Capacity.....	5-21
	5.6.5 Transmission Planning/Net Demand and Net Capability	5-22
5.7	Increased Efficiency.....	5-25
5.8	Load Management and Energy Conservation Programs	5-25
	5.8.1 Load Management	5-25
	5.8.2 Energy Conservation.....	5-25
	5.8.3 Conclusion	5-28
5.9	Delay of the Project	5-28
5.10	Effect of Promotional Practices	5-29
6	ALTERNATIVES TO THE PROJECT	6-1
6.1	Analysis of Alternatives.....	6-1
6.2	Generation Alternative.....	6-2
	6.2.1 Peaking Generation.....	6-2
	6.2.2 Distributed Generation.....	6-2
	6.2.3 Renewable Generation	6-3
6.3	Upgrade of Existing Facilities	6-3
6.4	Alternative Voltages	6-4
	6.4.1 Distribution Voltage.....	6-4
	6.4.2 Higher Voltages	6-4
6.5	Different Conductor	6-4
6.6	Alternative Endpoints	6-5
	6.6.1 New Orton 115/34.5 kV Source.....	6-5
6.7	Double Circuiting.....	6-7
6.8	Direct Current Alternative	6-7
6.9	Undergrounding	6-7

6.10	No-Build Alternative	6-9
6.10.1	Demand Side Management and Conservation	6-9
6.10.2	Reactive Power Supply	6-9
7	ALTERNATIVE ROUTES.....	7-1
7.1	Alternative Requirement	7-1
7.2	Rejected Route Alternatives	7-1
7.2.1	East Alternative.....	7-1
7.2.2	Central Alternative Segment.....	7-3
8	ENGINEERING, DESIGN, CONSTRUCTION AND RIGHT-OF-WAY ACQUISITION	8-1
8.1	Transmission Line Engineering and Operation Design	8-1
8.1.1	Transmission Structure Design and Right-of-Way Requirements.....	8-1
8.1.2	Design Options to Accommodate Future Expansion.....	8-1
8.2	Identification of Existing Utility and Public Rights-of-Way	8-1
8.3	Transmission Line Right-of-Way Acquisition Procedures	8-2
8.4	Construction Procedures	8-3
8.5	Restoration Procedures	8-5
8.6	Operation and Maintenance	8-6
8.7	Electric and Magnetic Fields (EMF).....	8-6
8.7.1	Electric Fields	8-7
8.7.2	Magnetic Fields.....	8-10
8.8	Stray Voltage	8-14
8.9	Corona.....	8-14
8.9.1	Radio and Television Interference	8-15
8.9.2	Audible Noise	8-15
8.9.3	Ozone and Nitrogen Oxide Emissions.....	8-15
9	ENVIRONMENTAL ANALYSIS OF ROUTES.....	9-1
9.1	Environmental Setting	9-1
9.2	Human Settlement.....	9-2
9.2.1	Public Health and Safety.....	9-2
9.2.2	Displacement/Proximity of Project to Businesses and Residences	9-4
9.2.3	Noise	9-6
9.2.4	Aesthetics	9-10
9.2.5	Socioeconomic	9-11
9.2.6	Cultural Values	9-12
9.2.7	Recreation	9-13
9.2.8	Public Services and Transportation	9-17
9.3	Land Use/Zoning	9-18
9.4	Land-based Economies	9-25
9.4.1	Agriculture	9-25
9.4.2	Forestry	9-27
9.4.3	Tourism.....	9-28
9.4.4	Mining.....	9-28
9.5	Archaeological and Historic Resources	9-30

9.5.1	Previously Recorded Archaeological Sites	9-30
9.5.2	Previously Recorded Standing Historic Structures	9-31
9.6	Natural Environment	9-33
9.6.1	Air Quality	9-33
9.6.2	Water Resources	9-33
9.6.3	Flora and Fauna	9-42
9.6.4	Invasive Species Management	9-44
9.7	Rare and Unique Natural Resources	9-45
9.8	Physiographic Features	9-51
9.8.1	Topography	9-51
9.8.2	Geology	9-52
9.8.3	Soils	9-52
9.9	Unavoidable Impacts	9-56
10	APPLICATION OF RULE CRITERIA	10-1
10.1	Certificate of Need	10-1
10.1.1	Denial Would Adversely Affect the Energy Supply	10-1
10.1.2	There is No Reasonable and Prudent Alternative	10-2
10.1.3	The Project will Protect the Environment and Provide Benefits	10-2
10.1.4	The Project will Comply with All Applicable Requirements	10-2
10.2	Route Permit	10-3
10.3	Conclusion	10-3

LIST OF TABLES

Table 2-1.	List of Possible Permits	2-6
Table 3-1.	Affected Load Area and Project Area Conductors	3-4
Table 4-1.	Estimated Great River Energy Project Costs (2014 Dollars).....	4-12
Table 4-2.	Estimated Minnesota Power Project Costs (2014 Dollars).....	4-13
Table 4-3.	Summary of Line Losses	4-15
Table 5-1.	Substation Voltage Criteria.....	5-5
Table 5-2.	Transmission Line Thermal Loading Criteria.....	5-5
Table 5-3.	Historical Monthly Coincident Peak Demand for Affected Load Area (MW) .	5-11
Table 5-4.	Historical Monthly Energy Consumption of Affected Load Area (MWh).....	5-12
Table 5-5.	Affected Load Area 10-Year Historical Coincident Peak Load Served by Todd-Wadena (MW)	5-14
Table 5-6.	Affected Load Area Five-Year Historical Coincident Peak Load Served by Todd-Wadena (MW)	5-15
Table 5-7.	Forecasted Average Annual Growth Rate	5-16
Table 5-8.	Forecasted 2018 Load Levels Used for the Out-Year Study	5-17
Table 5-9.	9-Year Historical Coincident Peak Load Data for Affected Load Area Served by Minnesota Power (MW)	5-18
Table 5-10.	Forecasted 2018 Load Levels Used for the Out-Year Study	5-20
Table 5-11.	Winter Season Forecast Peak Demand per Year in MW (Todd-Wadena and Minnesota Power)	5-20
Table 5-12.	Forecasted Annual Energy Consumption	5-21
Table 5-13.	Duration that the Affected Load Area is at Risk of Experiencing Inadequacies (Todd-Wadena and Minnesota Power)	5-22
Table 5-14.	Minnesota Power - CIP Projects in the Menahga Project Area	5-27
Table 5-15.	Critical Demand Analysis – Todd-Wadena and Minnesota Power	5-29
Table 8-1.	Calculated Electric Fields (kV/M) for Proposed Transmission Line Designs (One meter (3.28 feet) above ground).....	8-7
Table 8-2.	Magnetic Fields of Common Electric Appliances (mG)	8-11
Table 8-3.	Calculated Magnetic Fields (mG) for Proposed Transmission Line Designs(One meter (3.28 feet) above ground).....	8-12
Table 9-1.	Proximity of Homes and Businesses to Proposed Transmission Line Centerline	9-5
Table 9-2.	Common Noise Sources and Levels	9-6
Table 9-3.	MPCA Noise Limits by Noise Area Classification (dBA)	9-7
Table 9-4.	Anticipated Transmission Line Noise Levels with Heavy Rain	9-8
Table 9-5.	Socioeconomic Characteristics within the Project Area	9-11
Table 9-6.	Recreational Resources in the Project Vicinity	9-13
Table 9-7.	Previously Recorded Archaeological Resources in Project Vicinity.....	9-31
Table 9-8.	Previously Recorded Standing Historic Structures in Project Vicinity	9-32
Table 9-9.	PWI Waters (Hubbard and Wadena Counties)	9-38
Table 9-10.	Wetland Types within the ROW (NWI)	9-39
Table 9-11.	Rare and Unique Resources in the Project Vicinity.....	9-46
Table 9-12.	Soil Associations in the Vicinity of the Project	9-52

LIST OF FIGURES

Figure 1-1.	Great River Energy Service Territory.....	1-2
Figure 1-2.	Minnesota Power Service Territory	1-4
Figure 1-3.	Proposed Project	1-6
Figure 1-4.	Hubbard-Verndale System.....	1-8
Figure 3-1.	Hubbard-Verndale 34.5 kV Sub-transmission System	3-3
Figure 4-1A.	Proposed Project-North.....	4-2
Figure 4-1B.	Proposed Project-Central	4-3
Figure 4-1C.	Proposed Project-South.....	4-4
Figure 4-2.	Typical Transmission Structure Types	4-7
Figure 4-3.	Photos of Typical 115 kV Transmission Structures	4-8
Figure 5-1.	Affected Load Area.....	5-4
Figure 5-2.	Hubbard-Twin Lakes 34.5 kV Outage with Existing System Conditions	5-6
Figure 5-3.	Verndale-Verndale Distribution 34.5 kV Outage with Existing System Conditions	5-8
Figure 5-4.	Historical Monthly Peak Demand of the Affected Load Area (MW)	5-12
Figure 5-5.	Five-Year Historical Annual Energy Consumption of the Affected Load Area.....	5-13
Figure 5-6.	Affected Load Area Served by Todd-Wadena-10-Year Historical Coincident Peak Demand Growth Trend.....	5-15
Figure 5-7.	Affected Load Area Five-Year Historical Coincident Peak Load Growth Trend – Todd-Wadena	5-16
Figure 5-8.	Affected Load Area Nine-Year Historical Peak Demand Growth Trend Served by Minnesota Power	5-19
Figure 5-9.	Affected Load Area Five-Year Historical Peak Demand Growth Trend Served by Minnesota Power	5-19
Figure 5-10.	Load Duration Curve – Todd-Wadena and Minnesota Power.....	5-23
Figure 5-11.	Capacity of the Affected Load Area Transmission System with the Proposed Project versus Peak Demand (Todd-Wadena and Minnesota Power).....	5-24
Figure 5-12.	Minnesota Power’s 2004–2013 CIP Achievements	5-26
Figure 6-1.	Alternative Endpoints	6-6
Figure 7-1.	Rejected Routes	7-2
Figure 8-1.	Standard Tree Removal Practices	8-4
Figure 8-2.	115/115 kV Double Circuit Line Electric Field Profile.....	8-8
Figure 8-3.	115 kV with 7.2 kV Underbuild Line Electric Field Profile.....	8-8
Figure 8-4.	115 kV Single Circuit Line Electric Field Profile	8-9
Figure 8-5.	115/115 kV Double Circuit Line Magnetic Field Profile	8-13
Figure 8-6.	115 kV with 7.2 kV Underbuild Line Magnetic Field Profile.....	8-13
Figure 8-7.	115 kV Single Circuit Line Magnetic Field Profile.....	8-14

Figure 9-1A.	Recreation Areas – North.....	9-14
Figure 9-1B.	Recreation Areas – Central	9-15
Figure 9-1C.	Recreation Areas – South.....	9-16
Figure 9-2A.	Land Use-North	9-19
Figure 9-2B.	Land Use-Central	9-20
Figure 9-2C.	Land Use-South	9-21
Figure 9-3A.	Zoning-North	9-22
Figure 9-3B.	Zoning-Central.....	9-23
Figure 9-3C.	Zoning-South	9-24
Figure 9-4.	Gravel Pit Locations in the Project Area	9-29
Figure 9-5A.	Hydrologic Features-North	9-34
Figure 9-5B.	Hydrologic Features-Central.....	9-35
Figure 9-5C.	Hydrologic Features-South	9-36
Figure 9-6A.	Rare Features-North.....	9-47
Figure 9-6B.	Rare Features-Central	9-48
Figure 9-6C.	Rare Features-South.....	9-49
Figure 9-7A.	Soils-North.....	9-53
Figure 9-7B.	Soils-Central	9-54
Figure 9-7C.	Soils-South.....	9-55

APPENDICES

- Appendix A** Notice of Project and Open House
(Local Governmental Unit Example Letter)
- Appendix B** Order of the Minnesota Public Utilities Commission Granting Exemptions, dated December 3, 2014
- Appendix C** Certificate of Need Application Requirements Completeness Checklist
- Appendix D** Letter from Carole Schmidt of Great River Energy to Dr. Burl Haar, Executive Secretary of the Minnesota Public Utilities Commission, informing the Commission of Applicants' intent to file a route permit application under the alternative review procedures, dated December 11, 2014
- Appendix E** Route Permit Application Requirements Completeness Checklist
- Appendix F** Order of the Minnesota Public Utilities Commission Approving a Notice Plan, dated December 8, 2014
- Appendix G** Detailed Route Maps
- Appendix H** Substation Plot Plans (Preliminary)
- Appendix I** Great River Energy Demand Side Management Programs
- Appendix J** List of Landowners within Proposed Route
- Appendix K** Agency Correspondence

LIST OF ACRONYMS

ACRONYMS	
AC	Alternating Current
ACSR	Aluminum Conductor Steel Reinforced
ACSS	Aluminum Conductor Steel Supported
ALJ	Administrative Law Judge
Applicants	Great River Energy and Minnesota Power
BMPs	Best Management Practices
BPA	Bonneville Power Administration
CIP	Conservation Improvement Program
Commission	Minnesota Public Utilities Commission
CON	Certificate of Need
Corps	United States Army Corps of Engineers
CR	County Road
CSAH	County State Aid Highway
dBA	Decibel – A weighted
DC	Direct Current
DNR	Minnesota Department of Natural Resources
DSM	Demand Side Management
EA	Environmental Assessment
EERA	Energy Environmental Review and Analysis
EF	Electric Fields
ELF	Extremely Low Frequency
EMF	Electric and Magnetic Fields
EPA	United States Environmental Protection Agency
EQB	Minnesota Environmental Quality Board
G	Gauss
HVDC	High Voltage Direct Current
HVTL	High Voltage Transmission Line
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IEEE	Institute of Electrical and Electronic Engineers
IMDs	Implantable Medical Devices
kV	Kilovolt
kV/m	Kilovolts Per Meter
LGUs	Local Governmental Units
LHVTL	Large High Voltage Transmission Line
mA rms	MilliAmperes Root Mean Square
MBS	Moderate Biodiversity Significance
MF	Magnetic Fields
mG	Milligauss
MHS	Minnesota Historical Society
MISO	Midcontinent Independent System Operator
MnDOT	Minnesota Department of Transportation
MPL	Minnesota Pipe Line Company

ACRONYMS	
MPCA	Minnesota Pollution Control Agency
MRO	Midwest Reliability Organization
MTEP	MISO Transmission Expansion Plan
MVAR	Mega Volt Ampere Reactive
MW	Megawatt
MWh	Megawatt hours
NAC	Noise Area Classifications
NERC	North American Electric Reliability Council
NESC	National Electrical Safety Code
NIEHS	National Institute of Environmental Health Sciences
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
Project	Menahga Area 115 kV Project
PWI	Public Waters Inventory
ROW	Right-of-Way
SHPO	State Historic Preservation Office
SNA	Scientific and Natural Area
SWPPP	Stormwater Pollution Prevention Plan
TH	Trunk Highway
Todd-Wadena	Todd-Wadena Electric Cooperative
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WHO	World Health Organization
WMA	Wildlife Management Area

SUMMARY OF THE APPLICATION

1 SUMMARY OF THE APPLICATION

1.1 Introduction

Great River Energy and Minnesota Power (Applicants) are applying to the Minnesota Public Utilities Commission (Commission) for a Certificate of Need (CON) and a Route Permit to construct approximately 22.5 miles of new overhead 115 kilovolt (kV) transmission line in Hubbard, Wadena and Becker counties, Minnesota (Project).

Applicants propose to construct a new 115 kV transmission line between the existing Great River Energy Hubbard Substation and the proposed Todd-Wadena Electric Cooperative (Todd-Wadena) “Red Eye” distribution substation; construct the proposed Minnesota Power “Straight River” Substation, Great River Energy “Blueberry” Substation, and Todd-Wadena Red Eye Substation (to serve the proposed Minnesota Pipe Line Company (MPL) “Sebeka” pump station); relocate the existing Todd-Wadena Menahga Substation to the Blueberry Substation site and convert the voltage from 34.5 kV to 115 kV; and modify the existing Great River Energy Hubbard Substation and Minnesota Power Pipeline Substation.

Approximately 4.5 of the 22.5 miles of transmission line will be double circuit 115 kV/115 kV transmission line to accommodate a future project to the north, and approximately 18 miles will be single circuit 115 kV transmission line. Some segments of the transmission line will carry distribution line underbuild.

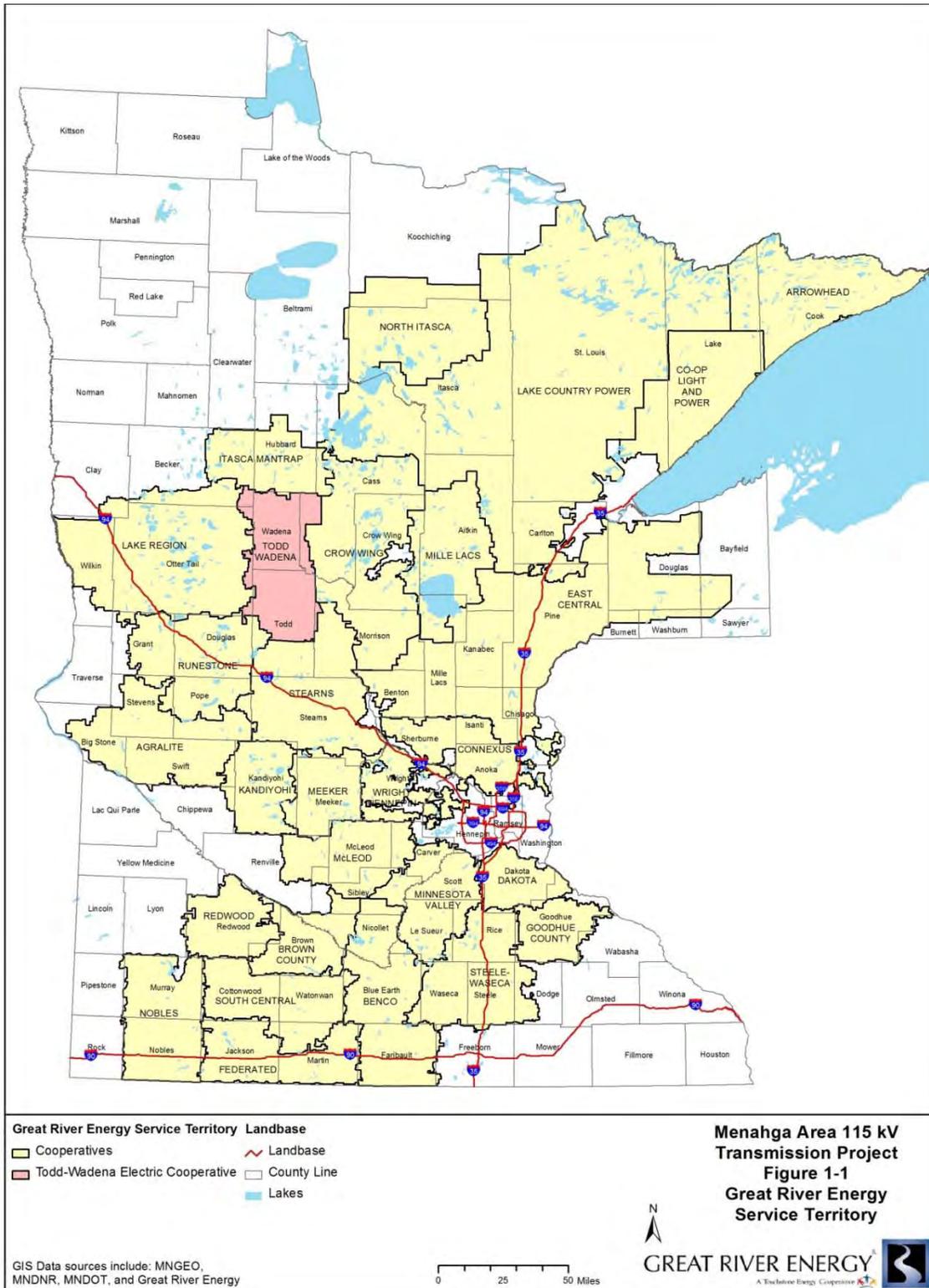
Applicants anticipate start of construction in 2016 and energization of the line in spring 2017.

1.2 Great River Energy

Great River Energy is a not-for-profit generation and transmission cooperative based in Maple Grove, Minnesota. Great River Energy provides electrical energy and related services to 28 member cooperatives, including Todd-Wadena, the distribution cooperative serving the area proposed to be supplied by the proposed transmission line (**Figure 1-1**). Great River Energy’s distribution cooperatives, in turn, supply electricity and related services to more than 650,000 residential, commercial, and industrial customers in Minnesota and Wisconsin.

Todd-Wadena provides electricity and related services to approximately 8,000 residential, commercial and industrial customers in Minnesota. Approximately 800 residential, commercial and industrial members of this cooperative would benefit from the proposed high voltage transmission line during normal system operation and up to 1400 would benefit during contingency conditions.

Figure 1-1. Great River Energy Service Territory



Great River Energy's generation system includes a mix of baseload and peaking plants, including coal-fired, refuse-derived fuel, natural gas and oil plants as well as wind generators (a total of approximately 3,500 megawatts (MW)). Great River Energy owns approximately 4,600 miles of transmission line in Minnesota, North Dakota, South Dakota, and Wisconsin.

Great River Energy's transmission network is interconnected with the regional transmission grid to promote reliability and Great River Energy is a member of the Midwest Reliability Organization (MRO) and the Midcontinent Independent System Operator (MISO).

1.3 Minnesota Power

Minnesota Power is an investor-owned public utility headquartered in Duluth, Minnesota. Minnesota Power supplies retail electric service to 143,000 retail customers and wholesale electric service to 16 municipalities in a 26,000-square-mile electric service territory located in northeastern Minnesota (**Figure 1-2**). Minnesota Power generates and delivers electric energy through a network of transmission and distribution lines and substations throughout northeastern Minnesota. Minnesota Power's transmission network is interconnected with the regional transmission grid to promote reliability and Minnesota Power is a member of the MRO and MISO.

1.4 Project Contact

The contact for the Menahga Area 115 kV Project is:

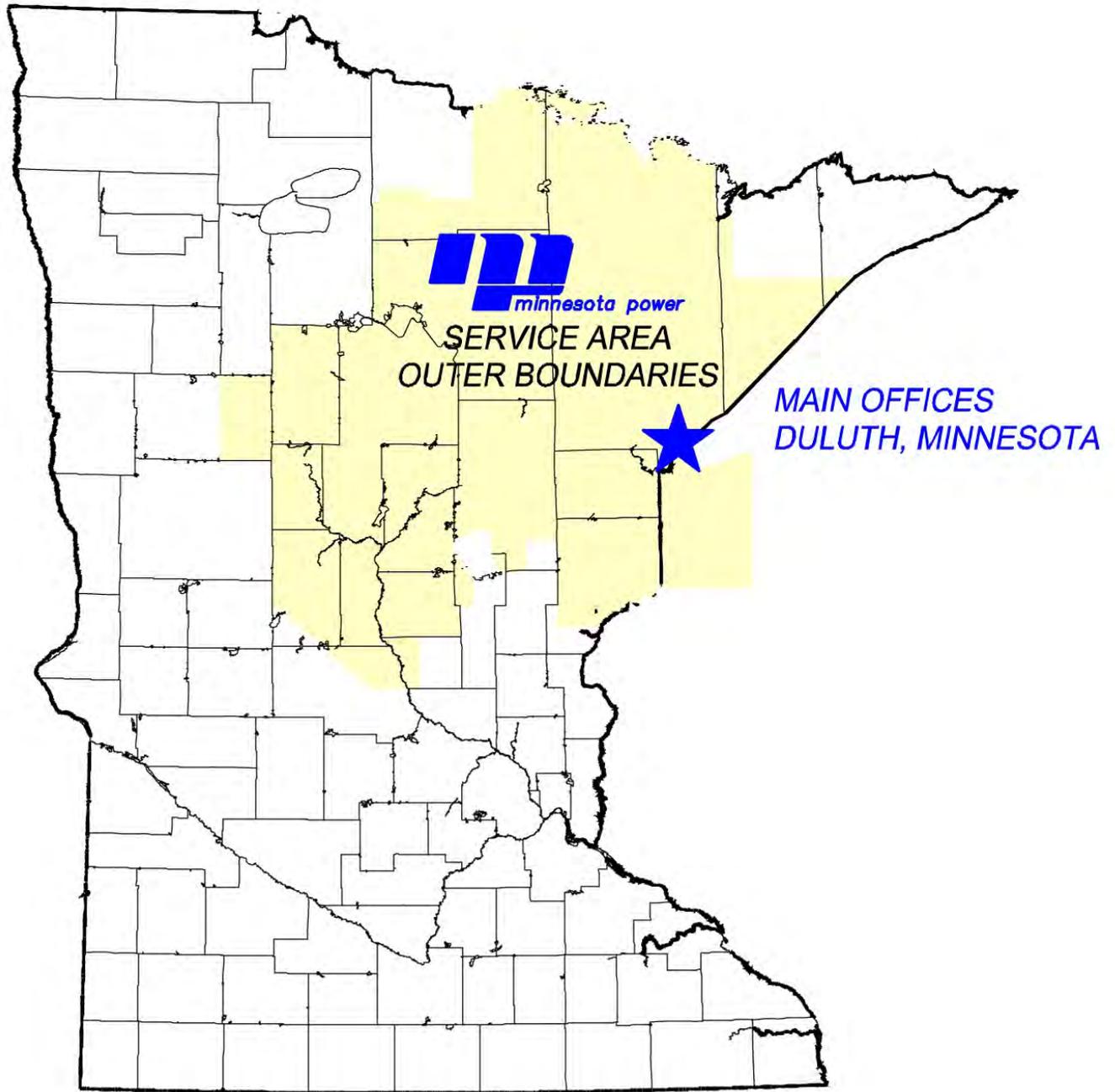
Carole L. Schmidt
Great River Energy
Supervisor, Transmission Permitting and Compliance
12300 Elm Creek Blvd.
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763-445-5214
cschmidt@greenergy.com

1.5 Proposed Project

Applicants have studied the power service to the region and have determined that new 115 kV electrical facilities are needed to meet existing electric load and future electric load requirements. Great River Energy has an additional need to provide electric service to a proposed Todd-Wadena distribution substation that will serve the proposed MPL Sebeka pump station. MPL submitted a Certificate of Need application for the Minnesota Pipe Line Reliability Project on July 25, 2014 (MPUC Docket No. PL-5/CN-14-320).

The proposed plan to address the power system overloads in the area and to serve the proposed Todd-Wadena distribution substation includes:

Figure 1-2. Minnesota Power Service Territory



- Construction of approximately 7 miles of east-west transmission line between the existing Great River Energy Hubbard Substation and proposed new Minnesota Power Straight River Substation, which will replace the existing Minnesota Power 34.5 kV “522” feeder line. The first 4.5 miles between the Hubbard Substation and County Road (CR) 115 will be double-circuit 115 kV line to accommodate a future Great River Energy project to the north. The approximate 2.5 miles between CR 115 and the proposed Minnesota Power Straight River Substation will be single-circuit 115 kV line.
- Construction of a generally north to south, single-circuit transmission line (approximately 15.5 miles) between the proposed Minnesota Power Straight River Substation and the proposed new Todd-Wadena Red Eye distribution substation.
- Construction of the proposed new Minnesota Power Straight River Substation, Great River Energy Blueberry Substation, and Todd-Wadena Red Eye Substation (that will serve the proposed new MPL pump station); relocation of the existing Todd-Wadena Menahga Substation to the proposed new Blueberry Substation site and conversion of the voltage from 34.5 kV to 115 kV; and modifications to the existing Great River Energy Hubbard Substation and the Minnesota Power Pipeline Substation.

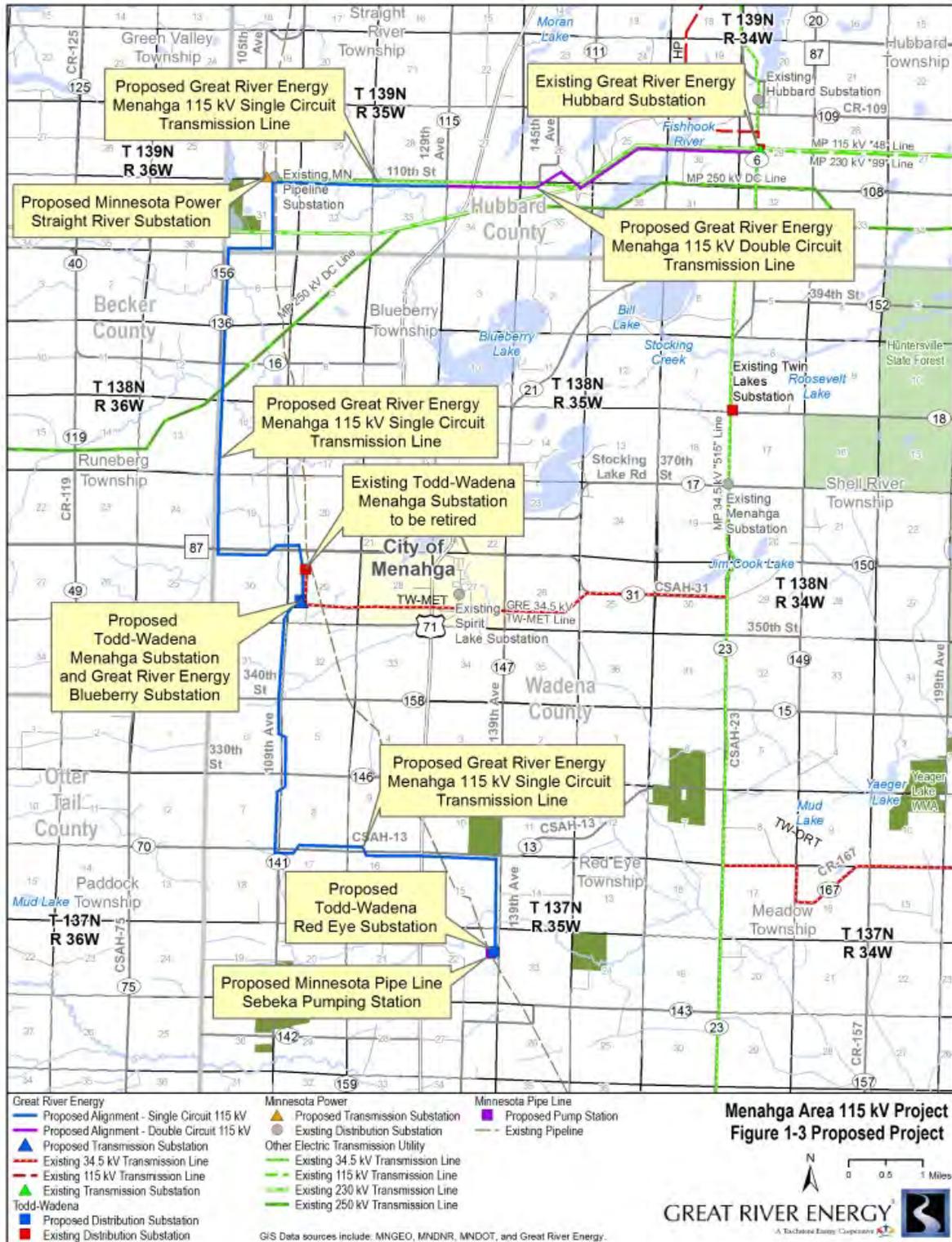
The proposed route is shown on **Figure 1-3**. Applicants are generally requesting approval of a 500-foot route width (250 feet either side of the transmission line in areas where the transmission line will be cross-country, or 250 feet either side of the centerline of road right-of-ways (ROW) in areas where the transmission line follows a road). In a few areas (particularly around proposed substations), Applicants are requesting a route width wider than 500 feet to accommodate facility designs as described in **Section 4.1.1**.

The proposed transmission line is located in Hubbard, Wadena and Becker counties, Minnesota. Single-pole wood structures with horizontal post insulators will be used for most of the transmission line. H-frame, laminated wood poles or steel poles may be required in some locations (to cross under an existing line, for angles poles, or in areas where soil conditions are poor and guying is not practical). Typical pole heights will range from 60 to 90 feet above ground and spans between poles will range from 275 to 450 feet. Some segments of the transmission line will carry distribution line underbuild.

Great River Energy will acquire easements for the new 115 kV transmission line.

The Project will cost approximately \$23 million dollars.

Figure 1-3. Proposed Project



1.6 Project Need and Purpose

The Menahga Area 115 kV Project will serve two needs as described below. A detailed discussion of Project need is provided in **Chapter 5**.

1.6.1 Load-Serving Need

The 34.5 kV sub-transmission system (**Figure 1-4**) sourced from the Great River Energy Hubbard 230/115/34.5 kV Substation and the Minnesota Power Verndale 115/34.5 kV Substation is at risk of experiencing transmission system overloads. These system issues were first detected in 2007. As a temporary measure, Minnesota Power installed a 2.4 mega volt ampere reactive (MVAR) capacitor at the Sebeka Regulator Station in 2008 to relieve these voltage issues. However, the capacitor bank was viewed as a short-term solution, because at the time the transmission line and transformers were close to the thermal limits.

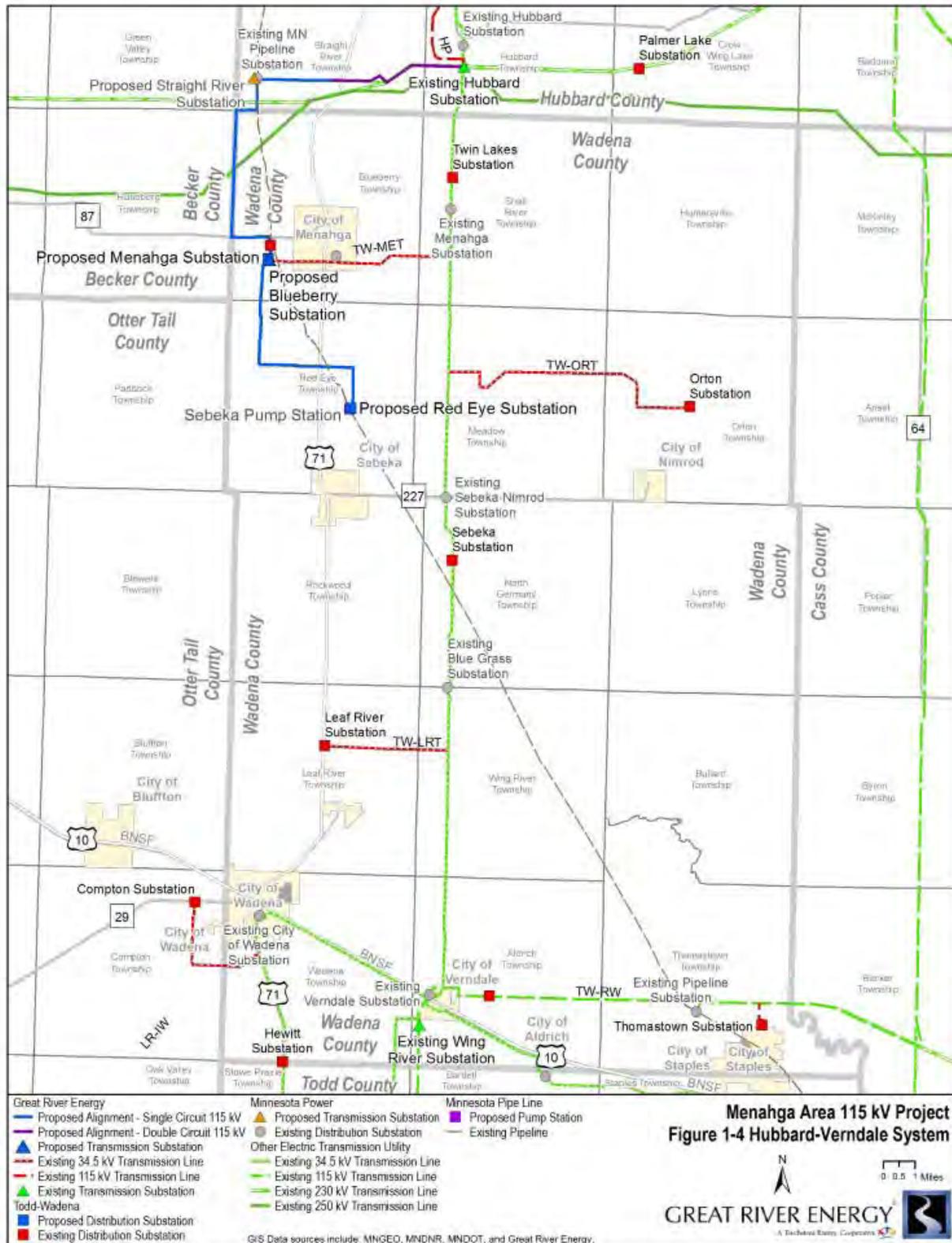
With continuing risk of sub-transmission system overloads and a proposed new pump station load, it is now necessary to remove a large load (Menahga) from the 34.5 kV system and place it on a new 115 kV system. This will require construction of a new 115 kV transmission line between the existing Great River Energy Hubbard Substation and the proposed new Great River Energy Blueberry Substation, and then south to the proposed new Todd-Wadena Red Eye distribution substation to serve the proposed new MPL pump station.

The North American Electric Reliability Council (NERC), which develops standards for implementing secure and safe electrical delivery, mandates that certain levels of service be maintained to ensure that the transmission grid operates efficiently and reliably. In addition, electric utilities like Great River Energy and Minnesota Power are responsible for maintaining power quality at a level that prevents damage to all consumers' electrical equipment. Based on these mandates, transmission improvements are necessary to maintain the reliability and quality of electric service for this region.

1.6.2 MPL Need

MPL is proposing to construct six new pump stations along its newest pipeline (Line 4) to ensure that Minnesota refineries continue to have access to reliable and sufficient crude oil supplies to meet demand for transportation fuels. MPL plans to use available capacity on Line 4 to ensure reliability of its pipeline system, which is the primary crude oil pipeline system supplying Minnesota's two refineries. In addition to the local load-serving need discussed above, the Project is needed to provide electrical service to the proposed new Todd-Wadena Red Eye distribution substation, which will serve one of these six proposed pump stations (the Sebeka Pump Station), which will be located at the southern terminus of the Project.

Figure 1-4. Hubbard-Verndale System



1.7 Proposed Route

A general description of the proposed route is provided below. See **Section 4.1.1** for a more detailed description of the route.

The proposed transmission line (**Figure 1-3**) begins at Great River Energy's Hubbard Substation and heads westerly for about 7 miles to Minnesota Power's proposed new Straight River Substation. In this section of the Project, the new 115 kV line would replace Minnesota Power's 34.5 kV 522 feeder line. The line then turns south paralleling the west side of MPL's pipelines for approximately one mile; it then turns westerly on the north side of Hubbard Line Road for a short distance; then turns southerly several miles to Trunk Highway (TH) 87. The line follows east along TH 87 for about 1.25 miles, then turns in a south-southeasterly direction and angles to Great River Energy's existing "TW-MET" 34.5 kV line, where it will angle over to 111th Avenue, turn southerly, and into the proposed location of the proposed new Blueberry Substation. The TW-MET 34.5 kV line in this area will be removed once construction of the 115 kV line is complete.

The line will exit the Blueberry Substation and turn westerly for approximately 550 feet, then turn southwesterly along the west side of the Minnesota Energy natural gas pipeline to a crossing of 350th Street, where it continues south about 3 miles on 109th Avenue to County State Aid Highway (CSAH) 13. There the line turns east for 3 miles along CSAH 13, then turns south on 139th Avenue and into the proposed Red Eye Substation.

1.8 Alternatives

Applicants considered several alternatives to the proposed Project, including: 1) a new local generation alternative; 2) various transmission solutions, including upgrading other existing facilities, different conductors, different voltage levels and different endpoints; and 3) a no-build alternative focusing on reactive power supply improvements and demand side management. Alternatives to the proposed Project are discussed further in **Chapter 6**.

1.9 Potential Environmental Effects

Applicants analyzed the potential environmental effects from the proposed Project. No significant unavoidable impacts will result from construction of the new 115 kV transmission line and associated facilities.

No homeowners will be displaced by construction of the proposed transmission line. All agricultural land impacted during construction will be returned to its natural condition as nearly as possible and landowners will be compensated for any losses from construction. All water bodies will be protected during construction. The electric fields associated with the new line will be significantly less than the maximum levels permitted by state regulators. No stray voltage issues are anticipated to affect farm animals along the routes.

The Department of Commerce, Energy Environmental Review and Analysis (EERA) is responsible for environmental review of the Project. The Certificate of Need rules require preparation of an Environmental Report, whereas the Route Permit rules require preparation of

an Environmental Assessment (EA). The Department of Commerce may elect to prepare an EA for the Project that analyzes potential environmental impacts from the Project and meets all statutory and rule requirements of both the Environmental Report and the EA.

1.10 Public Involvement

Great River Energy held a public open house informational meeting on September 30, 2014, at the Menahga Senior Center in Menahga, Minnesota to provide information about the Project to the public. Great River Energy sent post card open house invitations to 141 landowners within the 1000-foot notice corridor. Great River Energy also mailed notice (an example letter is provided in **Appendix A**) of the Project and open house to 93 agencies, elected officials, and local governmental units (LGUs), including tribal representatives (White Earth Band of Ojibwe and Leech Lake Band of Ojibwe). Newspaper notices announcing the open house were also placed in four local newspapers approximately a week before the open house.

Approximately 30 members of the public attended the open house. Inquiries/concerns from the public included whether the transmission line will go through their property, proximity of the proposed line to houses, tree removal, Project schedule, compensation for easements, electric and magnetic fields (EMF) and stray voltage, and possible impacts to center pivot irrigation systems. A Minnesota Department of Natural Resources (DNR) representative attended and pointed out state lands in the Project area and other resource issues (a designated trout stream, a high wildlife area, swan activity) to be considered in the area.

Subsequent to the open house, Applicants received: one written statement on the Project (a letter regarding the proximity of the proposed line to the Alajoki Cemetery), three telephone calls and one email requesting information on the Project and the proposed line location.

The need for the Project has been discussed in the Minnesota Biennial Transmission Projects Report since 2007 (Tracking number 2007-NE-N3).

The public will have an opportunity to review this application and submit comments to the Commission about the Project. A copy of the application will be available on the Commission eDockets website (www.mn.gov/puc), on the Department of Commerce Project website (<http://mn.gov/commerce/energyfacilities>) and on the Great River Energy webpage at www.greatriverenergy.com. Additionally, a copy of this application will be available at the Park Rapids Public Library, Menahga City Hall, Sebeka City Hall, and Wadena Public Library for the public to review.

A scoping meeting will be held in the area by EERA within 60 days of acceptance of this application as complete to answer questions about the Project and to solicit public comments and suggestions for matters to examine during its environmental review. In a few months, assuming the Department of Commerce chooses to prepare an EA that includes all requirements of an Environmental Report, a public hearing will be held in the Project area after the EA is complete. At this hearing, members of the public will be given an opportunity to ask questions and submit comments. Applicants will also present further evidence to support their need and route for the Project. Applicants anticipate that the Commission will hold a joint public hearing on both the

Certificate of Need and the Route Permit pursuant to Minnesota Statutes Section 216B.243, subdivision 4.

There are two options for citizens, landowners, and interested persons to receive project information:

1. **Sign up for the Project Mailing List.** To sign up to receive notices about project milestones and opportunities to participate (meetings, comment periods, etc.) email docketing.puc@state.mn.us or call 651-201-2234 with the docket number (14-787 or 797), your name, mailing address and email address.

You may request to receive notices by email or U.S. Mail. For projects with more than one docket (e.g., a project requiring a Certificate of Need and a Route Permit), you will be added to both mailing lists.

2. **Subscribe to the Docket.** To receive email notifications when new documents are filed in the Certificate of Need or Route Permit dockets:

1. Go to: mn.gov/puc
2. Select the green box *Subscribe to a Docket*
3. Type your e-mail address
4. For *Type of Subscription*, select *Docket Number*
5. For *Docket Number*, select *14* in the first box, type *787* (for the Certificate of Need docket) or *797* (for the Route Permit docket) in the second box
6. Select *Add to List*
7. Select *Save*

Note - subscribing may result in a large number of emails

Staff contact information is provided below.

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1.11 Conclusion

The Commission has established criteria in Minnesota Rule 7849.0120 to apply in determining whether a proposed high voltage transmission line is needed. An applicant for a Certificate of Need must show that the probable result of denying the request would be an adverse effect on the future adequacy and reliability of the system, there is not a more reasonable and prudent alternative, the proposed facility will provide benefits to society compatible with protecting the

environment, and the project will comply with all applicable standards and regulations. Applicants have demonstrated in the Application that the proposed Project meets all the requirements to obtain a Certificate of Need. The Project will address transmission system overloads in the area and provide electric service to a new pump station proposed by MPL.

With regard to route selection for high voltage transmission lines, the applicable rules are found in Minnesota Rules Chapter 7850. This Project satisfies the criteria for a route permit: the transmission line conserves resources, minimizes environmental impacts, and minimizes effects on human settlement and land-based economies by the use of existing transmission line corridors and road corridors.