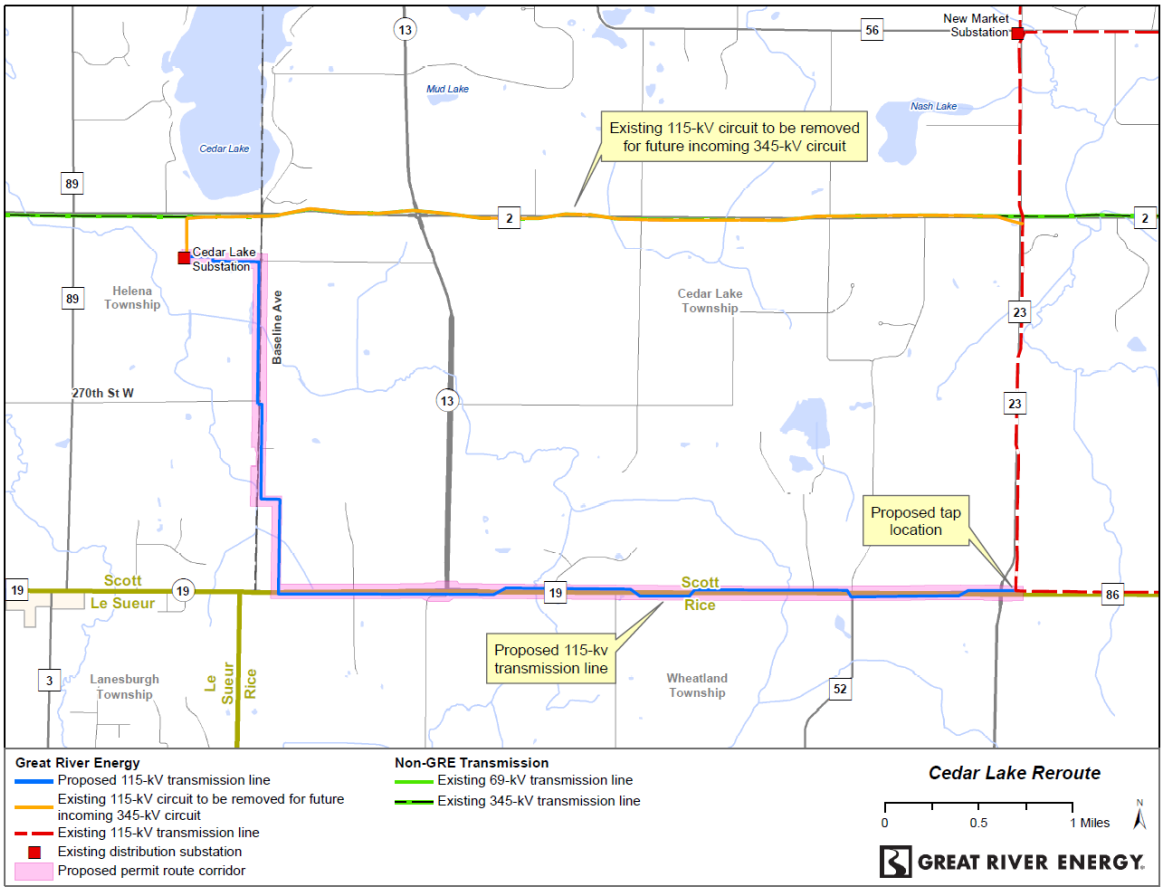
COMMERCE DEPARTMENT

Environmental Assessment

Cedar Lake Reroute Project

Docket No. ET2/TL-23-170



Minnesota Department of Commerce
Energy Environmental Review and Analysis

December 2023

BLANK PAGE

Responsible Government Unit
Minnesota Department of Commerce
Energy Environmental Review and Analysis
85 7th Place East, Suite 500
Saint Paul, MN 55101-2198

Project Owner
Great River Energy
12300 Elm Creek Blvd.
Maple Grove, MN 55369

Department Representative
Richard Davis
Environmental Review Manager
(651) 539-1846
Richard.davis@state.mn.us

Project Representative
Mark Strohfus
Transmission Planning Specialist
(763) 445-5210
MStrohfus@GREnergy.com

This document can be made available in alternative formats, that is, large print or audio, by calling 651-539-1530.

Abstract

Under the Power Plant Siting Act, a route permit from the Minnesota Public Utilities Commission (Commission) is required to construct a high voltage transmission line (HVTL). Great River Energy (Applicant or GRE) filed an application with the Commission for a route permit to construct approximately 6.3-mile 115 kV transmission line. The transmission line will connect at GRE's existing MV-EVX 115 kV transmission line near the intersection of County Road 23 and Minnesota Highway 19 and extend to the existing Cedar Lake Substation south of County Road 2. The Project will initially operate at 69 kV; designing to 115 kV standards will simplify operating the regional transmission system at 115 kV as electrification and load development increases in the area. Once the transmission line is constructed and connected to the substation, GRE's existing 4.5-mile MV-CDT 115 kV transmission circuit, which is co-located in part on the CapX2020 345 kV transmission structures along County Road 2, will be removed.

The Project is being constructed to make room for a second 345 kV circuit to be attached to the existing CapX2020 Brookings to Hampton transmission structures, which run along County Road 2 in the Project area.

GRE submitted its route permit application on June 7, 2023. The application was filed pursuant to the alternative review process outlined in Minnesota Statute 216E.04 and Minnesota Rules 7850.2800–3900. In an Order dated July 5, 2023, the Commission accepted the HVTL Route Permit Application as complete.

Department of Commerce (Commerce), Energy Environmental Review and Analysis (EERA) staff is responsible for conducting environmental review for route permit applications submitted to the Commission. Accordingly, EERA held a scoping meeting in New Prague on August 1, 2023,

and has prepared this Environmental Assessment (EA) for the GRE Cedar Lake Reroute Project. This EA addresses the issues required in Minnesota Rules 7850.3700, subpart 4, and those identified in Commerce's November 16, 2023, EA Scoping Decision.

Following release of this EA, a public hearing will be held in the project area. The hearing will be presided over by an administrative law judge (ALJ) from the Office of Administrative Hearings. Upon completion of the environmental review and hearing process, the ALJ will provide the Commission with a report. The report will include findings of fact, conclusions of law, and recommendations. The ALJ report and the entire record will be submitted to the Commission to aid the Commission's decision on a route permit.

A decision on the route permit for the proposed project is anticipated in May 2024.

Persons interested in this project can place their name on the project mailing list by contacting the Public Utilities Commission at docketing.puc@state.mn.us or 651-201-2204 to sign up.

Additional documents and information can be found on the EERA website at: http://mn.gov/commerce/energyfacilities/Docket.html?Id=15078 or the Minnesota eDockets webpage at: https://www.edockets.state.mn.us/EFiling/search.jsp by selecting "23" for year and "170" for number.

Acronyms, Abbreviations and Definitions

ALJ	administrative law judge
BMPs	best management practices
Commerce	Minnesota Department of Commerce
Commission	Minnesota Public Utilities Commission
CSAH	County State Aid Highway
dBa	A-weighted sound level recorded in units of decibels
DNR	Minnesota Department of Natural Resources
EA	Environmental Assessment
EERA	Energy Environmental Review and Analysis
ELF-EMF	extremely low frequency electromagnetic fields
EMF	electromagnetic field
Enbridge	Enbridge Energy, Limited Partnership
HVTL	high voltage transmission line
KHz	kilohertz
kV	kilovolt or 1,000 volts
Minn. R.	Minnesota Rule
Minn. Stat.	Minnesota Statute
µG	milligauss
MHz	megahertz
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
NAC	noise area classification
NDPC	North Dakota Pipeline Company, LLC
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NEV	neutral-to-earth voltage
NLCD	National Land Cover Database
NLEB	Northern Long Eared Bat
NPDES/SDS	National Pollutant Discharge Elimination System /State Disposal System Construction Stormwater permit
NWI	National Wetland Inventory
OAH	Minnesota Office of Administrative Hearings
ppm	parts per million

Proposed Project	Minnkota Power MPL-Laporte 115 kV Transmission Project
pump station	NDPC's proposed pump station along its proposed Sandpiper Project
PWI	Public Waters Inventory
ROI	region of influence
ROW	right-of-way
RUS	USDA Rural Utilities Service
Scoping Decision	EA Scoping Decision
SHPO	State Historic Preservation Office
subd.	subdivision (Minnesota Statute)
subp.	subpart (Minnesota Rule)
SWPPP	Stormwater Pollution Prevention Plan
UHF	ultra-high frequency
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
VHF	very high frequency
WCA	Wetland Conservation Act
WMA	Wildlife Management Area

1 Contents

Abstract 1
Acronyms, Abbreviations and Definitions 3
2 Introduction 11
2.1 Project Purpose 12
2.2 Project Description 12
2.3 Sources of Information 13
3 Regulatory Framework 14
3.1 Certificate of Need 14
3.2 Route Permit 14
3.3 Public Hearing 18
3.4 Permit Decision 19
3.5 Other Permits and Approvals 20
3.6 Applicable Codes 25
3.7 Issues Outside the Scope of the EA 25
4 Proposed Project 27
4.1 Route Width 27
4.2 Right-of-Way Requirements 28
4.3 Temporary Easements 28
4.4 Substation and Associated Facilities 28
4.5 Transmission Structures 29
4.6 Construction 30
4.7 Project Costs 35
4.8 Project Schedule 36
5 Potential Impacts of the Proposed Project 37
5.1 Consideration of Potential Impacts 37
5.2 Regions of Influence 39
5.3 Environmental Setting 40
5.4 Impacts to Human Settlement 41
5.4.1 Aesthetics 41
5.4.2 Cultural Values 44
5.4.3 Displacement 46

5.4.4 Electronic Interference 47
5.4.5 Land Use and Zoning 49
5.4.6 Noise 50
5.4.7 Property Values 54
5.4.8 Socioeconomics and Environmental Justice 55
5.5 Human Health and Safety 59
5.5.1 Electric and Magnetic Fields 59
5.5.2 Implantable Medical Devices 63
5.5.3 Stray Voltage 64
5.6 Public Services and Infrastructure 67
5.6.1 Airports 67
5.6.2 Emergency Services 68
5.6.3 Roads and Highways 70
5.6.4 Utilities and Existing Infrastructure 72
5.7 Land-Based Economies 73
5.7.1 Agriculture 74
5.7.2 Forestry 76
5.7.3 Mining 76
5.7.4 Tourism and Recreation 77
5.8 Archaeological and Historic Resources 78
5.9 Natural Resources 79
5.9.1 Air Quality 80
5.9.2 Climate Change 83
5.9.3 Geology and Topography 84
5.9.4 Surface Water 84
5.9.5 Groundwater 87
5.9.6 Wetlands 88
5.9.7 Floodplains 91
5.9.8 Soils 91
5.9.9 Vegetation 93
5.9.10 Wildlife 96
5.9.11 Rare and Unique Natural Resources 100

5.10 Cumulative Impacts 106
6 Commission Request for Additional Information 109
6.1 Baseline Avenue Expanded Route 109
6.1.1 Potential Impacts in the Expanded Route 110
Table 24: County Level Population, Income, and Poverty Data 110
6.2 Minnesota Valley Electric Cooperative 115
7 Unavoidable Impacts 116
8 Application of Routing Factors 117
8.1 Relative Merits 118
8.1.1 Factor: Effects on Human Settlement (A) 118
8.1.2 Factor: Effects on Public Health and Safety (B) 119
8.1.3 Factor: Effects on Land-Based Economies (C) 119
8.1.4 Factor: Effects on Archaeological and Historic Resources (D) 119
8.1.5 Factor: Effects on Natural Environment (E) 120
8.1.6 Factor: Effects on Rare and Unique Natural Resources (F) 121
8.1.7 Factor: Use or paralleling of existing ROW, survey lines, natural division lines, Agricultural Field Boundaries (H) 121
8.1.8 Factor: Use of existing transportation, pipeline, and existing transmission systems or rights-of-way (J) 121
8.1.9 Factor: Electrical System Reliability (K) 121
8.1.10 Factor: Unavoidable Impacts (M) 121
8.1.11 Factor: Irreversible and Irretrievable Commitments of Resources (N) 121

Tables

Table 1: Potential Downstream Permits and Approvals 21
Table 2: Typical 115 kV Structure Dimensions 29
Table 3: Project Costs 36
Table 4: Regions of Influence for Human and Environmental Resources 39
Table 5: Building Distances from Proposed Alignment 43
Table 6: Noise Area Classifications (dBA) 51
Table 7: Estimated Corona Effect Noise 52
Table 8: Socio-Economic Matrix of Proposed Project Area 56
Table 9: Environmental Justice Data for Census Tracts Crossed by the Project Route 57

Table 10: Minority Populations by Race and Ethnicity and Low-Income Populations within the Project Area (Percentage) 58
Table 11: Magnetic Fields of Common Electric Appliances (μG) 60
Table 12: State Electric and Magnetic Field Standards 61
Table 13: International Electric and Magnetic Field Guidelines 62
Table 14: Calculated Electric Fields (kV/m) One Meter above Ground 62
Table 15: Calculated Magnetic Fields One Meter above Ground (mG) 62
Table 16: Emergency Service Provider 68
Table 17: Highways and Roads w/in the Project Area 70
Table 18: Construction Emissions of Criteria Pollutants (tons/year) 81
Table 19: Preliminary Estimate Greenhouse Gas Emissions 83
Table 20: Wetlands Crossed by the Project Alignment with Span Lengths Longer than 400 feet 90
Table 21: Soil Associations in the Vicinity of the Project 92
Table 22: Federally Protected Species w/in the Project Area 102
Table 23: Current and Reasonably Foreseeable Projects 107
Table 24: County Level Population, Income, and Poverty Data 110
Table 25: County and Census Tract Level Minority Populations, Low Income, and Non-English Speaking Households 110
Table 26: Minority Populations by Race and Ethnicity and Low-Income Populations within the Project Area (Percentage) 111
Table 27: Land Use Types within the Expanded Route Width along Baseline Avenue 112
Table 28: Wetlands within the Expanded Route Width along Baseline Avenue 113
Table 29: Waterbodies within the Expanded Route along Baseline Avenue 114

Diagrams

Diagram 1: Route and Right-of-Way Illustration 27
Diagram 2: Typical Transmission Structure Types 29
Diagram 3: Components of a Transmission Line 30
Diagram 4: Photos of Typical 115 Transmission Line Structures 31
Diagram 5: Landscaping Country Hollow Development 43
Diagram 6: Electronic Communication & Transmission Line Frequencies 47
Diagram 7: Illustration of Typical Switch 53

Figures

Figure 1 Proposed Project and Location
Figure 2 Proposed Route as Modified
Figure 3 Minnesota Valley Cooperative Distribution Lines

Figure 4 Country Hollow Lane Alignment Modification
Figure 5 Land Cover (GAP) Map
Figure 6 Zoning Map
Figure 7 Census Tracts
Figure 8 Regional Transmission System
Figure 9 Recreation
Figure 10 Soils
Figure 11 Water Resources
Figure 12 Current and Reasonably Foreseeable Projects
Figure 13 Baseline Avenue Expansion Aerial Map

Appendices

Appendix A EA Scoping Decision
Appendix B Draft Route Permit
Appendix C Detailed Aerial Photo Maps

2 Introduction

On June 7, 2023, Great River Energy (Applicant or GRE) submitted a high voltage transmission line (HVTL) Route Permit Application (RPA) to the Minnesota Public Utilities Commission (Commission).[1] The RPA was submitted under the alternative review process (Minnesota Statute 216E.04; Minnesota Rule 7850.2800-3900). The Commission docket number for this project is ET2/TL-23-170.

The Minnesota Department of Commerce (DOC), Energy Environmental Review and Analysis (EERA) staff is tasked with conducting environmental review on applications for route permits before the Commission.[2] The intent of the environmental review process is to inform the public, decision-makers, local governments, state agencies, and applicants of the potential impacts and possible mitigation measures associated with the proposed project.

This document is an Environmental Assessment (EA). It addresses the issues required in Minnesota Rule 7850.3700, subpart 4, and those identified in Commerce's November 16, 2023, EA Scoping Decision (**Appendix A**). It is organized as follows:

Section 1 provides an overview of this document and the project. It also provides a summary of the potential impacts of the project and potential mitigation measures.

Section 2 explains the regulatory framework associated with the project, including the route permitting process and other permits and approvals required for the project.

Section 3 describes the project as proposed by GRE, including rights-of-way, structures, and conductors.

Section 4 details the potential impacts of the project to both human and natural resources, and identifies measures that could be implemented to avoid, minimize, or mitigate identified adverse impacts.

Section 5 provides information requested by the Commission on the expanded route width along Baseline Avenue and on the Minnesota Valley Cooperative distribution lines along Highway 19.

Section 6 describes any unavoidable impacts, and irreversible or irretrievable commitment of resources resulting from the proposed project.

Section 7 discusses the proposed route and its merits relative to the *Factors Considered* for routing HVTLs.

[1] Great River Energy Cedar Lake Reroute Application, June 6, 2023. eDocket No. 20236-196404-01 to 10.
[2] Minn. Stat. 216E.04, subdivision 5.

2.1 Project Purpose

The Project will replace approximately 4.5 miles of existing 115 kV line connected to the Cedar Lake Substation. The existing 115 kV line is currently installed in the second circuit position on CapX2020 structures 044 through 068 in the Helena to Chub Lake segment of the Brookings to Hampton 345 kV transmission line project. On May 26, 2015, the Commission approved GRE's request for a minor alteration to allow the temporary installation of the existing 115 kV line. GRE indicated that use of the existing double circuit structures would be temporary and would continue until such time as the structures are needed to carry a new permanent 345 kV transmission line. At that time, GRE would be required to remove the 115 kV line and develop other means to serve the Cedar Lake substation.

GRE entered a temporary structure sharing agreement with the CapX2020 owners. The agreement requires GRE to remove the existing 115 kV line when the owners provide written notice specifying the need for the Brookings project second circuit line. On March 29, 2023, the owners provided GRE with notice of termination of the agreement, effective 30 months from the date of the notice.

The current Project is proposed in order to make room for a second 345 kV circuit to be attached to the existing CapX2020 Brookings to Hampton transmission structures. The Project will include construction of a new approximately 6.3-mile 115 kV transmission line.

The transmission line will connect at GRE's existing MV-EVX 115 kV transmission line near the intersection of County Road 23 and Minnesota Highway 19 and extend to the existing Cedar Lake Substation south of County Road 2. The Project will initially operate at 69 kV; designing to 115 kV standards will simplify operating the regional transmission system at 115 kV as electrification and load development increases in the area. Once the transmission line is constructed and connected to the substation, GRE's existing 4.5-mile 115 kV transmission circuit, which is co-located in part on the CapX2020 Brookings to Hampton transmission structures, will be removed.

2.2 Project Description

The Project will begin at GRE's existing Cedar Lake Substation located approximately 1,000 feet south of 260th St W in Helena Township in Scott County (**Figure 1**). The route will extend east from the Cedar Lake Substation through agricultural fields and forested areas to Baseline Avenue. From there, it will continue to follow Baseline Avenue south until 270th St W to Baseline Avenue's termination point. The route will continue south for approximately 1,300 feet to a landowner property boundary, where it will turn east for approximately 600 feet to the eastern edge of the landowner property boundary. The route will then continue south for approximately 2,650 feet to 280th St East/State Highway 19 and then turn east. It will continue along 280th St E/State Highway 19 for approximately 4 miles until it intersects with Great River Energy's existing MV-EVX 115-kV line near Panama Ave / County Highway 23.

GRE anticipates commencing construction of the Project in the fall 2024 after the required permits and approvals are obtained. The construction will take approximately seven to eight months to complete, and the Project should be energized in summer 2025.

2.3 Sources of Information

Much of the information used in this EA derives from documents prepared by the Applicant, including the Route Permit Application. In addition to material provided by the Applicant, information from scoping comments, relevant environmental review documents for similar projects, spatial data, and other state agencies were used to prepare this document.

Several spatial data sources, which describe the resources in the project area, were used in preparing this environmental Assessment (EA). Spatial data was imported into geographic information system (GIS) software, where the data was analyzed and potential impacts of the project quantified, e.g., acres of forested wetlands within the anticipated project right-of-way (ROW).

3 Regulatory Framework

In order to construct the proposed project, GRE must obtain a route permit from the Commission. Additional approvals from other state and federal agencies with permitting authority for actions related to the project may also be required.

3.1 Certificate of Need

The proposed project will operate at a voltage greater than 100 kV but will have a length in Minnesota less than 10 miles. Therefore, it does not qualify as a large energy facility under Minnesota Statute 216B.2421. Large energy facilities typically require a certificate of need (CN) under Minnesota Statute 216B.243. The proposed project does not require a CN.

3.2 Route Permit

In Minnesota, no person may construct a high voltage transmission line (HVTL) without a route permit from the Commission (Minnesota Statute 216E.03). A high voltage transmission line is defined as a conductor of electric energy designed for and capable of operation at a voltage of 100 kV or more and greater than 1,500 feet in length (Minnesota Statute 216E.01, Subd. 4).

The proposed project will consist of a new 115 kV transmission line in excess of 1,500 feet and therefore requires a route permit from the Commission.

Route Permit Application and Acceptance

The new transmission line will be designed to operate at a voltage of 115 kV; thus, the project qualifies for the Commission's alternative permitting process (Minnesota Rule 7850.2800, subp. 1C).

Minnesota Rule 7850.2800 states applicants intending to submit a project under the Commission's alternative permitting process for transmission lines are required to provide a 10-day advance notice of this intent to the Commission before submitting their route permit application. GRE provided that notice[3] on May 8, 2019.

Route permit applications for HVTLs must provide specific information about the proposed project including, but not limited to, applicant information, route description, and potential environmental impacts and mitigation measures (Minnesota Rule 7850.3100). Review under the alternative permitting process does not require the applicant to propose alternative routes in the permit application. However, if the applicant has evaluated and rejected alternative routes they must include these and the reasons for rejecting them in the route permit application.

[3] Notice of Intent to Submit a Route Permit Application under the Alternative Permitting Process for the GRE 115 kilovolt conversion, May 8, 2019, eDocket no. 20196-153418-01.

The Commission may accept an application as complete, reject it and require additional information to be submitted, or accept it as complete upon filing of supplemental information (Minnesota Rule 7850.2000). The environmental review and permitting process begins on the date the Commission determines that a route permit application is complete. The Commission has six months from the date of this determination to reach a route permit decision; though the decision can be extended for three months for cause, or with the Applicant's agreement (Minnesota Rule 7850.3900).

In an Order dated July 5, 2023, the Commission accepted the HVTL Route Application as complete and authorized review under the alternative permitting process defined in Minn. Stat. § 216.04 and Minn. R.7850.2800 to 7850.3900 and referred the matter to the Office of Administrative Hearings for appointment of an Administrative Law Judge to prepare a full Report.[4]

Environmental Review

Applications for HVTL route permits are subject to environmental review conducted by EERA staff (Minnesota Rule 7850.3700). Projects proceeding under the alternative permitting process require the preparation of an EA.

An EA is a document which describes the potential human and environmental impacts of the proposed project and potential mitigative measures. This is the only state environmental review document required for the Project (Minnesota Statute 216E.04, subd. 5). Staff provides notice and conducts a public scoping meeting to solicit comments on the scope of the EA.

The Department of Commerce determines the scope of the EA. The Department may include alternative routes suggested by the public in the scope of the EA if such alternatives will aid in the Commission's decision on the route permit application.

Under Minnesota Rule, 7850.3700, subp. 4, the Environmental Assessment must include the following:

A. A general description of the proposed project.
B. A list of any alternative sites or routes that are addressed.
C. A discussion of the potential impacts of the proposed project and each alternative site or route on the human and natural environment.
D. A discussion of mitigative measures that could reasonably be implemented to eliminate or minimize any adverse impacts identified for the proposed project and each alternative.
E. An analysis of the feasibility of each alternative site or route considered.
F. A list of permits required for the project; and
G. A discussion of other matters identified in the scoping process.

[4] Commission Order finding the application complete and referring the matter to the OAH, July 5, 2023. eDocket No. 20237-197231-01.

Scoping Process

On July 14, 2023, Commission and EERA staff sent notice of the place, date and time of public information and scoping meetings to local government units and those persons on the Project contact/general list.[5]

Commission staff and EERA staff jointly held a public information and EA scoping meeting at the Park Ballroom in New Prague on August 1, 2023. A remote-access meeting (Webex) was held on August 2, 2022. The purpose of the meetings was to provide information to the public about the proposed Project, to answer questions, and to allow the public an opportunity to suggest impacts and alternatives that should be considered during preparation of the EA. A court reporter was present at the meetings to document oral statements.

Scoping Comments

Approximately 28 people attended the in-person public information and scoping meeting, while four people attended the remote meeting. During the comment period, which closed on August 14, 2023, eight public comments were received, and three comment letters were received from state agencies. The court reporter record from the public meetings, as well as scanned images (pdf) of the original written comments received, were posted on the EERA webpage[6] and filed in eDockets.[7]

Comments received ranged from statements of support for, or opposition to, the proposed HVTL project, statements of specific concerns or perceived impacts, and suggested alternative routing for portions of the proposed project.

Proposed Alternatives

The process for individuals to suggest that specific alternative routes, alternative route segments, and/or alignment modifications be included in the scope of the environmental review document was discussed at the EA scoping meeting.

As covered during the EA scoping meeting, to be considered for inclusion in the scoping decision, alternative routes, route segments, or modifications to the alignment must meet an initial screening to be considered. This initial screening requires that all suggestions must:

1. Be submitted during the scoping comment period.
2. Describe the specific impact being mitigated.
3. Be specific and identifiable.
4. Meet the stated need for the project.

---

[5] Notice of Public Information/Scoping Meeting, July 14, 2023, eDocket no. 20237-197476-01.

[6] Public Comments, Written and Oral submitted during the scoping comment period, https://apps.commerce.state.mn.us/web/file-list/15145.

[7] Public Comments, Written and Oral submitted during the scoping comment period, August 15, 2023. eDocket No. 20238-198270-01 to 10 and 20238-198272-01 to 03.

During the EA scoping comment period several members of the public suggested alternative routes, alternative route segments, or modifications to the alignment proposed by GRE in their RPA.

Highway 2 Alternative Route. Several variations of constructing the line along Highway 2 were suggested during scoping, both in written and oral comments. These included the possibility of co-locating with the existing CapX structures, paralleling alongside the existing CapX structures, or placing the new lines on the opposite side of Highway 2 from the existing CapX ROW.

Cedar Lake Substation South Alternative Route Segment. One member of the public offered a suggested route alternative segment that proceeded directly south out of the Cedar Lake Substation cross-country for approximately 1.7-miles until it intersected with Highway 19, at which point it would parallel Highway 19 east for approximately ¼-mile until it joined GRE's proposed route and continue along that route/alignment to the terminus of the project. This segment would replace that portion of the proposed route that travels north-south along the west side of Baseline Avenue. Staff adjusted the suggested alternative route segment to avoid a small subdivision at the southern end of the segment.

RA3 Alternative Route. In an effort to avoid that portion of the proposed route along Baseline Avenue, several members of the public indicated a preference for one of the alternative routes, RA3, which was evaluated and rejected by GRE during their route application development phase. In accordance with Minnesota Rules 7850.3100, GRE identified and provided an explanation of the reasons for rejecting that route in its RPA.[8] RA3 proceeds east out of the Cedar Lake Substation along 263rd Street East for approximately 1.25 miles to Langford Avenue where it turns south along Langford Avenue/Highway 13 for approximately 1.7-miles until it intersected with Highway 19 where it joins GRE's proposed route and continues along that route/alignment to the terminus of the project.

Alignment Modification – Country Hollows Lane Alternative. A resident of the Country Hollows development requested that the alignment of the proposed line be moved to the southside of Highway 19 to avoid crossing the entrance road to the development.

Alignment Modification - Joel D. Lane Alternative. A resident on Joel D. Lane requested that the alignment of the proposed line be moved to the southside of Highway 19 to avoid crossing of Joel D. Lane at Highway 19.

EERA Scoping Summary Analysis Before the Commission

On September 15, 2023, EERA staff filed a summary of the scoping process with the Commission.

EERA staff recommended in its *Summary of Scoping Process* to the Commission[9] that the Highway 2 Alternative Route, Cedar Lake Substation South Alternative Route Segment, RA3 Alternative

[8] Great River Energy Cedar Lake Reroute Application, pp. 4-2 through 4-6, Figure 4-1. June 7, 2023. eDocket No. 20236-196404-02.
[9] ERRA Summary Of Scoping Process, September 13, 2023. eDocket No. 20239-198916-01 to 07.

Route, and the two Alignment Modifications not be included in the scoping decision for the EA. Staff recommended that GRE's preferred route be the sole routing alternative included in the scoping decision for the EA.

Commission's Consideration of Alternatives

On October 19, 2023, the Commission took up the review of EERA's *EA Scoping Summary* for the Cedar Lake Reroute Project docket. After consideration of the scoping process and EERA's staff proposed scoping recommendation, the Commission requested that the Department add a widening of the proposed route from 400-foot to 2,640 -foot along Baseline Avenue (**Figure 2**). The purpose of the broadening of the route is to encourage alignment modifications within the studied route to mitigate environment and human impacts and to allow impacted landowners to propose alignment modifications for consideration before the public hearing.

Additionally, the Commission required that the environmental assessment include an analysis of a complete under build for the full length of the proposed route paralleling Highway 19 of the existing distribution line that is now located South of Highway 19 or other modifications that co-locate or remove the distribution infrastructure from the route corridor in coordination with the electric distribution provider Minnesota Valley Electric Cooperative (MVC).[10]

Scoping Decision

After considering public comments, input from the Commission, and recommendations from EERA staff, the Department issued the Scoping Decision on November 16, 2023 (**Appendix A**).[11] The Scoping Decision identifies the issues and routes or route segments to be evaluated in this EA.

3.3 Public Hearing

The Commission is required by Minnesota Rule 7850.3800, subpart 1, to hold a public hearing once the EA is complete.

The hearing will be presided over by an administrative law judge (ALJ) from the Office of Administrative Hearings. Interested persons will have the opportunity to speak at the hearing, present evidence, ask questions, and submit comments. The ALJ will provide a report to the Commission.

Comments received during the public hearing become part of the record in the proceeding. EERA staff will respond to questions and comments about the EA at the public hearing, but staff is not required to revise or supplement the document.[12]

[10] Commission Order, Route Alternatives, November 7, 2019. eDocket No. 201911-157326-01.
[11] Minnesota Department of Commerce, *Environmental Assessment Scoping Decision*, November 12, 2019, eDockets No. 201911-157563-01
[12] Minn. R. 7850.3800, subp. 4.

3.4 Permit Decision

The Minnesota Legislature has directed the Commission to select HVTL routes that minimize adverse human and environmental impacts while insuring continuing electric power system reliability and integrity.[13] An HVTL route must be compatible with environmental preservation and the efficient use of resources while also ensuring electric energy needs are met and fulfilled in an orderly and timely fashion.[14]

Route permits issued by the Commission include a permitted route and anticipated alignment. The route permit also outlines conditions specifying construction and operational standards. A sample permit for a HVTL route permit was filed in the project docket by Commission staff on August 8, 2023, to allow stakeholders and the public to become familiar with the layout and general/standard conditions typically found in route permits.[15] Through the Route Permit Application review process (environmental review and public hearing), project specific information (permittee, route/alignment details, special conditions, etc.) is developed and added to the sample permit, resulting in a permit that goes before the Commission for deliberation and a final decision.

Minnesota Statute 216E.03, subdivision 7(b) identifies 12 considerations that the Commission must consider when designating a route for a HVTL. These considerations are further clarified and expanded by Minnesota Rule 7850.4100, which identifies 14 factors the Commission must consider when making a permit decision.

These factors include:

A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services.

B. effects on public health and safety.

C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining.

D. effects on archaeological and historic resources.

E. effects on the natural environment, including effects on air and water quality resources and flora and fauna.

F. effects on rare and unique natural resources.

G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity.

[13] Minn. Stat. 216E.02, subd. 1.
[14] Minn. Stat. 216E.02, subd. 1.
[15] Public Utilities Commission Staff Briefing Papers, August 8, 2023, eDocket No. 20238-198146-01.

H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries.

I. use of existing large electric power generating plant sites.

J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way.

K. electrical system reliability.

L. costs of constructing, operating, and maintaining the facility which are dependent on design and route.

M. adverse human and natural environmental effects which cannot be avoided; and

N. irreversible and irretrievable commitments of resources.

At the time the Commission makes a final decision about the permit application, it must determine whether the EA and the record created at the public hearing address the issues identified in the scoping decision.[16] The Commission must also make specific findings that it has considered locating a route for a new HVTL along an existing HVTL route or parallel to existing highway rights-of way, and, to the extent these are not used for the route, the Commission must state the reason why they are not used.[17]

The Commission must make a final decision on the route permit within 60 days after receipt of the ALJ report.[18] A final decision must be made within six months after the Commission's determination the application is complete; however, this time limit may be extended for up to three months for just cause or upon agreement of the applicant.[19]

A decision by the Commission on a route permit application for the proposed project is anticipated in March 2024.

If issued a route permit by the Commission, GRE may exercise the power of eminent domain to acquire land for the project. Minn. Stat. 216E.12 describes the utility's and landowners' rights under the powers of eminent domain. [20]

3.5 Other Permits and Approvals

A route permit from the Commission is the only state permit required for the routing of the project. The Commission's route permit supersedes local planning and zoning and binds state agencies.[21] Thus, state agencies are required to participate in the Commission's permitting

[16] Minn. R. 7850.3900, subp. 2.
[17] Minn. Stat. 216E.03, subd. 7(e).
[18] Minn. R. 7850.3900, subp. 1.
[19] Ibid.
[20] EERA has developed a Fact Sheet (Easements Fact Sheet) to explain how electric utilities obtain ROW for new energy facilities and to inform landowners of their rights in negotiating easement agreements. http://mn.gov/commerce/energyfacilities/documents/Easements%20Fact%20Sheet_08.05.14.pdf.
[21] Minn. Stat. 216E.10.

process to aid the Commission's decision-making and to indicate routes that are not permittable.[22]

Should the Commission issue a route permit, various federal, state, and local permits may be required for activities related to the construction and operation of the proposed project. All necessary permits subsequent to the Commission's issuance of a route permit (commonly referred to as "downstream permits") must be obtained by a permittee. **Table 1** includes a list of downstream permits that may be required for the proposed project.

Table 1: Potential Downstream Permits and Approvals

Permit	Jurisdiction
Federal	
Section 404 Clean Water Act Permit	United States Army Corps of Engineers
Section 7 Endangered Species Act	United States Fish and Wildlife Service
Migratory Bird Treaty Act Consultation	United States Fish and Wildlife Service
Bald and Golden Eagle Protection Act Consultation	United States Fish and Wildlife Service
Part 7460 Airport Obstruction Evaluation	Federal Aviation Administration / Minnesota Department of Transportation
State	
State Endangered Species Consultation	Minnesota Department of Natural Resources – Ecological Services
National Historic Preservation Act Consultation Minnesota Statutes Chapter 138 (Minnesota Field Archaeology Act and Minnesota Historic Sites Act)	State Historic Preservation Office Tribal Historic Preservation Officers
Licenses to Cross Public Waters	Minnesota Department of Natural Resources – Lands and Minerals
Water Appropriation General Permit – Construction Dewatering	Minnesota Department of Natural Resources
National Pollutant Discharge Elimination System Construction Stormwater Permit	Minnesota Pollution Control Agency
Section 401 Clean Water Act Water Quality Certification	Minnesota Pollution Control Agency
Wetland Conservation Act	Minnesota Board of Water and Soil Resources, Scott and Rice Counties Soil and Water Conservation Districts
Utility Accommodation on Trunk Highway ROW	Minnesota Department of Transportation
Miscellaneous Work Permit for Trunk Highways	Minnesota Department of Transportation
Oversize and/or Overweight Permit	Minnesota Department of Transportation
Local	
Road Crossing/Driveway/ROW Permits	Helena and Cedar Lake Townships, Scott County Wheatland Township, Rice County
Over-Width Load Permits	Helena and Cedar Lake Townships, Scott County Wheatland Township, Rice County
Other	
Crossing Permits/Agreements	Other utilities such as pipelines

[22] Ibid.

Federal

Section 404 Permit Clean Water Act Permit

The United States Army Corps of Engineers (USACE) "regulates the discharge of dredged or fill material into waters of the United States, including wetlands."[23] Dredged or fill material could impact water quality. A permit is required from USACE if the potential for significant adverse impacts exists.

It is anticipated the Project will be eligible for coverage under the Minnesota Utility Regional General Permit and the GRE, in consultation with the USACE, St. Paul District, will seek coverage under the appropriate permit once design of the transmission line is complete.

U.S. Fish and Wildlife Service Endangered Species Act, Migratory Bird Treaty Act, and Bald and Golden Eagle Protection Act

A permit is required from the United States Fish and Wildlife Service (USFWS) for the incidental "taking"[24] of any endangered species. As a result, USFWS encourages project proposers to consult with the agency to determine if a project has the potential to impact federally listed threatened and endangered species. Additionally, consultation can lead to the identification of mitigation measures for potential impacts associated with the project.

Eligibility for coverage under the USACE Section 404 Minnesota Utility Regional General Permit require that GRE assess whether the Project might affect any federally listed threatened, endangered, or proposed threatened and endangered species, designated critical habitat, or proposed critical habitat in compliance with the Endangered Species Act.

The Migratory Bird Treaty Act (MBTA) prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service.

Bald eagles are afforded additional protections under the Bald and Golden Eagle Protection Act, which is administered by the USFWS. USFWS recommends that utility companies engage in consultation to address potential impacts of a proposed project on bald eagles and bald eagle nests. Utilities are eligible to apply for Incidental Take Permits and Nest Removal Permits issued by the USFWS, which will allow for the non-intentional take of bald eagles and the removal of bald eagle nests, respectively. Bald eagle incidental take permits and nest removal permits are considered to be voluntary permits, meaning a project proposer must make the determination to pursue a permit based on the respective risk of their project's potential to take a bald eagle.

[23] U.S. Environmental Protection Agency (October 27, 2015) *Section 404 Permit Program*, Retrieved April 20, 2023, from: http://www.epa.gov/cwa-404/section-404-permit-program.

[24] 16 U.S. § 1532(19) (defining "take" to mean to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in such conduct).

Federal Aviation Administration Part 7460 Airport Obstruction Evaluation

Obstruction evaluation refers to aeronautical studies conducted by the Federal Aviation Administration (FAA) for any object that may affect the national airspace, air navigation facilities, or airport capacity. Title 14 Code of Federal Regulations (CFR) Part 77 requires that anyone building a structure near an airport report their intentions to the FAA. This requires a submission of FAA Form 7460, at which point the FAA will conduct an Obstruction Evaluation / Airport Airspace Analysis Process.

State

State Endangered Species Consultation

Minnesota's Endangered Species Statute and the associated rules impose a variety of restrictions, a permit program, and several exemptions pertaining to species designated as endangered or threatened. A person may not take, import, transport, or sell any portion of an endangered or threatened species. In order to determine if a Project will impact a state listed threatened or endangered species, an applicant must consult with the MDNR Natural Heritage and Nongame Research Program, which collects, manages, and interprets information about nongame species.

Historic, Archaeological, and Tribal Cultural Resources

Eligibility for coverage under the USACE Section 404 Minnesota Utility Regional General Permit require that GRE assess whether the activity might have the potential to cause effects to any historic property, listed on, eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places.

License to Cross Public Waters

Minnesota Statutes, Section 84.415, authorizes the Commissioner of Natural Resources to establish rules for the sale of licenses which permit utilities to pass over, under, or across public lands and waters under the control of the Commissioner. The Lands and Minerals Division is responsible for granting permission to companies that propose to cross public waters with utility infrastructure projects. The permission is in the form of a utility crossing license. Utility licenses are granted for a term of 25 or 50 years and may be renewed when they expire.

Water Appropriation General Permit – Construction Dewatering

Minnesota Statute 103G.265 requires the Department of Natural Resources to manage water resources to ensure an adequate supply to meet long-range seasonal requirements for domestic, agricultural, fish and wildlife, recreational, power, navigation, and quality control purposes. The Water Appropriation Permit Program exists to balance competing management objectives that include both development and protection of Minnesota's water resources. A water use permit from the DNR is required for all users withdrawing more than 10,000 gallons of water per day or 1 million gallons per year. Construction dewatering activities are sometimes required during the installation of transmission line structures.

National Pollutant Discharge Elimination System Construction Stormwater General Permit

When stormwater drains off a construction site, it carries sediment and other pollutants that can harm lakes, streams, and wetlands. The U.S. Environmental Protection Agency estimates that 20 to 150 tons of soil per acre are lost every year to stormwater runoff from construction sites. A National Pollutant Discharge Elimination System (NPDES) permit from the Minnesota Pollution Control Agency (MPCA) is required for stormwater discharges associated with construction activities disturbing one or more acres. A requirement of the permit is to develop and implement a stormwater pollution prevention plan (SWPPP), which includes Best Management Practices (BMPs) to minimize discharge of pollutants from the site.

Section 401 Water Quality Certification

A Section 401 certification is necessary to obtain a federal permit for a project to ensure that the federal government does not issue a permit or license for a project that will result in a violation of the state water quality standards set under the Clean Water Act in waters of the U.S. The federal agency, in this case the USACE, cannot issue a permit until the MPCA has either certified that the project impacting waters of the U.S. will comply with state water quality standards, or waived its review of the project. The Project is anticipated to result in impacts that are eligible for coverage under the USACE Section 404 Minnesota Utility Regional General Permit, for which the MPCA has issued a Section 401 Certification associated with the regional general permits.

Wetland Conservation Act

The Minnesota Board of Water and Soil Resources (BWSR) administers the state Wetland Conservation Act (WCA), while local units of governments (LUG), mainly Counties oversee the implementation of the WCA. The WCA requires that any person "proposing to impact a wetland to first, attempt to avoid the impact; second, attempt to minimize the impact; and finally, replace any impacted area with another wetland of at least equal function and value."[25]

Utility Accommodation on Trunk Highway Right of Way

A Utility Accommodation Permit is required by the Minnesota Department of Transportation (MnDOT) if utility lines will overhang or cross over a state highway or utility structures will be located within road ROW. The Project, as proposed, will parallel 280th St E / State Highway 19, likely cross over the highway, and may have structures located within its ROW. Project construction work could not commence along the highway until the MnDOT permit has been issued.

A Miscellaneous Work Permit is required by MnDOT for placement of temporary obstructions on the road ROW (e.g., survey vehicles).

An Oversize and/or Overweight permit is required by MnDOT when a vehicle is transporting an oversize/overweight load on Minnesota roadways.

[25] Minn. R. 8420.0100, subp. 2.

Local

Commission route permits preempt local zoning, building, and land use rules, regulations, or ordinances promulgated by regional, county, local, and special purpose government; however, coordination with local governments may be required for the issues listed below:

- Access/Driveway — Coordination may be required to construct access roads or driveways from county or township roads.
- Public Lands — Coordination would be required to occupy county or township lands such as forest lands, park lands, watershed districts, and other properties owned by these entities.
- Overwidth Load — Coordination may be required to move over-width or heavy loads on county or township roads.
- Road Crossing and Right-of-Way — Coordination may be required to cross or occupy county or township road rights-of-way.

3.6 Applicable Codes

All transmission lines, regardless of route location, must meet requirements of the National Electrical Safety Code (NESC) for High Voltage Transmission Lines.[26] NESC standards are designed to safeguard human health "from hazards arising from the installation, operation, or maintenance of … overhead and underground electric supply and communication lines."[27] They also ensure that the transmission line and all associated structures are built from materials that will withstand the operational stresses placed upon them over the expected lifespan of the equipment, provided routine operational maintenance is performed.

HVTL route permits require permittees to comply with North American Electric Reliability Corporation (NERC) standards. NERC standards define the reliability requirements for planning and operating the electrical transmission grid in North America.[28]

3.7 Issues Outside the Scope of the EA

Consistent with the scoping decision for this EA (**Appendix A**), this document does not address the following topics:

- Any alternative not specifically identified in the scoping decision.
- A no-build alternative.
- Issues related to project need, size, type or timing.

[26] *See* Minn. Stat. 326B.35; Minn. R. 7826.0300, subp. 1 (requiring utilities to comply with the most recent edition of the NESC when constructing new facilities or reinvesting capital in existing facilities); *see also* Appendix B Generic Route Permit Template, Section 4.4.1 (requiring compliance with NESC standards).

[27] IEEE Standards Association (n.d.) C2-2002 – National Electrical Safety Code 2002 Edition, http://standards.ieee.org/findstds/standard/C2-2002.html.

[28] North American Electric Reliability Corporation (n.d.) *Standards*: http://www.nerc.com/pa/stand/Pages/default.aspx.

- Impacts of specific energy sources.
- The manner in which landowners are compensated for ROW easements.

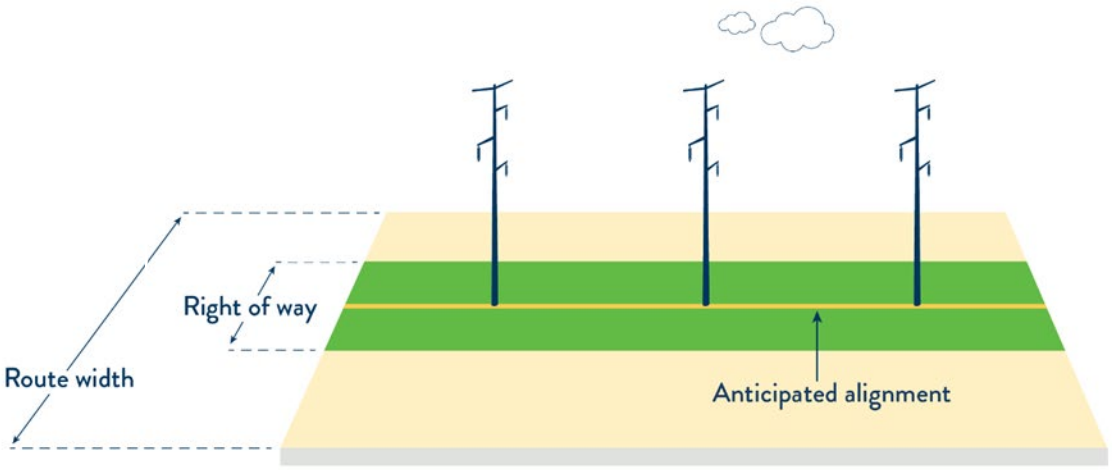
4 Proposed Project

Section 3 describes the proposed project including the requested route width, ROW, construction, operation and maintenance, anticipated costs, and schedule.

4.1 Route Width

When the Commission issues a route permit for a HVTL, the Commission approves a route, a route width, and an anticipated alignment within that route (**Diagram 1**). Minnesota Statute 216E.01, subdivision 8, defines "route" as "the location of a [HVTL] between two end points and further states "the route may have a variable width of up to 1.25 miles." The route width is typically wider than the actual ROW needed for the HVTL. This extra width provides flexibility in constructing the transmission line but is not so wide that it is impossible to determine where the transmission line would be constructed. The approved transmission line must be constructed within the Commission's designated route and along the anticipated alignment unless subsequent permissions are requested and approved by the Commission.[29]

Diagram 1: Route and Right-of-Way Illustration



GRE has requested a route width of 400 feet along most of the transmission line route, with wider portions at several locations to accommodate local features. These locations are illustrated in the detailed aerials in **Appendix C** and include the following:[30]

- The entire parcel upon which the Cedar Lake Substation is located, consisting of approximately 73 acres (**Appendix C, Page 1**).

[29] Minn. Stat. 216E.03, subd. 2; *see also* RPA at 4-1 and Appendix B (maps including route width and preferred alignment).
[30] Great River Energy Cedar Lake Reroute Application, p. 3-2, Appendix A. June 6, 2023. eDocket No. 20236-196404-01 to 10.

- A 250-foot-wide route south of Baseline Avenue for approximately 500 feet to avoid a residence to the southwest of Baseline Avenue (**Appendix C, Page 2)**.
- A 565-foot-wide route at the intersection of 280th St E / State Highway 19 and Langford Ave / State Highway 13, which extends approximately 1,000 feet. This route width was requested to accommodate the intersection of State Highway 19 and State Highway 13 (**Appendix C, Page 2**).
- A 435-foot-wide route at the intersection of 280th St E / State Highway 19 and Panama Ave / County Highway 23, which extends approximately 850 feet until the connection with Great River Energy's existing MV-EVX 115-kV transmission line. This route width was requested to accommodate the intersection of State Highway 19 and County Highway 23 (**Appendix C, Page 3**).

4.2 Right-of-Way Requirements

Minnesota Rule 7850.1000, subpart 15, defines "right-of-way" (ROW) as the "land interest required within a route for the construction, maintenance, and operation" of a HVTL. The NESC establishes clearance requirements for objects, including vegetation, to ensure that the conductor will not contact objects during high wind events.

The proposed 115 kV transmission line project will employ a ROW of 100 feet (50 feet on either side of the transmission line centerline). Select locations may require a slightly wider ROW to accommodate transmission line guy wires and anchors. Where the transmission line parallels roads, the transmission line structures are typically installed one to five feet outside of road ROW, resulting in approximately 55 feet of ROW needed outside of the road ROW.[31]

4.3 Temporary Easements

In addition to permanent easements along the ROW for the operation and maintenance of the transmission line, if needed, GRE will negotiate voluntary, short-term agreements for the use of temporary workspace for one or more marshalling yards for use in staging construction or storage of structures, vehicles, equipment, and supplies. Marshalling yards are generally sited on previously disturbed or developed areas.

4.4 Substation and Associated Facilities

The Cedar Lake Substation is already equipped with breakers and relays. This equipment is designed to protect human health, as well as the equipment on the transmission system, by de-energizing the transmission line should any unsafe line faults occur. No modifications are anticipated other than to connect the new transmission line to the substation.

[31] Great River Energy Cedar Lake Reroute Application, p. 3-7. June 6, 2023. eDocket No. 20236-196404-01 to 10.

4.5 Transmission Structures

Most of the new 115 kV line will consist of single circuit, horizontal post, or braced monopole wood structures with spans of approximately 300 to 400 feet. Transmission structures will typically range in height from 60 to 90 feet above ground (**Table 2**), depending upon the terrain and environmental constraints (**Diagram 2**). The single circuit structures will have three single conductor phase wires and one shield wire. It is anticipated that the phase wires will be 795 thousand circular mil aluminum conductor steel-reinforced (795 ASCR) or similar. The shield wire will be 0.528 optical ground wire (**Diagram 3**). The average diameter of the wood structures at ground level is 20 inches.

Table 2: Typical 115 kV Structure Dimensions

Structure Type	Material	Approximate Height Above Ground (feet)	Structure Base Diameter (inches)	Span Between Distances (feet)
Monopole with horizontal post or braced post	Wood, steel, or ductile iron	60 - 90	18 - 36	300 - 400
H-Frame	Wood, steel, or ductile iron	60 - 90	18 - 36	350 - 800
Three-pole	Wood, steel, or ductile iron	60 - 90	18 - 36	350 - 800

Diagram 2: Typical Transmission Structure Types

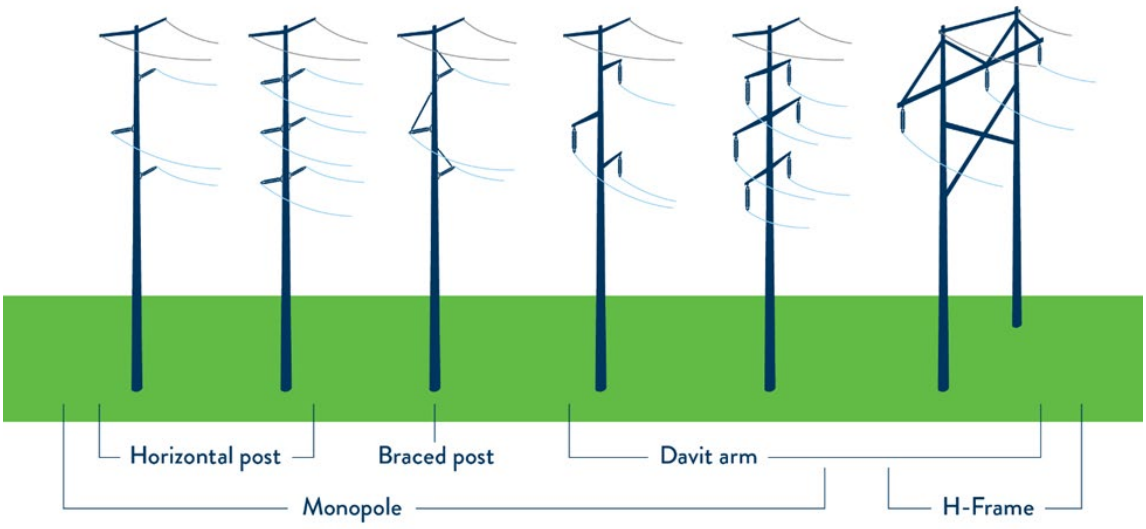
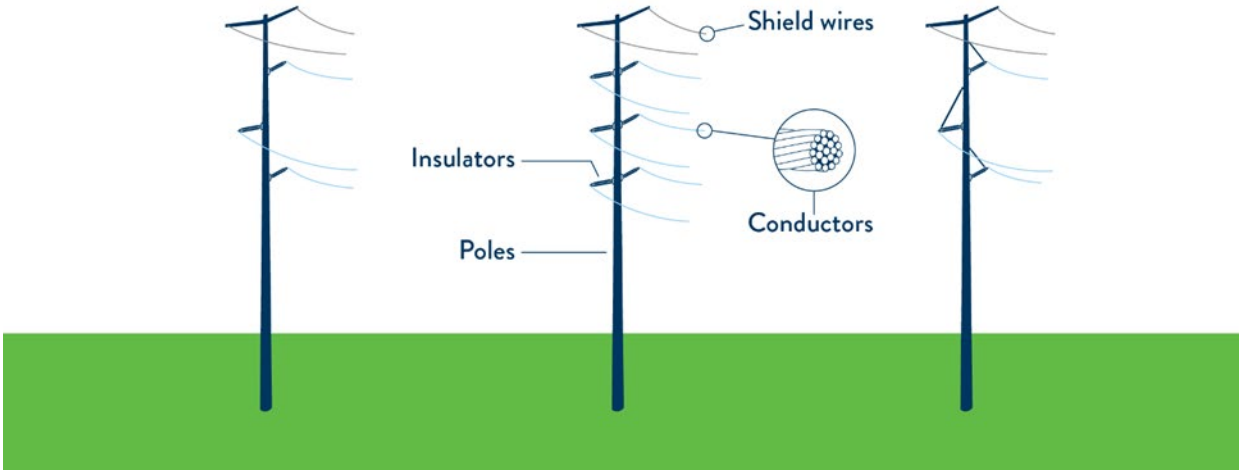


Diagram 3: Components of a Transmission Line



Laminated wood structures or steel structures may be needed for switches and angled structures; the size of these structures is dependent on the weight of the switch material, the tension on the line, or the angle of deflection the pole location causes on the transmission line.

Multi-pole and H-frame structures are designed in a horizontal configuration, which maintains the transmission line conductors parallel to the ground. Horizontal configuration is sometimes desirable where the transmission line crosses under other existing high voltage transmission lines. The horizontal configuration allows the upgraded 115-kV transmission line to be as low as possible at the crossing point, while still maintaining the required clearances set by the National Electrical Safety Code (NESC). GRE does not currently anticipate the Proposed Route will require H-frame or 3-pole structures. Dead-end structures are used to change direction or wire tension on a transmission line.

Photographs of typical 115 kV transmission line structures are shown in **Diagram 4**.

4.6 Construction

Construction will not begin until all necessary approvals are obtained, and land rights secured. The construction timeline is dependent upon several factors including final surveys and project design, receipt of approvals and reviews, weather, and the availability of labor and materials. Equipment used in the construction process includes backhoes, cranes, boom trucks and assorted small vehicles.

During formal land rights acquisition, GRE will provide the landowners the transmission line easement, offer of compensation, information on the Project schedule, construction practices, vegetation removal, and damage settlement.

Diagram 4: Photos of Typical 115 Transmission Line Structures

Single Circuit

Braced Post

3-Pole Deadend

Switch

H-Frame

The first phase of construction activities involves survey staking of the transmission line centerline and/or pole locations, followed by removal of trees and other vegetation from the ROW that will interfere with the safe operation of the transmission line. GRE may, if such language is included in an easement agreement, trim or remove unhealthy trees immediately adjacent to the transmission line ROW. Unhealthy trees near the ROW (commonly known as "danger trees") have the potential to endanger the line by falling on it. Draft route permit

conditions require permittees to minimize tree removal and preserve windbreaks, shelterbelts, and vegetation generally (**Appendix B, Section 5.3.9**).

Steps in the construction process include right-of-way preparation, staging, structure installation, conductor stringing, and collector substation work. Special construction methods will be used in sensitive areas.

Right-of-Way Preparation

Surveyors will stake the construction corridor within the approved right-of-way and the pole locations of the approved alignment in preparation for the construction crew arriving on site. Construction begins by removing trees and other vegetation from the right-of-way that will interfere with safe construction and operation of the HVTL. The Commission requires that applicants minimize tree removal to the maximum extent practicable and leave undisturbed low growing species that will not interfere with operation or construction.

Structures are generally installed at existing grade and GRE does not expect grading at structure locations unless it is necessary to provide a level area for construction access and activities. All disturbed areas will be returned to–pre-construction conditions. All imported fill, including temporary culverts and road approaches, will be removed from the site and disturbed areas will be returned to pre-disturbance conditions.

Crews will install erosion control where needed. The crew will install temporary culverts and field approaches where needed to access the route and to maintain adequate access and drainage throughout construction.

Staging Areas

Designated staging areas store equipment, structures, and other necessary materials used during construction. In some cases, additional space (temporary laydown areas) may be required. Sufficient rights to use the temporary laydown areas outside of the transmission line right-of-way will be obtained from affected landowners through rental agreements. Insulators and other hardware are attached to the structure while it is on the ground adjacent to the location where the structure is to be placed.

GRE will evaluate the need for temporary easements during project design and preliminary survey work. If temporary easements are needed, GRE will work with landowners to obtain easements for temporary construction or staging areas for storage of poles, vehicles, or other related items.

Structure Installation

When it is time to install the poles, structures are moved from the staging areas, delivered to the staked location, and placed within the right-of-way until the structure is set. Typically, access to the transmission line right-of-way corridor is made directly from existing roads or trails that run parallel or perpendicular to the transmission line right-of-way. In some situations, private field

roads or trails are used. Permission from the property owner is obtained prior to accessing the transmission line corridor outside of public rights-of-way. Where necessary to accommodate the heavy equipment used in construction (including cranes, concrete cement trucks, and hole-drilling equipment), existing access roads may be upgraded, or new access roads may be constructed. Once construction is complete any temporary field approaches and access roads installed for the Project will be removed and revegetated. Previously removed woody vegetation may be allowed to regrow so long as it does not encroach on NESC prescribed clearances and safety requirements.

GRE anticipates the predominant method for securing the poles for the Project to be direct-embedded. To place direct-embedded single poles in the ground, the spoils are removed from the ground. Temporary casing may be required if the hole does not stay open during the excavation process. The pole is set and backfilled with crushed rock. The spoils will be removed from site unless other arrangements are made with the landowner. GRE will not dispose of spoil materials within remnant prairie lands, areas restored to native plant communities, wetlands, protected water bodies, protected watercourses, or in a manner that could impact these areas through erosion or transport of the spoil materials. Concrete foundations will be used when warranted by site specific design criteria or circumstances. For concrete foundations, the excavation process will utilize temporary steel casing and rebar, concrete and anchor bolts will be placed in the hole. The standard projection of a concrete foundation is one foot above grade. Structures located in wet environments may require additional foundation support, typically consisting of a concrete foundation or placement of the structure base inside a vertical, galvanized steel culvert.

Conductor Stringing

Once structures are installed, conductors are strung along the line. Typically, setup areas are approximately three times the height of the structure and as wide as the right-of-way width. Puller-tensioner sites are locations where the contractor will set up equipment to pull in and tension the conductor. Exact locations are unknown currently. These locations are most often located at major obstacles such as turning points in the alignment. Conductors and a shield wire will be strung, tightened, and, once appropriate tension is obtained, secured to each structure. Crews will use temporary guard or clearance structures to provide adequate clearance over roads, existing power lines, waterways, or other potential obstructions, as well as to protect the conductor. Lastly, crews will install bird diverters on the shield wire in select locations; their placement will be coordinated with MDNR.

Other Construction Techniques

Several construction techniques will be utilized for the project. These techniques, such as the timing of construction to minimize impacts, are common construct practices throughout the industry.

GRE indicates that they, or its contractor, will maintain sound water and soil conservation practices during construction and operation of the facilities to protect topsoil and adjacent water resources and minimize soil erosion. Practices may include containing excavated material, protecting exposed soils, and stabilizing restored soil.

GRE indicates that impacts to wetlands will be minimized through construction BMPs. This means avoiding construction in wetlands if possible and avoiding major disturbance of individual wetlands and drainage systems during construction. This will be accomplished by strategically locating new access roads and spanning wetlands and drainage systems where possible. When it is not feasible to span the wetland, construction crews will rely on several options during construction to minimize impacts:

- When possible, construction will be scheduled during frozen ground conditions.
- Crews will attempt to access the wetland with the least amount of physical impact to the wetland (i.e., shortest route).
- The structures will be assembled on upland areas before they are brought to the site for installation.
- When construction during winter is not possible, construction mats will be used to minimize impacts to the extent practicable.

Restoration

Restoration will follow industry best practices and be completed as soon as possible after construction activities are over. The ground will be disturbed during the normal course of work (as is typical of most construction projects), which can take several weeks in any one location. GRE will restore areas disturbed by construction in accordance with BMPs and the Project's permit conditions. This will begin with a pre-construction survey that will identify areas requiring special restoration procedures. During construction, crews will also attempt to limit ground disturbance wherever possible. As construction on each parcel of land is completed, disturbed areas will be restored as nearly as possible to their original condition.

GRE or its contractor will contact each property owner after construction is completed to identify and address any damage that may have occurred due to construction of the project. If damage has occurred to crops, fences or the property, typically terms and conditions or the transmission easement agreement require the permittee to fairly compensate the landowner for damages.

In some cases, GRE may engage an outside contractor to restore the damaged property to its original condition. Permanent vegetation that is disturbed or removed during construction of transmission lines will be reestablished to pre-disturbance conditions. Resilient species of common grasses and shrubs typically reestablish naturally with few problems after disturbance. Areas with significant soil compaction and disturbance from construction activities along the route will require assistance in reestablishing the vegetation stratum and controlling soil erosion.

Maintenance

Regular inspections will identify needed maintenance and repairs. Transmission lines are designed to operate for decades, typically requiring only moderate maintenance, particularly in the first few years of operation. The estimated service life of the proposed project is approximately forty years. However, HVTLs are seldom completely retired.

Transmission infrastructure includes very few mechanical elements, which results in reliability. It is built to withstand weather extremes, apart from severe weather such as tornadoes and heavy ice storms. Transmission lines are automatically taken out of service by the operation of protective relaying equipment when a fault is sensed on the system. Such interruptions are usually momentary. Scheduled maintenance outages are also infrequent. As a result, the average annual availability of transmission infrastructure is very high, in excess of 99 percent.

The principal operating and maintenance cost for transmission facilities is the cost of inspections, which will be performed monthly by either truck or by air. Inspections will be conducted to ensure that the transmission line is fully functional, and that no vegetation has encroached, violating NESC prescribed clearances. Construction costs for 115 kV transmission lines in rural Minnesota are approximately $700,000 per mile. Average operation costs of HVTLs in Minnesota are approximately $2,000 per mile. Actual line-specific maintenance costs depend on the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used, and the age of the line.

4.7 Project Costs

Estimated costs for the proposed Project are approximately $10.4 million. Costs and tasks are divided into six phases as summarized in **Table 3**.

GRE anticipates 15 to 25 daily contract workers will be employed during construction of the Project; GRE will have a construction supervisor onsite throughout the construction phase.[32] GRE has stated that it will adhere to a policy where "preference shall be given to local suppliers.[33] Local suppliers are those suppliers or contractors who are physically located in GRE's service territory (Minnesota / Wisconsin) and/or in states where GRE has a physical location (North Dakota). GRE states that it typically hires contractors who pay their employees at or better than prevailing wages.[34]

[32] Great River Energy Cedar Lake Reroute Application, pp. 3-8. June 6, 2023. eDocket No. 20236-196404-01 to 10.
[33] Ibid.
[34] Ibid.

Table 3: Project Costs

Project	Planning/State Permitting	Land Acquisition/ Permits	Design	Procurement	Construction	Close Out	Total
Transmission Line	$386,378	$2,840,303	$507,551	$3,018,234	$2,958,647	$156,635	**$9,867,748**
Switches	$16,248	$3,271	$126,680	$214,377	$178,515	$13,212	**$552,303**
Total	**$402,626**	**$2,843,574**	**$634,231**	**$3,232,611**	**$3,137,162**	**$169,847**	**$10,420,051**

4.8 Project Schedule

GRE plans to commence construction of the Project in fall 2024 once required permits and approvals are obtained and anticipates construction will take approximately seven to eight months with the Project being energized in summer 2025.

5 Potential Impacts of the Proposed Project

This section provides an overview of the resources and potential impacts and mitigation measures associated with the route and alignment/ROW as proposed in the Applicant's Route Permit Application. Specifically, this section discusses and analyzes:

- The human and environmental resources affected by the project,
- Potential impacts to human and environmental resources, and
- Opportunities to avoid, minimize, or mitigate potential impacts.

The Commission's request for an evaluation of an expanded route width (2,640 feet) along Baseline Avenue between the Cedar Lake Substation and Highway 19 to provide an assessment of potential impacts through this area, and that the EA include an analysis of underbuilding for the full length of the proposed route paralleling Highway 19 are discussed in Section 5.

5.1 Consideration of Potential Impacts

A potential impact is the anticipated change to an existing condition caused either directly or indirectly by the construction and operation of a proposed project. Potential impacts can be positive or negative, short- or long-term, and, in certain circumstances, can accumulate incrementally. Impacts vary in duration and intensity, by resource, and across locations.

Direct impacts are caused by the proposed action and occur at the same time and place as the action. An indirect impact is caused by the proposed action but is further removed in distance or occurs later in time. It must be reasonably foreseeable, which means a reasonable person would anticipate or predict the impact. Cumulative impacts are the result of the incremental effects of the project in combination with other past, present, and reasonably foreseeable future projects.

In addition, impacts are put into context using the following concepts:

Duration. Impacts vary over time. Short-term impacts are generally associated with project construction. Long-term impacts are associated with the operational life of the project and usually end with project decommissioning. Permanent impacts extend beyond the decommissioning stage of the project.

Size. Impacts vary by size. Size is a measure of how big something is. To the extent possible, potential impacts are described quantitatively, for example, the number of impacted acres or the percentage of affected individuals in a population.

Intensity. Impacts vary in intensity. Intensity is a measurement of the severity of an impact on a resource condition or function. To the extent possible, potential impacts are described quantitatively, for example, the percentage of affected individuals in a population.

Location. Impacts are location dependent. For example, noise impacts decrease as distance from the source increases, or common resources in one location might be uncommon in another.

Uniqueness. Resources are different. Common resources occur frequently, while uncommon resources are not ordinarily encountered.

In combination with the anticipated on-the-ground effect, the above context is used to determine an overall resource impact level, which can range from highly beneficial to highly harmful. Impact levels are described using a qualitative scale, which is explained below. These terms are used to both ensure a common understanding among readers and, typically, to compare resource impacts between alternatives.

Minimal. Minimal impacts do not considerably alter an existing resource condition or function. Minimal impacts might, for some resources and at some locations, be noticeable to an average observer. These impacts generally affect common resources over the short-term.

Moderate. Moderate impacts alter an existing resource condition or function and are generally noticeable or predictable to the average observer. Effects might be spread out over a large area making them difficult to observe but can be estimated by modeling or some other means. Moderate impacts might be long-term or permanent to common resources, but generally short- to long-term to uncommon resources.

Significant. Significant impacts alter an existing resource condition or function to the extent that the resource is severely impaired or cannot function. Significant impacts are likely noticeable or predictable to the average observer. Effects might be spread out over a large area making them difficult to observe but can be estimated by modeling. Significant impacts can be of any duration and affect common or uncommon resources.

This section also discusses opportunities to avoid, reduce, or mitigate the level of impact. These actions are collectively referred to as mitigation.

Avoid. Avoiding an impact means it is eliminated altogether by moving or not undertaking parts or all a project.

Minimize. Minimizing an impact means to limit its intensity by reducing project size or moving the project from a given location.

Mitigate. Impacts that cannot be avoided or further minimized might be mitigated. Mitigating an impact means fixing it by repairing, rehabilitating, or restoring the affected environment, or compensating for it by replacing or providing a substitute resource elsewhere.

Some impacts are avoidable or can be minimized; some might be unavoidable but can be mitigated; others might be unavoidable and unable to be mitigated.

5.2 Regions of Influence

Potential impacts to human and environmental resources are analyzed in this EA within specific spatial bounds or regions of influence (ROI). The ROI for each resource is the geographic area within which a particular impact may exert some influence. This EA uses the ROI concept as the basis for assessing the potential impacts to each resource because of the proposed project. The ROI for the impacts analyzed in this EA are summarized in **Table 4**.

Table 4: Regions of Influence for Human and Environmental Resources

Type of Resource	Specific Resource / Potential Impact to Resource	Region of Influence
Human Settlement	Displacement	ROW/Route
	Aesthetics, Electronic Interference, Noise, Property Values, Zoning and Land Use Compatibility,	500 feet
	Public Utilities, Emergency Services, Roads	One Mile
	Socioeconomics, Cultural Values, Airports	County
	Corridor Sharing	One-quarter Mile
Public Health and Safety	Electric and Magnetic Fields, Implantable Medical Devices, Stray Voltage, Induced Voltage	500 feet
Land-based Economies	Agriculture, Forestry, Mining	ROW
	Tourism and Recreation	One Mile
Archaeological and Historic Resources	Artifacts and Historic Places	One Mile
Natural Environment	Surface Waters, Ground Water, Wetlands, Vegetation, Soils, Wildlife	ROW[35]
	Air	County
Rare and Unique Resources	Listed Species	One Mile

The ROI for most human and environmental resources is the permanent footprint of the proposed Project, as represented by the transmission line ROW. Resources within the footprint, such as soils and trees, are more likely to be impacted by the construction and operation of the

[35] Avian species can move easily throughout the project area and are susceptible to collision with transmission line conductors. Consequently, impact to avian species will be considered and discussed with a ROI larger than the ROW.

proposed Project. For example, soils could be compacted, and trees may be removed. Other resources may be impacted at a greater distance from the project. In this EA, the following ROIs will be used:

- **ROW:** A distance of 100 feet (50 feet on either side of the proposed alignment) is used to analyze the impacts of displacement, agriculture, forestry, mining, topography, soils, vegetation surface water resources, and wildlife. Although the actual alignment may differ from that proposed by GRE and the ROW may be somewhat smaller or larger in certain areas, use of a standard ROW along the anticipated centerline(s) provides for a consistent assessment of potential impacts.
- **500 feet:** A distance of 250 feet either side of the proposed alignment is used as the ROI for analyzing potential impacts to aesthetics, noise, property value and electric and magnetic fields impacts.
- **One Mile:** A distance of one mile from the proposed alignment is used as the ROI for analyzing potential impacts to archaeological and historic resources, and rare and unique species. Direct impacts, if they occur, are anticipated to diminish relatively quickly such that the potential impacts outside the route would be minimal to moderate. However, indirect impacts may extend beyond the route.
- **County:** Scott and Rice Counties are used as the ROI for analyzing potential impacts to cultural values, socioeconomics, public utilities, airports, air quality, and emergency services. These are resources for which impacts may extend throughout communities in the project area.

5.3 Environmental Setting

The proposed project straddles both Scott and Rice Counties and is located in Helena and Cedar Lake Townships (east of New Prague) in Scott County and Wheatland Township in Rice County.

The Minnesota Department of Natural Resources and the U.S. Forest Service have developed an Ecological Classification System (ECS) for ecological mapping and landscape classification. The Project is located within the Big Woods Subsection, and NE Iowa Morainal Section of the Eastern Broadleaf Forest Province, according to the DNR Ecological Classification System.[36] The Eastern Broadleaf Forest (EBF) Province in Minnesota covers nearly 12 million acres of the central and southeastern parts of the state and serves as a transition between semi-arid portions of the state that were historically prairie and semi-humid mixed conifer-deciduous forests to the northeast. The western boundary of this province is sharply defined along much of its length as an abrupt transition from forest and woodland to open grassland. The northeastern boundary is more diffuse, with a gradual transition between eastern deciduous forests and the mixed conifer-hardwood forests of northern Minnesota. The topography and surface geology are largely the product of Pleistocene glacial processes; the northwestern and central portions of the province

[36] DNR. *Ecological Land Classification Hierarchy,* http://www.dnr.state.mn.us/ecs/index.html. The Ecological Classification System (ECS) was developed for Minnesota by the DNR and the U.S. Forest Service for ecological mapping and landscape classification.

were covered by ice in the last glaciation and are characterized by thick (100–300 feet) deposits of glacial drift. Glacial lakes associated with the last glacial advance contributed large volumes of meltwater to rivers that cut deep valleys along the present course of the Minnesota, St. Croix, and lower Mississippi rivers.[37]

The environmental setting of the proposed route and surrounding area includes hydrologic features such as such as wetlands, ponds, streams, lakes, including Cedar Lake, Mud Lake, and Sand Creek. Land use within the Project Area is primarily agricultural and rural residential areas, with pockets of industrial/commercial development.

There are existing transmission lines and Minnesota Valley Electric Cooperative (MVC) distribution lines located within the Project area. The CapX2020 transmission line is north of the Proposed Route along 260th Street East/County Road 2. The Xcel Energy 0744 69-kV line runs west and south of the Project, and the Great River Energy MV-EVX 115-kV line, which would serve as the connection point for the Project, runs north-south to the east of the Project (**Figure 3**).

Prior to European settlement, Oak woodland and maple-basswood forest were the most common vegetation types on the irregular ridges of in the Big Woods subsection.[38]

5.4 Impacts to Human Settlement

Construction and operation of new transmission lines have the potential to impact human settlement. These impacts might be short-term, for example, an influx of construction jobs during construction, or long-term, for example, changes to land use.

5.4.1 Aesthetics

Aesthetic, or visual resources, are generally defined as the natural and built features of a landscape that may be viewed by the public and contribute to the visual quality and character of an area. Aesthetic resources form the overall impression that an observer has of an area or its landscape character. Distinctive landforms, water bodies, vegetation, and human-made features that contribute to an area's aesthetic qualities are elements that contribute to an area's visual character. Visual quality is generally defined as the visual significance or appeal of a landscape based on cultural values and the landscape's intrinsic physical elements.

Visual sensitivity is a measure of viewer interest and concern for the visual quality of the landscape and potential changes to it, which is determined based on a combination of viewer sensitivity and viewer exposure. Viewer sensitivity varies for individuals and groups depending on the activities viewers are engaged in, their values and expectations related to the appearance and character of the landscape, and their potential level of concern for changes to the landscape. High viewer sensitivity is typically assigned to viewer groups engaged in recreational or leisure

[37] Ibid.
[38] Ibid.

activities; traveling on scenic routes for pleasure or to and from recreational or scenic areas; experiencing or traveling to or from protected, natural, cultural, or historic areas; or experiencing views from resort areas or their residences. Low viewer sensitivity is typically assigned to viewer groups engaged in work activities or commuting to or from work.

Viewer exposure varies for any view location or travel route depending on the number of viewers and the frequency and duration of their views. Viewer exposure would typically be highest for views experienced by high numbers of people, frequently, and for long periods. Other factors, such as viewing angle and viewer position relative to a feature or area, can also be contributing factors to viewer exposure.

The landscape within the project area is a mixture of rural residential development, forested land, agriculture, and utility infrastructure. The 500-foot ROI for aesthetic resources was identified because the proposed project is most likely to be visible within this near-foreground distance zone and views of the proposed project from aesthetic resources within this distance zone have the greatest potential to result in visual impacts for sensitive viewers.

The proposed transmission line will be visible along the proposed route, like the GRE 115-kV MV-EVX transmission lines in the area. Portions of the area already have overhead MVEC distribution lines. Most of the new structures will be wood poles approximately 60 to 90 feet above ground with spans between poles ranging from 300 to 400 feet.

The current understanding between GRE and MVC is that where Project overtakes MVC distribution lines, MVC would elect to decommission those lines and bury new lines given GRE's offer of financial assistance. This would include locations along the eastside Baseline Avenue, and 280th Street East/State Highway 19. Given that the existing MVC distribution lines which have been in place for at least a decade would be replaced with the new structures, thus the visual impacts might be perceived by a viewer as incremental, resulting in fewer, albeit taller (20-30 feet taller) structures on the landscape.

Potential Impacts

Impact on aesthetics is probably the most cited impact category associated with transmission lines. Aesthetics, as a *Factor Considered*, carries the most weight when it is tied to a specific feature: residential property, Scenic Byways, Historic/Archaeological/Natural Features, Cultural Values, or National Monuments, for example. In other situations, such as among and along existing infrastructure, the impact on aesthetics generally carries much less weight, is usually viewed as incremental, and is one of the reasons collocating among the built environment (utility corridors, road and railways, pipelines, etc.) is preferred.

The visual impact of the project is expected to be most noticeable for residents and businesses in the immediate vicinity of the transmission line along the roadways it parallels and near the Cedar Lake Substation where the enters/exist the facility. The nearest residences are located along Baseline Avenue and 280th St East/State Highway 19. The closest home is approximately 176 feet from the proposed alignment (**Appendix C, Page 2**).

Table 5 summarizes the residential and non-residential buildings at various distances to the proposed alignment for the Project.

Table 5: Building Distances from Proposed Alignment

Building Type	0-50 feet	50-100 feet	100-150 feet	150-200 feet	Total
Home	0	0	0	1	1
Business	0	0	1	1	2
Outbuilding	1	2	1	3	7
Total	**1**	**2**	**2**	**5**	**10**

During the scoping comment period several residents of the Country Hollows Development expressed concern over the potential impacts from the proposed alignment along the northside of Highway 19 (**Diagram 5**). The proposed alignment would pass directly over the landscaping at the entrance and more than likely require some tree removal to remain compliant with the NECS code (**Appendix C, Page 3**).

Diagram 5: Landscaping Country Hollow Development

Because the Project will utilize existing Minnesota Valley distribution line ROW along portions of Baseline Avenue, and 280th Street East/State Highway 19, and will largely be collocated with

existing utilities and parallel existing road ROW, the aesthetic impacts are anticipated to be minimal. The existing Minnesota Valley distribution lines have been in place for at least a decade and thus the visual impacts might be perceived by a viewer as less because it is anticipated that the existing distribution will be buried by MV resulting in fewer, albeit taller (20-30 feet taller) structures on the landscape.

Mitigation

Aesthetic impacts cannot be fully avoided. GRE is committed to working with landowners on pole placement and alignment adjustments. Potential mitigation measures include:

- Location of structures, ROW, and other disturbed areas will be determined by considering input from landowners to minimize visual impacts.
- Care shall be used to preserve the natural landscape. Construction and operation shall be conducted to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work.
- Landowners may be compensated for the removal of trees and vegetation based on easement negotiations.

Structures will be placed at the maximum feasible distance from trail and water crossings, within limits of structure design and applicable regulations.

An appropriate mitigation for the identified impacts to the landscaping at the entrance to the Country Hollow Development would be avoidance. This could be accomplished by modification of the proposed alignment, moving the proposed alignment to the south side of State Highway 19 just west of Country Hollow Lane while staying in the requested route width avoiding the land scaping at the entrance to the development (**Figure 4**).

5.4.2 Cultural Values

Cultural values can be described as shared community beliefs or attitudes, among a given area or population that define what is collectively important and worthwhile to the group. Major infrastructure projects can be inconsistent with the cultural values of an area, resulting in a deterioration of a community's shared sense of self.

The project area incorporates parts of both Scott and Rice County.

Scott County was founded in 1853 before Minnesota became a state in 1858. Its County Seat is Shakopee.[39] Before the colonization of Minnesota, it was home to the Dakota Sioux, also known as Oceti Sakowin. The Native Americans (Dakota Sioux) inhabited these lands before fur traders settled here. They camped along the Minnesota River, which runs along the northern border of the county. The Treaty of Traverse Des Sioux was signed in 1851 giving up Sioux land to the government; in 1862, this treaty was not to last as a war broke out between the Sioux and white

[39] "History: Scott County, MN." *History | Scott County, MN*, www.scottcountymn.gov/905/History

settlers. This war was known as the Dakota War; after the Dakota War, many immigrants from European countries settled here.[40]

According to the Scott County 2040 Comprehensive Plan, Scott County is the youngest and fastest growing county in the state, and its population growth is anticipated to continue to outpace all other counties in Minnesota through 2040. Scott County has experienced considerable population growth and has become more urbanized and ethnically diversified over the past 50 years.

Scott County is an agriculturally based community; however, it has diversified with commercial, industrial, and housing developments. The Shakopee Mdewakanton Sioux Community is a federally recognized Indian Tribe that holds land in north-central Scott County, owns and operates the Mystic Lake Casino, and is one of the largest employers in Scott County. The County is home to several historical, scenic, and entertainment destinations including Canterbury Park, Murphy's Landing, Elko Speedway, Renaissance Festival, Valleyfair, and the aforementioned Mystic Lake Casino. Scott County has been working to expand outdoor recreational opportunities for its residents by preserving land to steward and conserve natural resources and wildlife habitat, and increasing funding and therefore services (e.g., new parks, trails, improved accessibility, infrastructure maintenance) associated with the regional park system.

Scott County also supports the use of renewable and alternative energy sources to reduce greenhouse gases and protect the natural environment.

Rice County, which is located to the south of Scott County, is considered a transitional area between south-central and southeastern Minnesota. It is more rural in character relative to Scott County, and much of the land use is agricultural to produce corn and soybeans as well as livestock operations.

Long before explorers came to southern Minnesota, Native Americans called this land home for centuries. Stone tools have been found that date back more than 10,000 years. The oldest known inhabitants of the area were the Mound Builders, most likely the ancestors of the Dakota and Iowa Native Americans.[41]

The first European explorer to visit the area was Le Sueur who came in 1695. Le Sueur built a fort on Prairie Island on the Mississippi, traded with the Mdewakanton Dakota, and explored the area as far as Mankato. It would be another 200 years before the first European settlers would make their claims on the land.[42]

[40] Ibid.
[41] Rice County Comprehensive Plan (ricecountymn.gov).
[42] Rice County Comprehensive Plan (ricecountymn.gov).

Rice County was founded on March 5, 1853. It was named for Henry Mower Rice, a fur trader who became instrumental in creation of the Minnesota Territory and its subsequent growth and development.

Rice County is home to the Minnesota State Academies, St. Olaf College, and Carleton College. It boasts 13 parks within the park system totaling over 1,100 acres, in addition to open space such as Rossez Wildlife Area, Cannon River, Wildlife Management Areas, State Scientific and Natural Areas, conservation lands, farmed lands, and forest lands.

Like Scott County, Rice County also supports the use of renewable and alternative energy sources and has taken steps to become a more sustainable place for residents and visitors.

Potential Impact and Mitigation

Construction of the proposed Project is not expected to conflict with the cultural values of the area; therefore, no mitigation is proposed.

5.4.3 Displacement

In the context of transmission line routing proceedings, displacement refers to the removal of a residence or building to facilitate the safe operation of a transmission line. The National Electric Safety Code (NESC) standards require certain minimum clearances between transmission lines and objects such as trees, buildings, or other structures to ensure that the transmission line can be operated safely. For electrical safety code and maintenance reasons, utilities generally do not allow residences or other buildings within the ROW of a transmission line. Any residences or other buildings located within a proposed ROW are generally removed, or "displaced."

Potential Impacts

No displacement of residential homes, structures or businesses will occur as a result of the Cedar Lake Reroute Project. The NESC and Great River Energy standards require certain clearances between transmission line structures and buildings or structures within the ROW for safe operation of the proposed transmission line. Displacement of residential homes, structures or businesses in the ROW would occur only if a transmission line alignment and design could not accomplish these necessary clearances. The requested route (400-foot route width) provides sufficient design flexibility and distances from existing homes and structures for a transmission line design that achieves the requisite clearances.

The nearest residences are located along Baseline Avenue and 280th St East/State Highway 19. The closest home is approximately 176 feet from the proposed alignment (**Appendix C Page 2**).

Table 5 summarizes the residential and non-residential buildings at various distances to the proposed alignment for the Project.

Mitigation

Displacement of existing homes and other structures can often be avoided through design refinements to the project. These refinements could include modifications to the transmission line alignment or design modifications (e.g., changes in structure design).

No displacement is anticipated, and therefore no mitigation is required.

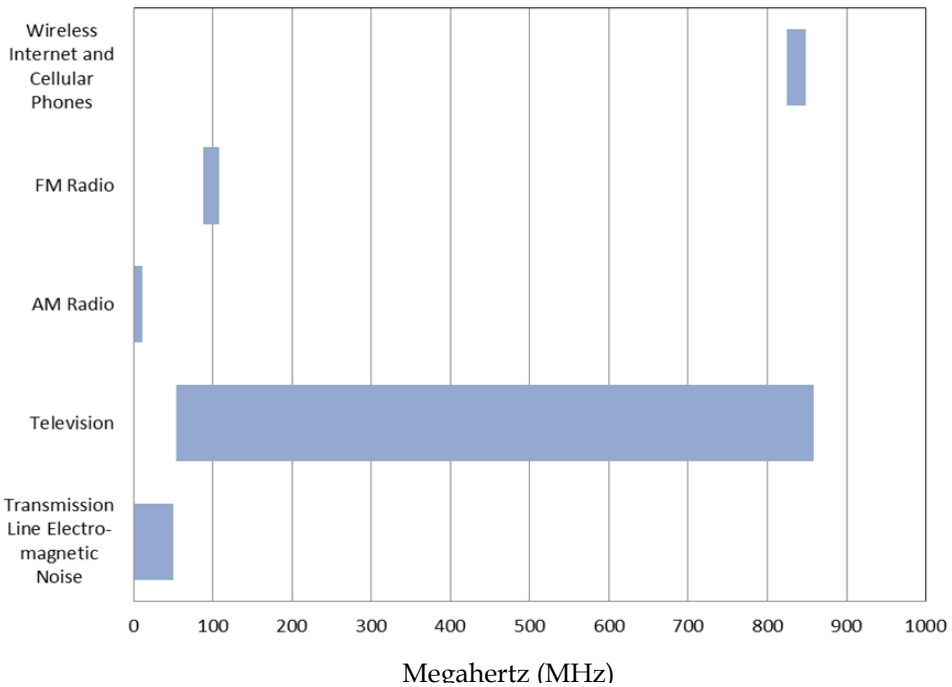
5.4.4 Electronic Interference

Transmission lines have the potential to interfere with the normal operation of electronic devices. Interference can result from electromagnetic noise created by the ionization of air molecules surrounding conductors. This ionization is commonly known as corona. Interference can also result from transmission line poles blocking line-of-sight communications.

Radio Interference

Corona from transmission line conductors can generate electromagnetic noise in the Amplitude modulation (AM) radio frequency range (**Diagram 6**). This noise may cause interference with radio communications. AM radio interference typically occurs immediately under a transmission line and dissipates rapidly on either side. If radio interference from transmission line corona does occur, satisfactory reception from AM radio stations can be restored by appropriate modification of the receiving antenna system.

Diagram 6: Electronic Communication & Transmission Line Frequencies



Frequent modulation (FM) radio receivers usually do not pick up interference from transmission lines because corona-generated radio frequency noise decreases in magnitude with increasing frequency and is quite small in the FM broadcast band (**Diagram 6**). Additionally, the interference rejection properties inherent in FM radio systems make them virtually immune to electromagnetic noise.

Two-way radios used for emergency services typically operate at frequencies greater than 150 MHz. Minnesota is currently moving to a statewide emergency communications system that operates at 800 MHz.[43] Corona-generated electromagnetic noise is minimal at these frequencies (**Diagram 6**).

Television Signals

It is possible to receive television broadcasts through a digital antenna, satellite dish, or a local cable provider. How an individual receives their television broadcast dictates the potential interference that might occur from a transmission line.

Digital broadcast frequencies are higher than frequencies generated by corona noise. Additionally, digital broadcasts use packets of binary information as opposed to waveforms to transfer content. These binary signals are less susceptible to corruption and can be corrected for errors. Digital broadcasts are susceptible to freezing and pixilation due to multipath reflections or low signal strength.

Satellite television is broadcast at radio frequencies in the 12 to 18 gigahertz range.[44] These signals are also higher than corona generated noise. Satellite television is susceptible to line-of-sight interference, for example, rain or snow can result in the loss of signal. If the obstruction is removed, the signal interference will be removed also.

Cable broadcasts are redistributed satellite broadcasts and are generally not susceptible to interference due to the use of shielded coaxial cable.

Impacts to television broadcasts from the new HVTL are not anticipated for any of the routing options. Transmission frequencies are higher than those of corona-generated noise, which makes interference unlikely. Multipath reflections due to the structures supporting the project's conductors are unlikely. Line-of-site obstructions could occur if a structure was directly in the path of a transmission signal (e.g. satellite signal).

Wireless Internet and Cellular Phones

Wireless internet and cellular phones use frequencies in the UHF range and vary based on phone service provider. UHF signals begin at 900 MHz and are higher than frequencies generated by corona noise.

---

[43] Emergency Medical Services Regulatory Board, EMS Radio Project, http://www.emsrb.state.mn.us/comm.asp.

[44] National Telecommunications and Information Administration (August 2011).

Potential Impacts

No impacts to electronic devices are anticipated as a result of the construction and operation of the new HVTL. Interference due to electromagnetic noise is not anticipated. Interference due to line-of-sight obstruction is not anticipated and can be mitigated through structure placement.

Mitigation

Any impacts to AM radio reception can be mitigated by distance from the conductor or by antenna modifications.

Uses of different antennas or satellite dishes, or adjusting their locations, will typically resolve any impacts to television signals that may be impacted.

Impacts to wireless internet and cellular phones are not anticipated and mitigation is not proposed.

The draft route permit includes conditions requiring the permittee to mitigate impacts on communications devices and to restore reception to pre-project quality (**Appendix B, Section 5.4.3**).

5.4.5 Land Use and Zoning

Land use is the use of land by humans, such as residential, commercial, or agricultural uses, and often refers to zoning. Zoning is a regulatory tool used by local governments (cities, counties, and some townships) to promote or restrict certain land uses within specific geographic areas. Land use planning and zoning are tools used to manage land resources in a way that encourages orderly development and protects the resources and uses that are valued by people living in an area.

If transmission lines are routed in areas where they are incompatible with existing or planned land uses, it can restrict land use, landowners and communities from using their land resources in ways they prefer, getting in the way of efficient and organized use and development of land or compromising land and water quality.

The existing Cedar Lake Substation and the Proposed Route west of Baseline Avenue are in Helena Township, in Scott County. The proposed route from Baseline Avenue south to 280th Street East/Highway 19 is located within Cedar Lake Township, Scott County. The proposed route then follows 280th Street East/Highway 19, which corresponds to the Scott County/Rice County line. The proposed alignment crosses over the county line (from the northside to southside of Highway 19) six times, with 2.0 miles on the north side in Cedar Lake Township, Scott County, and 2.0 miles on the south side in Wheatland Township, Rice County. The Project area is to the east and outside of the City of New Prague.

The Project area consists largely of agricultural and rural development land use patterns. Land cover along the proposed route is a mix of agriculture, residential, woodlands, and wetlands (**Figure 5**).

Zoning classification for the Project area is illustrated in **Figure 6**.

According to the Scott County and Rice County Zoning Ordinances, essential public services including transmission, utilities, and substations are allowable within these zones with a conditional use permit.

The Commission's route permit decision must be guided, in part, by potential impacts to local zoning and land use to fulfill the legislative goal of "minimizing human settlement and other land use conflicts."[45]

Potential Impact and Mitigation

Impacts to land use because of the Project are expected to be minimal, and construction of the line will not change land uses, particularly given that the Project will be located with existing utility and road ROW. Short-term agricultural impacts might occur during construction, which will be mitigated through restoration and compensatory payments. Minimal impacts to residential land uses are anticipated; therefore, no additional mitigation is proposed.

5.4.6 Noise

Noise can be defined as any undesired sound.[46] It is measured in units of decibels on a logarithmic scale. The A-weighted scale (dBA) is used to duplicate the sensitivity of the human ear.[47] A three dBA change in sound is barely detectable to average human hearing, whereas a five dBA change is clearly noticeable. A 10 dBA change is perceived as a sound doubling in loudness.

Minnesota's noise standards differ based on noise area classifications (NAC), which correspond to the location of the listener (or receptor) and the time of day (**Table 6**).[48] Although the NACs are based on the land use activity (e.g., residential, educational, and manufacturing) of the location where the noise is heard, the NACs do not always reflect the zoning of the location. Noise standards are expressed as a range of permissible dBA over a one-hour time period. L_{10} may be exceeded for only 10 percent of the time, or six minutes, while L_{50} may be exceeded for only 50 percent of the time, or 30 minutes. Standards vary between day and nighttime hours.[49]

The proposed project is in a rural area. Ambient noise levels in these types of locations are generally between 30 and 40 dBA during daytime hours, with higher ambient noise levels of 50

---

45 Minn. Stat. 216E.03, subd. 7.
46 MPCA (n.d.) *Noise Program*: https://www.pca.state.mn.us/air/noise-program.
47 MPCA (November 2015) *A Guide to Noise Control in Minnesota*: https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf.
48 Minn. R, 7030.0050, https://www.revisor.leg.state.mn.us/rules/?id=7030.0050
49 MPCA (November 2015), page 2.

to 60 dBA expected near roadways. The primary noise receptors within the route would be residences.

Table 6: Noise Area Classifications (dBA)[50]

Noise Area Classification (NAC)	Daytime (7:00 a.m. to 10:00 p.m.)		Nighttime (10:00 p.m. to 7:00 a.m.)	
	L_{10}	L_{50}	L_{10}	L_{50}
1	65	60	55	50
2	70	65	70	65
3	80	75	80	75

Potential Impacts

Potential noise impacts due to the new transmission line can be grouped into two categories: (1) noise from construction of the transmission line, and (2) noise from operation of the transmission line. Noise impacts for both categories are anticipated to be minimal.

Construction

Construction noise is not anticipated to exceed state noise standards; however, this does not mean that direct noise impacts will not occur from construction related activities. These minimal impacts will be short-term and sporadic. GRE would be expected to restrict construction activities to daytime hours, limiting the impact of construction noise on local residences.

Noise from heavy equipment and increased vehicle traffic will occur during daytime hours. These impacts are anticipated to be short-term and intermittent. Noise associated with heavy equipment can range between 80 and 90 dBA at full power 50 feet away from the source. Heavy equipment generally runs at full power up to 50 percent of the time.[51] Point source sounds decrease six dBA at each doubling of distance.[52] This means an 80 dBA sound at 50 feet is perceived as a 50 dBA sound at 1,600 feet. Any exceedance of noise standards would be short-term and confined to daytime hours.

Operation

Noise from transmission lines is due to small electrical discharges at specific locations along the surface of the conductor that ionize surrounding air molecules. This phenomenon—common to all transmission lines—is known as corona. In general, any imperfection on the surface of the conductor might be a source for corona. Examples include dust and dirt, or nicks and burrs from construction. Resulting noise levels are dependent upon voltage level (corona noise increases as voltage increases) and weather conditions.

[50] Minn. R. 7030.0040
[51] Federal Highway Administration (November 30, 2015) *Highway Traffic Noise: Construction Noise Handbook*, Retrieved March 22, 2016, from: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook09.cfm.
[52] Minnesota Pollution Control Agency (2015), page 10.

In foggy, damp, or rainy conditions, corona noise, a subtle crackling sound, caused by water droplets striking a transmission line is common. In light rain, dense fog, snow or other relative moist conditions, corona noise might be higher than rural background levels. In heavy rain, corona noise increases, but because of the increased background noise associated with heavy rain, the corona noise is undetectable. During dry weather, corona noise is essentially imperceptible (**Table 7**).

Table 7: Estimated Corona Effect Noise[53]

L_5	L_{50}	Location
17.7 dBA	14.2 dBA	edge of right-of-way
18.8 dBA	15.3 dBA	directly under line

The Project will include a switch where the Project connects to the existing 115-kV MV-EVX transmission line (**Diagram 8**). A switch can cause short-term (i.e., a minute or less) noise during opening or closing of the switches. These events will be infrequent and not likely perceivable to local landowners. The switch noise will not be perceptible at the nearest residence, which is approximately 300 feet south and across 280th Street East/County Road 86 (**Appendix C, Page 3)**.

Mitigation

Standard language in Commission route permits requires permittees to adhere to MPCA noise standards which protect against impacts to human health and welfare.[54] Operational noise from the transmission line is not anticipated to significantly contribute to exceedances of the MPCA's total noise standards, therefore, no mitigation is proposed after construction is completed.

Construction noise can be mitigated to minimize the impact of any exceedances of the standard that may occur. Possible mitigation measures include the following:

- Conducting construction activities during normal business hours
- Equipping construction equipment with residential-grade mufflers
- Combining noisy operations to occur in the same time. The total noise level produced will not be significantly greater than the level produced if the operations were performed separately.

[53] RPA at 6-13, Table 6.2.2-3.
[54] Generic Route Permit Template at Section 5.3.5.

Diagram 7: Illustration of Typical Switch

5.4.7 Property Values

The placement of infrastructure near human settlements has the potential to impact property values. The impacts can be positive and negative. The type and extent of impacts depends on the relative location of the infrastructure and existing land uses in the project area. For example, a new highway may increase the value of properties anticipated to be used for commercial purposes but decrease the value of nearby residential properties.

Potential impacts to property values due to transmission lines are related to three main concerns: (1) potential aesthetic impacts of the line, (2) concern over potential health effects from electric and magnetic fields (EMF), and (3) potential interference with agriculture or other land uses. Research on the relationship between property values and proximity to transmission lines has not identified a clear cause and effect relationship. Rather, the presence of a transmission line is one of many factors that affect the value of a specific property. The research has revealed trends which are generally applicable to properties near transmission lines:[55]

- When negative impacts on property values occur, the potential reduction in property values is in the range of 1 to 10 percent.
- Impacts on property values decrease with distance from the line. Thus, impacts on the sale price of smaller properties are usually greater than impacts on the sale price of larger properties.
- Other amenities, such as proximity to schools or jobs, lot size, square footage of a house, and neighborhood characteristics, tend to have a much greater effect on sale price than the presence of a power line.
- Negative impacts appear to diminish over time.
- The value of agricultural property is likely to decrease if the power line poles are placed in an area that inhibits farming operations.

A recent literature review examined 17 studies on the relationship between transmission lines and property values.[56] The reviewers concluded that the studies indicate small or no effects on the sale price of properties due to the presence of transmission lines.[57]

Potential Impacts

Direct impacts to property values from the new transmission line are anticipated to be minimal. While impacts to property values could occur, any potential impact would be difficult to attribute to the proposed project specifically. For most of its length, the new transmission line would follow existing infrastructure. As proximity to roadways would be one factor of many affecting

[55] Final Environmental Impact Statement, Arrowhead–Weston Electric Transmission Line Project, Volume I, Public Service Commission of Wisconsin Docket 05-CE-113, October 2000, p. 212-215.

[56] The Effects of Transmission Lines on Property Values: A Literature Review, Journal of Real Estate Literature, 2010, www.real-analytics.com/Transmission Lines Lit Review.pdf.

[57] Ibid.

the value of an individual property, any impact from the transmission line would be incremental. The new transmission line would not significantly reduce future agricultural uses, and aesthetic impacts from the transmission line would be incremental to the aesthetic impact of the other linear infrastructure features (streets/avenues, county roads, state highway, or pipeline corridor) present.

Mitigation

Impacts to property values can be mitigated by reducing aesthetic impacts, perceived health risks, and encumbrances to future land use. Property values can also be mitigated through inclusion of specific conditions (restoration and vegetation management) in individual easement agreements with landowners along the proposed route. This could include negotiation for compensation for any real or perceived loss.

5.4.8 Socioeconomics and Environmental Justice

Socioeconomic factors provide an indication of how economic activity affects and is shaped by social processes. Socioeconomic measures tell us how societies progress, stagnate, or regress because of their local or regional economy, or the global economy. HVTL projects like this one can contribute to growth and progress at the local level over time, but it is not expected to have a significant socioeconomic impact.

Utility infrastructure can adversely impact low-income, minority or tribal populations. Environmental justice is the" fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[58] The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.[59]

Potential Impacts

Project area was evaluated on a regional basis, comparing data for the Scott County, Rice County, and the State of Minnesota. U.S. Census data was used to develop **Table 8**, which provides information regarding total population (2020), percentage white alone population, median income (2017-2021), percent below poverty level and percentage language other than English spoken at home (2017-2021).

[58] US EPA Environmental Justice, https://www.epa.gov/environmentaljustice.
[59] US EPA, Guidance for Incorporating Environmental Justice Concern in EPA's NEPA Compliance Analyses (pdf).

Table 8: Socio-Economic Matrix of Proposed Project Area[60]

Location	2020 Population	White Alone Population	Median Income (2017-2021)	Percent Below Poverty Level	Language Other than English Spoken at Home (2017-2021)
State of Minnesota	5,706,494	78.1%	$77,706	9.3%	12.1%
Scott County	150,928	78.2%	$109,031	4.6%	13.5%
Rice County	67,097	80.2%	$71,384	9.4%	13.1%

An environmental justice analysis for the Project was completed by the Applicant using the methodology in Minn. Stat. 216B.1691, subd. 1(e) (rev. 2023), which provides:

"Environmental justice area means an area in Minnesota that, based on the most recent data published by the United States Census Bureau, meets one or more of the following criteria:
(1) 40 percent or more of the area's total population is nonwhite.
(2) 35 percent or more of households in the area have an income that is at or below 200 percent of the federal poverty level.
(3) 40 percent or more of the area's residents over the age of five have limited English proficiency; or
(4) the area is located within Indian country, as defined in United State Code, title 18, section 1151."[61]

Census tracts that intersect with the proposed route were analyzed by GRE for environment justice areas; census tracts are the best approximation of a geographic area where adverse impacts can occur from the Project. These census tracts are illustrated in **Figure 7;** Scott County was used as a reference population for the census tracts.

Table 9 identifies the minority populations by race and ethnicity, low-income populations, and populations with a language other than English spoken at home for Scott County and census tracts crossed by the Project Route. The most recent available data was used: U.S. Census 2021 American Community Survey 5-Year Estimate Data File# B17017, File# B03002, and File# DP02

[60] RPA p. 6-15, Table 6.2.4-1.
[61] Although this statute does not prescribe requirements for a route permit application, Great River Energy employed this methodology in the Cedar Lake Reroute Docket which is consistent with the methodology used by EERA in a recently issued EA. *See* Docket No. ET2/22-235.

Table 9: Environmental Justice Data for Census Tracts Crossed by the Project Route[62]

County/Census Tract	2021 Population	Percent Total Minority [a]	Percent Below Poverty Level	Language Other Than English Spoken at Home (2017-2021)
Scott County	149,568	20.8	4.0	13.5
Census Tract 811.01	3,035	1.9	1.4	1.2
Census Tract 812	6,609	10.3	5.4	2.4

[a] "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White.

No federally recognized Tribal Areas are crossed by the Project. No census tracts within the Project area are considered environmental justice communities under the definition provided in Minn. Stat. 216B.1691, subd. 1(e).

GRE also conducted an environmental justice analysis in accordance with the U.S. Environmental Protection Agency (USEPA) Federal Interagency Working Group on Environmental Justice (EJ) and National Environmental Policy Act (NEPA) Committee's publication, Promising Practices for EJ Methodologies in NEPA Reviews (Promising Practices). Using this methodology, the USEPA's Environmental Justice Screening Tool (EJScreen) was used as an initial step to gather information regarding minority and/or low-income populations; potential environmental quality issues; environmental and demographic indicators; and other important factors.

Table 10 identifies the minority populations by race and ethnicity and low-income populations within Minnesota, Scott County, and U.S. Census block groups crossed by the Project. U.S. Census 2021 American Community Survey 5-Year Estimate Data File# B17017 and File# B03002 for the race, ethnicity, and poverty data were analyzed at the block group level.

[62] RPA p. 6-16, Table 6.2.4-2.

Table 10: Minority Populations by Race and Ethnicity and Low-Income Populations within the Project Area (Percentage)[63]

State/County/Census Block Group	White	Black/ African American	American Indian or Alaskan Native	Asian	Native Hawaiian/ Pacific Islander	Some Other Race	Two or More Races	Hispanic or Latino	Total Minority [a]	Below Poverty Level
State of Minnesota	78.3	6.5	0.8	5.0	0.0	0.3	3.4	5.6	21.7	9.2
Scott County	79.2	4.8	0.4	6.2	0.0	0.3	3.7	5.5	20.8	4.0
Census Tract 811.01, Block Group 1	98.3	0.0	0.0	0.5	0.0	0.0	0.8	0.4	1.7	2.1
Census Tract 811.01, Block Group 3	99.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0
Census Tract 812, Block Group 4	95.6	0.4	0.0	0.5	0.0	1.5	1.2	1.0	4.6	2.4
[a] "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White										

No block groups are considered environmental justice communities.

GRE anticipates that 15-25 daily contract workers will be employed during construction of the Project, in addition to a construction supervisor. It is unknown if any of these jobs will be local jobs. Operation of the new transmission line will not create any permanent jobs. Communities and businesses near the project can expect a short-term increase in revenues due to project construction, and construction will not disrupt these communities and businesses.

The construction of the new transmission line will generate a minimal positive direct economic impact due to expenditures at local businesses during project construction from purchases of goods and services and long-term through an incremental increase in utility taxes.

Long term benefits of the Project include the ongoing reliable electrical services and the ability to serve existing and new local load growth. The benefits apply to the local community regardless of economic status, race, and personal identification.

Mitigation

Adverse socio-economic impacts are not expected; therefore, no mitigation is proposed.
There are no environmental justice communities impacted by the Project, so no environmental justice impacts are anticipated. Because impacts to socioeconomics will be generally short-term and beneficial, no mitigation is proposed.

[63] RPA p. 6-17, Table 6.2.4-3.

5.5 Human Health and Safety

Construction and operation of new transmission lines may have the potential to impact human health and safety.

5.5.1 Electric and Magnetic Fields

Electric and magnetic fields (EMF) are invisible forces that result from the presence of electricity. EMF occurs naturally and is caused by weather or the geomagnetic field. Man-made EMF is caused by all electrical devices and is found wherever people use electricity. EMF are characterized and distinguished by their frequency, that is, the rate at which the field changes direction each second. Electrical lines in the United States have a frequency of 60 cycles per second or 60 Hertz (Hz). EMF at this frequency level is known as extremely low frequency EMF (ELF-EMF).

Electric fields are created by the electric charge (i.e., voltage) on a conductor. The strength of the electric field produced is associated with the voltage of the transmission line and is measured in kilovolts per meter (kV/m), not the current (amps). The strength of an electric field decreases rapidly as it travels from the conductor and is easily shielded or weakened by most objects and materials, such as trees and buildings.

Magnetic fields are created by the electrical current (i.e., amps) moving through a conductor. The strength of a magnetic field produced is proportional to the electrical current moving through the transmission line and is measured in milliGauss (µG). Similar to electric fields, the strength of a magnetic field decreases rapidly as the distance from the source increases. However, unlike electric fields, magnetic fields are not easily shielded or weakened by objects or materials. **Table 11** provides examples of magnetic fields associated with common electric household appliances.

Health Studies

A concern related to EMF is the potential for adverse health effects due to EMF exposure. In the 1970s, epidemiological studies indicated a possible association between childhood leukemia and EMF levels. Since then, various types of research have been conducted to examine EMF and potential health effects including animal studies, epidemiological studies, clinical studies, and cellular studies. Scientific panels and commissions have reviewed and studied this research data. These studies have been conducted by, among others, the National Institute of Environmental Health.

Table 11: Magnetic Fields of Common Electric Appliances (μG)[64]

Appliance	Distance from Source (feet)		
	0.5	One	Two
Can Opener	600	150	20
Computer	14	5	2
Copy Machine	90	20	7
Shaver	100	20	-
Stove	30	8	2
Hair Dryer	300	10	-
Portable Heater	100	20	4
Vacuum Cleaner	300	60	10

Sciences,[65] the World Health Organization,[66] the Scientific Committee on Emerging and Newly Identified Health Risks,[67] and the Minnesota State Interagency Working Group on EMF Issues.[68] In general, these studies concur that:

- Based on epidemiological studies, there is a statistical association between childhood leukemia and EMF exposure. There is no consistent association between EMF exposure and other diseases in children or adults.
- Laboratory, animal, and cellular studies fail to show a cause-and-effect relationship between disease and EMF exposure at common EMF levels. A biological mechanism for how EMF might cause disease has not been established.
- Because a cause-and-effect relationship cannot be established, while a statistical association between childhood leukemia and EMF exposure has been shown, there is:
    - Uncertainty as to the potential health effects of EMF,
    - No methodology for estimating health effects based on EMF exposure,
    - A need for further study of the potential health effects of EMF,
    - A need for a prudent avoidance approach in the design and use of all electrical devices, including transmission lines.

Regulations and Guidelines

Currently, there are no federal regulations regarding allowable electric or magnetic fields produced by transmission lines in the United States; however, some state governments have developed state-specific regulations (**Table 12**).

Additionally, international organizations have adopted standards for exposure to electric and magnetic fields (**Table 13**).

---

[64] United States Environmental Protection Agency (1992) *EMF in Your Environment: http://nepis.epa.gov*

[65] National Institute of Environmental Health Sciences, Electric and Magnetic Fields, http://www.niehs.nih.gov/health/topics/agents/emf/.

[66] World Health Organization, Electromagnetic Fields, http://www.who.int/peh-emf/en/.

[67] Scientific Committee on Emerging and Newly Identified Health Risks, http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_022.pdf.

[68] A White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options, Minnesota State Interagency Working Group on EMF Issues, http://energyfacilities.puc.state.mn.us/documents/EMF White Paper - MN Workgroup Sep 2002.pdf [hereinafter MSIWG White Paper on EMF Issues].

The Minnesota Public Utilities Commission limits the maximum electric field directly under all transmission lines in Minnesota to 8.0 kV/m. A standard for magnetic fields has not been adopted. However, the Commission has adopted a prudent avoidance approach in routing transmission lines and, on a case-by-case basis, considers and may require (through the HVTL Route Permit) mitigation strategies for minimizing EMF exposure levels associated with transmission lines (see discussion of mitigation strategies, below).

Table 12: State Electric and Magnetic Field Standards[69]

State	Electric Field (kV/m)		Magnetic Field (µG)
	Within Right-of-Way	Edge of Right-of-Way	Edge of Right-of-Way
Florida	8.0[a]	2.0	150[a] (max load)
	10.0[b]	—	200[b] (max load)
	—	—	250[c] (max load)
Massachusetts	—	—	85[g]
Montana	7.0[d]	1.0[e]	—
New Jersey	—	3.0	—
New York	11.8	1.6	200
	11.0[f]	—	—
	7.0[d]	—	—
Oregon	9.0	—	—

a 69 kV to 230 kV transmission lines
b 500 kV transmission lines
c 500 kV transmission lines on certain existing Rights-of-Way
d Maximum for highway crossing
e May be waived by landowner
f Maximum for private road crossings
g A level above 85 µG is not prohibited, but may trigger a more extensive review of alternatives.

Potential Impacts

No adverse health impacts from electric or magnetic fields are expected for persons living or working near the proposed project. GRE has modeled and calculated the electric and magnetic fields associated with the proposed 115 kV transmission line project.

The calculated maximum electric field (**Table 14**) ranges from 1.20 directly under the transmission line to 0.25 at the edge of the ROW.[70] These values are considerably below the Commission standard of 8.0 kV/m.

[69] National Institute of Environmental Health Sciences (2002).
[70] RPA at p. 6-23, Table 6.3.1-1.

Table 13: International Electric and Magnetic Field Guidelines[71]

Organization	Electric Field (kV/m)		Magnetic Field (µG)	
	General Public	Occupational	General Public	Occupational
Institute of Electrical and Electronics Engineers	5.0	20	9,040	27,100
Int'l Commission on Non-Ionizing Radiation Protection	4.2	8.3	2,000	4,200
American Conference of Industrial Hygienists	—	25	—	10,000/ 1,000[a]
National Radiological Protection Board	4.2	—	830	4,200
a For persons with cardiac pacemakers or other medical electronic devices				

The calculated magnetic field from the transmission line is dependent upon line design, but also depends upon the current passing through the line. **Table 15** shows calculations for the expected average load on the line and calculations at the peak loads. The field generated by the expected peak load using the monopole transmission configuration is 9.85 mG (69 kV) and 6.17 mG (115 kV) at the transmission centerline. Under average load conditions, the calculated field would be 5.52 mG (69 kV) and 3.41 mG (115 kV) at the transmission centerline.[72]

Table 14: Calculated Electric Fields (kV/m) One Meter above Ground[73]

Operating Voltage (kV)	Max Operating Voltage (kV)	Distance to Proposed Alignment (feet) – Electric Field (kV/m)										
		-300	-200	-100	-50	-25	Max	25	50	100	200	300
69 kV	72.5	0.00	0.01	0.04	0.16	0.33	0.75	0.44	0.14	0.04	0.01	0.01
115 kV	120.75	0.01	0.02	0.07	0.25	0.53	1.20	0.70	0.22	0.07	0.02	0.01

Table 15: Calculated Magnetic Fields One Meter above Ground (mG)[74]

Operating Voltage	Max Operating Voltage (kV)	Line Current (Amps)	Distance to Proposed Alignment – Magnetic Field (feet)										
			-300	-200	-100	-50	-25	Max	25	50	100	200	300
69 kV Peak Load	72.5	75	0.10	0.22	0.80	2.48	5.38	9.85	6.36	2.83	0.87	0.23	0.10

[71] National Institute of Environmental Health Sciences (2002).

[72] RPA at p. 6-26, Table 6.3.1-3.

[73] RPA at p. 6-23, Table 6.3.1-1.

[74] RPA at p. 6-26, Table 6.3.1-3.

Operating Voltage	Max Operating Voltage (kV)	Line Current (Amps)	Distance to Proposed Alignment – Magnetic Field (feet)										
			-300	-200	-100	-50	-25	Max	25	50	100	200	300
69 kV Average Load	72.5	42	0.06	0.12	0.45	1.39	3.01	5.52	3.56	1.59	0.49	0.13	0.06
115 kV Peak Load	120.75	47	0.06	0.14	0.50	1.55	3.37	6.17	3.98	1.77	0.54	0.14	0.06
115 kV Average Load	120.75	26	0.03	0.08	0.28	0.86	1.87	3.41	2.20	0.98	0.30	0.08	0.04

Mitigation

The Commission has adopted a prudent avoidance approach in routing transmission lines and, on a case-by-case basis, considers and may require (through the HVTL Route Permit) mitigation strategies for minimizing EMF exposure levels associated with transmission lines. No health impacts due to EMF are anticipated; therefore, no mitigation is proposed.

5.5.2 Implantable Medical Devices

EMF may interfere with implantable electromechanical medical devices, such as pacemakers, defibrillators, neurostimulators and insulin pumps. Most of the research on electromagnetic interference and medical devices is related to pacemakers. Laboratory tests indicate that interference from magnetic fields in pacemakers is not observed until 1,000 mG, a field strength greater than that associated with high voltage transmission lines.[75] Therefore, the focus of research has been on electric field impacts.

Electric fields may interfere with a pacemaker's ability to sense normal electrical activity in the heart. In the unlikely event a pacemaker is impacted, the effect is typically a temporary asynchronous pacing (commonly referred to as reversion mode or fixed rate pacing). The pacemaker returns to its normal operation when the person moves away from the source of the interference.

Medtronic and Guidant, manufacturers of pacemakers and implantable cardioverters/ defibrillators, indicate that electric fields less than 6 kV/m are unlikely to affect operation of modern bipolar devices. Older unipolar designs, however, are more susceptible to interference from electric fields, with research suggesting that interference may occur with electric fields ranging from 1.2 to 1.7 kV/m.

[75] Electric Power Research Institute (2004) Electromagnetic Interference with Implanted Medical Devices.

There are no residences, businesses, or sensitive receptors such as hospitals or nursing homes located within the anticipated ROW, therefore the regular presence of implantable medical devices within the ROW is not expected.

Potential Impacts

Impacts to implantable medical devices from the proposed project are not expected to occur. The calculated maximum electric field strength for the project is 1.20 kV/m. This field strength is below the 6.0 kV/m interaction level for modern, bipolar pacemakers, and also below the range of interaction for older, unipolar pacemakers.

Mitigation

No health impacts due to EMF are anticipated from the operation of the new transmission line; thus, no mitigation measures are proposed. However, consistent with the Commission's prudent avoidance approach to potential EMF impacts, basic mitigation measures are prudent. Electric and magnetic fields diminish with distance from a conductor. Thus, EMF exposure levels can be minimized by routing transmission lines away from residences and other locations where citizens congregate. EMF exposure levels can also be minimized by conductor configurations that facilitate phase cancellation between circuits.[76]

5.5.3 Stray Voltage

In general terms, stray voltage can be defined as "voltage caused by an electric current in the earth, or in ground water, resulting from the grounding of electrical equipment or an electrical distribution system."[77] Stray voltage encompasses two phenomena: neutral-to-earth (NEV) voltage and induced voltage.

Neutral-to-Earth Voltage

NEV is a type of stray voltage that can occur where distribution lines enter structures. "Electrical systems—farm systems and utility distribution systems—are grounded to the earth to ensure safety and reliability. Inevitably, some current flows through the earth at each point where the electrical system is grounded, and a small voltage develops."[78] This extraneous voltage appears on metal surfaces in buildings, barns, and other structures.

NEV is typically experienced by livestock that contact one or more metal objects on a farm, for example, feeders, waterers, or stalls. Metal objects on a farm are grounded to earth through electrical connections. Livestock, by virtue of standing on the ground, are also grounded to earth. If an animal touches two points at different voltages (one at neutral voltage and the other near

[76] MSIWG White Paper on EMF Issues.
[77] Edison Electric Institute (April 2005) *Glossary of Electric Industry Terms*, Washington, DC: Edison Electric Institute (2005).
[78] Wisconsin Public Service Commission (2011) Answers to Your Stray Voltage Questions: Backed by *Research*: http://www.wisconsinpublicservice.com/business/pdf/farm_voltage.pdf, page 1.

true ground),[79] a small current will flow through the livestock to the ground because the animal completes the electrical circuit.[80]

Despite livestock and metal objects both being grounded to the earth there are a number of factors that affect the effectiveness of the ground, that is, a good or poor ground. In metal objects these include wire size and length, the quality of connections, the number and resistance of ground rods, and the current being grounded.[81] Likewise, a number of factors also determine the extent to which livestock are grounded, for example, if the animal is standing on wet versus dry ground.[82] Stray voltage results from this difference in the effectiveness of grounding and on the resulting electrical currents. It can exist at any farm, house or business that uses electricity, independent of whether a transmission line nearby.

If NEV is prevalent in an agricultural operation it can affect livestock health. This concern has primarily been raised on dairy farms because of its potential to affect milk production and quality. NEV is generally associated with electrical distribution lines and electrical service at a residence or on a farm. Transmission lines do not create stray voltage as they do not directly connect to businesses, residences, or farms.

Induced Voltage

The electric field from a transmission line can extend to nearby conductive objects, such as a metal fence, and induce a voltage upon them. This phenomenon is dependent on many factors, including the shape, size, orientation, capacitance, and location of the object along the ROW. If the objects upon which a voltage is induced are insulated or semi-insulated from the ground and a person touches them, a small current will pass through their body to the ground, which may be accompanied by a spark discharge and mild shock. This is similar to what can occur when an individual walks across a carpet and touches a grounded object or another person.

The primary concern with induced voltage is not the voltage, but the current that flows through a person to the ground when touching the object. To ensure the safety of persons in the proximity of transmission lines, the NESC requires that any discharge be less than five milliamperes.

In addition, the Commission's electric field limit of 8 kV/m is designed to prevent serious shock hazards due to induced voltage. Proper grounding of metal objects or buildings under or adjacent to transmission lines is the best method of avoiding these shocks.

Transmission lines may cause additional current to flow on distribution lines where these lines parallel. When distribution lines and electrical service are properly wired and grounded, these

[79] North Dakota State University Agricultural Engineering Department (1986) *Extension Publication #108: Stray Voltage*: https://www.ag.ndsu.edu/extension-aben/epq/files/epq108.pdf.
[80] Michigan Agricultural Electric Council (October 2008) *Stray Voltage: Questions and Answers*: http://maec.msu.edu/Stray%20Voltage%20Brochure%202008.pdf.
[81] North Dakota State University Agricultural Engineering Department (1986).
[82] Ibid.

additional currents are not significant. However, if distribution lines and electrical service are not properly wired and grounded, these additional currents could create stray voltage impacts.

A frequent request among the various stakeholder groups participating in the routing proceedings of energy infrastructure projects is the evaluation of collocating of these linear projects within a common corridor. While there are numerous benefits to common utility corridors, there are also concerns. Collocated steel pipelines that share, parallel, or cross HVTLs may be subject to electrical interference from electrostatic coupling, electromagnetic induction, and conductive effects.[83] If these interference effects are high enough, they may pose a safety hazard to personnel or compromise the integrity of the pipeline.[84]

Potential Impacts

Impacts to residences or farming operations resulting from NEV are not anticipated. The proposed project is a 115 kV transmission line that does not directly connect to businesses or residences at any point along the route and does not change local electrical service.

Impacts due to induced voltage are not anticipated to occur because of the operation of the new transmission line. The new transmission line may induce a voltage on insulated metal objects near the transmission line ROW; however, the Commission requires that transmission lines be constructed and operated to meet NESC standards as well as the Commission's own electric field limit of 8 kV/m, reducing these impacts.

Transmission lines can induce a current on a distribution circuit that is parallel and immediately under the transmission line. Typically lines 200 kV and above are at greater risk for induction than 115 kV transmission lines. The presence of the distribution line immediately under the transmission line will act as a collector of any induced voltage and will be designed with grounding and insulation to account for any induced voltage from the transmission line.

Mitigation

Impacts from NEV as a result of the proposed project are not anticipated; therefore, no mitigation is proposed. If a person has a question or concern about stray voltage on their property, they should contact their electrical service provider to discuss the situation and the possibility of an on-site investigation.

Potential impacts as a result of induced voltage are reduced or avoided by the standard conditions found in the draft route permit (**Appendix B, Section 5.5.1**). As a result, potential impacts are not anticipated, and further mitigation is not proposed.

Other mitigation measures can be developed if it is determined that electrical interference is present. In general, all of these measures involve a low resistance grounding system to pass interfering AC to ground. Typical mitigation designs can be either surface or deep grounding

[83] http://www.who.int/peh-emf/meetings/archive/en/paper02shwehdi.pdf
[84] Id.

designs.[85] GRE would ensure that any fixed conductive object in close proximity or parallel to the Project, such as a fence or other permanent conductive fixture, would be grounded so any discharge would be less than the 5 mA rms NESC limit.[86]

5.6 Public Services and Infrastructure

Public services and infrastructure include the systems that supply essential amenities like public water supplies, electricity, gas, internet and transportation by road, rail, and air. Construction activities can cause temporary disturbances to public services and infrastructure through traffic restrictions or utility outages. Typical operational concerns related to infrastructure are mainly compatibility with roadway expansion plans, and transportation safety requirements. The proposed project will have minor impacts to roadways during construction and operation. Other public services and infrastructure will not be impacted.

The Project is in a principally agricultural and rural residential area. Private landowners in the Project area have their own private wells and individual sewage treatment systems. The residents also have access to other utility services by various providers, including waste collection, natural gas, cable television, electricity, and telephone.

Public services and facilities in the project area generally include emergency services provided by government entities, including hospitals, fire departments, and police departments, water supply or wastewater disposal systems, and gas and electricity services, and existing and future transportation corridors and projects.

5.6.1 Airports

Transmission line structures and conductors have the potential to interfere with safe operation of an airport if they are too tall for the applicable safety zone. Airports have different safety zones, which are based on several characteristics, including runway dimensions, the type of aircraft intended to use the runway, and the type of approach procedures used by the aircraft.[87] These characteristics determine necessary setback distances for transmission line structures.

Potential Impacts

The Mayo Clinic Health System – New Prague, located on 301 2nd Street NE, New Prague, MN is identified as an airport by the Minnesota Department of Transportation (MnDOT) Enterprise Mapping Application[88]; however, it is approximately 2.6 miles west of the Project area and no associated airport influence area overlaps with Project area. There are no other airports in Scott and Rice Counties within 5 miles of the Project area. Title 14 Code of Federal Regulations (CFR) Part 77 requires that anyone building a structure near an airport report their intentions to the

[85] https://www.nace.org/uploadedFiles/Corrosion_Central/Industries/SP016907PHMSA.pdf
[86] RPA @ p. 6-24.
[87] *See generally* Minn. R. 8800.
[88] https://dotapp9.dot.state.mn.us/emma/; access November 6, 2023.

Federal Aviation Administration (FAA). This requires a submission of FAA Form 7460, at which point the FAA will conduct an Obstruction Evaluation/Airport Airspace Analysis Process. GRE will complete this process during the permitting process.

Mitigation

No impacts to airports will occur as a result of the construction of the new transmission line; therefore, no mitigation is proposed.

5.6.2 Emergency Services

Transmission lines have the potential to impact access to emergency services, for example, through interference with electronic communication systems or traffic delays. Impacts to emergency services in the Project area could result from (1) an inability to communicate that there is an emergency or (2) an inability to respond to an emergency.

The table below provides location and contact information on emergency service providers within the Project area, including police, emergency medical services, and fire departments. The distance to emergency medical services is also provided in the table below.

Table 16: Emergency Service Provider

Emergency Response Facility	Address	Distance from Project area	Contact No.
Police			
Scott County Dispatch Emergency	Scott County Law Enforcement Center 301 Fuller Street South Shakopee, MN 55379	NA	911
Rice County Dispatch Emergency	Rice County Law Enforcement Center 118 Third St. NW Faribault, MN 55021	NA	911
Scott County Dispatch Non-Emergency	Scott County Law Enforcement Center 301 Fuller Street South Shakopee, MN 55379	15.5 miles north of Project area	952-445-1411
Rice County Dispatch Non-Emergency	Rice County Law Enforcement Center 118 Third St. NW Faribault, MN 55021	20.2 miles southeast of the Project area	507-332-6024
State Patrol District 2500 (Scott County)	2005 North Lilac Drive Golden Valley, MN 55422	30.3 miles northeast of Project area	763-591-4680
State Patrol District 2100 (Rice County)	2900 48th Street Northwest, Rochester, MN 55901	57 miles southeast of Project area	507-923-2040
Emergency Medical Services			
Scott County Dispatch Emergency	Scott County Law Enforcement Center	NA	911

Emergency Response Facility	Address	Distance from Project area	Contact No.
	301 Fuller Street South Shakopee, MN 55379		
Rice County Dispatch Emergency	Rice County Law Enforcement Center 118 Third St. NW Faribault, MN 55021	NA	911
Northfield Hospital (Scott County)	321 Main St. Elko New Market, MN 55054	4.7 miles east of Project area	952-461-5200
Parkview Medical Clinic (Scott County)	1400 First St NE New Prague, MN 56071	1.8 miles west of Project area	952-758-2535
Mayo Clinic Health System (Scott County)	301 Second St NE New Prague, MN 56071	2.6 miles west of Project area	952-800-2611 800-584-6667 (toll free)
Northfield Hospital (Rice County)	103 15th Ave SE Lonsdale, MN 55046	5 miles south of Project area	507-744-3245
Fire Department			
Scott County Dispatch Emergency	Scott County Law Enforcement Center 301 Fuller Street South Shakopee, MN 55379	NA	911
Rice County Dispatch Emergency	Rice County Law Enforcement Center 118 Third St. NW Faribault, MN 55021	NA	911
New Prague Fire Department (Scott County)	505 5th Ave NW New Prague, MN 56071	3 miles west of Project area	NA
City of Elko New Market Fire Department (Scott County)	PO Box 127 Elko New Market, MN 55020	5 miles east of Project area	952-461-2777
Webster Fire Department (Rice County)	415 Central St NW Lonsdale, MN 55406	4.4 miles south of the Project area	507-744-2327
Lonsdale Fire Department (Rice County)	426 Railway St SW, Lonsdale, MN 55046	4.6 miles south of the Project area	507-744-2021

Potential Impacts

Potential impacts to electronic communication systems due to the project are discussed in Section 4.4.4. No impacts to communications systems are anticipated; therefore, no impacts to the community's ability to communicate regarding an emergency are anticipated. During construction of the project, there may be temporary impacts to roads in the form of traffic delays which could impede responses to an emergency. Short-term localized traffic delays are anticipated during construction. However, these impacts are anticipated to be minimal and manageable through traffic control standard practices (see 4.6.3).

No impacts to emergency services are anticipated once the project is operational.

Mitigation

Potential impacts can be mitigated by notifying emergency responders of traffic interruptions. No long-term impacts are anticipated; therefore, no other mitigation is proposed.

5.6.3 Roads and Highways

State routing policy indicates a preference for consolidating transmission with existing infrastructure including roads. MN Statute 216E.03, directs the Commission to consider locating routes located on existing HVTL route and parallel existing highway ROW and if the route selected does not follow existing HVTL and highway ROWs, the Commission must state the reasons those ROWs are not followed.

Minnesota Rules, part 7850.4100, subparts H and J require the Commission consider corridor sharing in determining whether to issue a permit for a high voltage transmission line. Corridor sharing can include use or paralleling of existing infrastructure ROW including existing transportation, pipeline, and electrical transmission systems or rights-of-way, or use of established boundaries such as survey lines or agricultural field lines. Sharing corridors with existing infrastructure or paralleling existing ROWs minimizes fragmentation of the landscape and can minimize impacts to adjacent property.

Roadways can be impacted temporarily during construction and during maintenance of the transmission line. Impacts during construction and maintenance can include temporary traffic delays, road closures, and detours in the project area. While paralleling an existing transmission line generally presents a routing opportunity, there is also some risk that a single incident could affect service on both lines.

The proposed route will parallel and/or intersect with several township, county, and state-managed roads and highways as identified in **Table 17** and shown on the maps in **Appendix C**.

Table 17: Highways and Roads w/in the Project Area[89]

Highway / Road Name	Jurisdiction	Parallel / Intersects	Traffic Volumes (SEQ # / Year)
Baseline Ave	Helena / Cedar Lake Township	Parallel	Not available
270th St W	Helena Township	Intersect	Not available
280th St E / State Highway 19	MnDOT	Parallel	8,057-9,120 (11009 and 10255, 2021)
Teale Ave (N) / Leroy Ave (S)	Cedar Lake Township	Intersect	Not available
Langford Ave / New Prague Blvd / State Highway 13	MnDOT	Intersect	4,079 (11008, 2021)
Lake Ave	Wheatland Township	Intersect	Not available
Joel D Lane	Cedar Lake Township	Intersect	Not available
Kanabec Ave	Wheatland Township	Intersect	Not available

[89] RPA at p. 6-21, Table 6.2.7-1.

Highway / Road Name	Jurisdiction	Parallel / Intersects	Traffic Volumes (SEQ # / Year)
Country Hollows Lane	Cedar Lake Township	Intersect	Not available
Balsa Ave (N) / Jackson Ave or County Road 52 (S)	Cedar Lake Township / Rice County	Intersect	295 (32949, 2020 for Jackson Ave or County Road 52)
Panama Ave / County Highway 23 (N) / Independence Ave / State Highway 19 (S)	Scott County (N) / MnDOT (S)	Intersect	1,850 (42172, 2018) / 3,750 (4745, 2018)
280th St E / County Road 86	Scott County	Parallel	Not available

The proposed route parallels approximately four miles of 280th Street East/Highway 19, which is considered a principal arterial road in Scott County (**Appendix C, Page 2 and 3**). The proposed route would also cross Langford Avenue/New Prague Bouvard/Highway 13 (**Appendix C, Page 2**), which is also considered a principal arterial road. However, none of the highways or roads within the Project area have been identified by Scott County as having current or forecasted daily traffic volume or congestion capacity issues.

Potential Impacts

During project construction, short-term, localized traffic delays due to construction activity, material delivery and worker transportation could impact transportation in the project area. The exposure of traffic to potential hazards is a function of the traffic volume and the length of time that the closure will be in effect. The goals common to all traffic control zones are:

- to minimize crashes and crash severity; and
- to minimize inconvenience and conflicts as a result of the work

For all construction projects within or adjacent to roadways attention must be given to traffic control from the early stages of development of the project, through the completion of the actual construction, including the preliminary layout studies, detailed design, and the drafting of the special provisions. It is considered essential that the appropriate district of MnDOT be involved to provide their specialty input so that a traffic management plan (TMP) can be developed. Careful consideration of the TMP should result in minimizing confusion and delays to motorists and pedestrians as well as reduce crashes, provide greater safety to the various parties involved in the project, and improve the image of the construction industry.[90]

Mitigation

Impacts to roads and vehicular traffic can be mitigated through coordination with the appropriate state and local authorities (TMP) during construction, as well as by alignments and pole placements that minimize interference with roadways.

GRE will coordinate Project construction schedules, including any outages, with MVC to avoid and/or minimize disruptions to service in the area. Based on the location of other existing utilities

[90] MN MUTCD Field Manual for Temporary Traffic Control Zone layouts and the Standard Signs Manual.

and site improvements that are identified during survey activities, the transmission line will be designed to meet or exceed required clearances and pole locations.[91] No structure locations will be placed on or near existing utilities, including oil pipelines.
Temporary access for construction of the transmission line will be along the transmission line ROW. Temporary and infrequent traffic impacts associated with equipment/material delivery and worker transportation will occur. Stringing the conductors and shield wire across roads can be accomplished with minimal traffic impacts. Typically, a pulling rope is simply carried across the road, which is then pulled overhead. Temporary structures may be installed inside or outside of road ROW to ensure pulling lines, shield wire, or conductors to have sufficient clearance over roads. GRE or its contractors will work with the MnDOT through its application process for a *Utility Accommodation Permit* in MnDOT ROW and comply with all permit conditions.[92]

Where appropriate, pilot vehicles will accompany the movement of heavy equipment. Traffic control barriers and warning devices will be used where appropriate. All necessary provisions will be made to conform to safety requirements for maintaining the flow of public traffic. Construction operations will be conducted to offer the least possible obstruction and inconvenience to the traveling public. GRE or its contractors will plan and execute delivery of heavy equipment in coordination with the appropriate road authorities and in a manner that would avoid traffic congestion and reduce likelihood of dangerous situations along local roadways.[93]

Impacts to the operations of the area's roads and highways from the new transmission line are anticipated to be minimal with these precautions.

5.6.4 Utilities and Existing Infrastructure

Transmission lines have the potential to damage or interfere with the use of existing public utilities. The presence of a transmission line could also preclude construction and operation of planned utility infrastructure.

There are several existing overhead transmission lines located in the Project area (**Figure 8)**, including the CapX2020 transmission line located to the north of the proposed route running east-west along 260th Street East. Xcel Energy's 69-kV 0744 line runs north-south approximately 1.7 miles east of the Cedar Lake Substation. South of the City of New Prague, the line turns to the east and parallels the proposed alignment approximately 1.5 miles south of 280th Street/Highway 19. Additionally, GRE's 115-kV MV-EVX transmission line runs north-south on Panama Ave/County Highway 23 to the east of the Project, which will serve as the connection point for the Project.

The Minnesota Pipeline Company maintains the MinnCan crude oil pipeline, which runs generally east-west through the northern portion of the Project area. The proposed alignment would be

[91] RPA at p. 6-22.
[92] RPA at p. 6-22.
[93] Ibid

collocated with this pipeline corridor for approximately 0.4 mile from the Cedar Lake Substation to Baseline Avenue (**Appendix C, Page 1**[94]). There is also an existing natural gas pipeline maintained by Northern Natural Gas Pipeline to the east and southeast of the Project area.

The proposed route will follow existing distribution lines maintained by the MVC along both Baseline Avenue and 280th Street East/Highway 19 (**Appendix C**). Currently, the proposed alignment will be located within the existing distribution line easement for about 2.5 miles.

The Project is in a rural area, and water and sanitary services are supplied to area residences by individual wells and septic systems. Electrical service is provided by MVC in the Project area. Natural gas service may be provided in some towns/cities in the region, but most residences in the area are served by propane.

Potential Impacts

Impacts to water utilities could occur if transmission line structures damaged or impeded the use of wells or septic systems. The proposed route is primarily located along roadway and existing transmission line ROW, minimizing the potential to impact wells and septic systems.

Impacts to utilities from construction and operation of the HVTL are expected to be minimal.

Mitigation

Construction impacts to utilities can be avoided by marking underground utilities prior to construction and avoiding these areas during construction. The location of natural gas and oil pipelines, septic tanks, wells, and underground distribution lines can be identified during engineering surveys once a route is determined.

5.7 Land-Based Economies

Transmission lines have the potential to impact land-based economies. Transmission lines and poles are a physical presence on the landscape that can prevent or otherwise limit use of the landscape for other purposes. In general, and for safe operation of the line, buildings and tall growing trees are not allowed in transmission line ROWs, while many agricultural uses can continue within the ROW. These limitations can create impacts for commercial businesses and forestry.

Impacts to land-based economies due to the proposed project are anticipated to be minimal. Impacts to agriculture are anticipated to be minimal. Impacts to forested lands and to forestry operations are also anticipated to be minimal. No impact to mining activities are anticipated, as there are no identified gravel pits or mines within the anticipated alignment for the Project.

[94] RPA at p. 6-21, Appendix A (The MinnCan crude oil pipeline location is not provided on the maps in **Appendix A** because this is proprietary information).

5.7.1 Agriculture

According to the 2017 United States Department of Agriculture (USDA) Census of Agriculture, Scott County has 740 individual farms with an average farm size of 156 acres, and farmland covers approximately 115,504 acres (52 percent) of the county. Over $75 million was generated from both crop and livestock sales in 2017. Rice County has 1,242 individual farms with an average farm size of 182 acres and covers approximately 226,255 acres (69 percent) of the county. Over $204 million was generated from both crop and livestock sales in 2017.

Agricultural lands within the proposed route consist primarily of pasture, hay, and cultivated lands (**Figure 5**). The transmission line ROW is compatible for use as pasture, hay, or other crop cultivation. The proposed alignment will cross about 3.2 miles of agricultural land, which conservatively equates to approximately 39.6 acres (within the 100-foot ROW)[95]. No organic farms will be impacted by the Project. [96]

Impacts to agricultural operations due to transmission lines fall generally into two types – temporary and permanent impacts. Temporary impacts are impacts due to construction activities. These activities could temporarily limit the use of fields or could cause direct impacts to crops and also damage soils due to soil compaction or disruption of drainage infrastructure.

Permanent agricultural impacts are impacts due to the physical presence of transmission line structures in agricultural fields. The footprint of a pole can be relatively small – e.g., approximately four-square feet. However, the impact of such poles can be greater than their footprint in that they can (1) impede the use of farm equipment, (2) interfere with aerial spraying, and (3) impede the use of irrigation systems. These physical impacts can lead to financial impacts, e.g., loss of farming income, decrease in property value.

Potential Impacts

Some agricultural land may be temporarily removed from production during transmission line construction. Determination of temporary agricultural impacts that will result from construction is dependent upon final engineering design. The acreage anticipated to be included in temporary construction access points includes some cultivated lands. Construction of the proposed transmission structures will require repeated access to structure locations to install the structures and to string conductors. Equipment used in the construction process will include backhoes, cranes, boom trucks and assorted small vehicles. Operation of these vehicles on adjoining farm fields can cause rutting and soil compaction, particularly during springtime and otherwise wet conditions.

Temporary impacts, such as soil compaction, crop damage, and disruption to drainage systems may occur during construction of the project. Construction vehicles are relatively large and can cause rutting and compaction of soils at structure locations and along the transmission line ROW.

---

[95] RPA at p. 6-29.
[96] RPA at p. 6-29.

Mitigation

GRE will work with landowners to minimize impacts to agricultural activities along the proposed route and will compensate landowners for any crop damage/loss and soil compaction that may occur during construction.[97] Areas disturbed during construction will be repaired and restored to pre-construction contours as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate natural revegetation, provide for proper drainage, and prevent erosion.

Specific mitigation measures to be implemented include:

- Local roads will be used as practicable for moving equipment and installing structures.
- Where local roads cannot be used, movement of crews and equipment will be limited to the ROW to the greatest extent possible, including access to the route. Contractors employed by Great River Energy will limit movement on the ROW to minimize damage to grazing land or property. If movement outside of the ROW is necessary during construction, permission will be obtained, and any damage will be paid to the landowner.
- Construction will be scheduled during periods when agricultural activities will be minimally affected to the extent possible, or the landowner will be compensated accordingly.
- Ruts that are hazardous to agricultural operations will be repaired or compensation will be provided as an alternative if the landowner desires. Such ruts will be leveled, filled, and graded or otherwise eliminated in an approved manner. In the pasture area, compacted soils will be loosened, and ruts will be leveled by scarifying, harrowing, discing, or by other approved methods. Damage to ditches, terraces, roads, and other features of the land will be corrected using approved methods and indigenous plants where necessary. The land and facilities will be restored as nearly as practicable to their original conditions.
- ROW easements will be purchased through negotiations with each landowner affected by the Project. Restoration or compensation will subsequently be made for reasonable crop damages or other property damages that occurs during construction or maintenance as negotiated.
- Fences, gates, and similar improvements that are removed or damaged will be promptly repaired or replaced.

Some temporary construction space will be needed for the Project. For temporary marshalling yards, which will provide space to store material and equipment, and temporary space needed for pulling equipment, Great River Energy will work with local landowners to lease the space by agreement with the respective landowner(s), remove and properly dispose of all material and debris, and repair all damages and perform restoration, as necessary. It is anticipated that

[97] RPA at p. 6-30.

minimal temporary construction space on property immediately adjacent to the ROW and on private property will be needed, except for limited equipment access and pulling areas.

As a standard condition, the draft route permit require permittees to compensate landowners for damage to crops and drain tile (**Appendix B, Section 5.3.19**).

5.7.2 Forestry

Any vegetation or tree that could interfere with the safe operation, maintenance, or construction of a transmission line is subject to removal under the NESC.

Forested areas in the project area are shown on **Figure 5**. There are no commercially operated forestlands with the project area.

Potential Impacts

GRE will clear approximately 16.7 acres of trees over approximately 2.1 miles within the 100-foot-wide ROW, based on their review of aerial photographs.

While trees will be cleared and removed from the ROW, resulting in a loss, direct impacts to forestry operations, including timber harvest, are not anticipated.

Mitigation

Impacts to forestry operations, including timber harvest, are not anticipated.

The ROW will need to be maintained for the safe and reliable operation of the transmission line. Mitigation measures for potential impacts to tree resources within the ROW include the following:

- Compensation for the removal of vegetation in the ROW will be offered to landowners during easement negotiations.
- Landowners will be given the option to keep any portions of the trees (e.g., timber, branches, chips, shreds) cut within the easement area.

5.7.3 Mining

Impacts to mining operations can occur if transmission lines interfere with access to, or the removal of, sand, gravel, or mineral resources.

There is an active gravel mine located at 12668 New Prague Boulevard (280th Street East/Highway 19) approximately 500 feet east of where the proposed alignment crosses over 280th Street East/Highway 19 (**Appendix C, Page 2**)**.** There are three gravel pits in the vicinity of the Project; an active mine is not listed in the MnDOT data. Two gravel pits are located approximately 1,800 and 3,000 feet west of the proposed route. One gravel pit is located approximately 4,600 feet

north of the west side of the proposed route. Based on GRE's review of current aerial imagery and historical aerial imagery, no active gravel pits appear to be present at these three locations.

No other mining activity is present in the vicinity of the Project. The Project would not inhibit mining activities at the mine located on New Prague Boulevard.

Potential Impacts and Mitigation

No known mining operations exist within the proposed route. No impacts are anticipated to mining economies.

5.7.4 Tourism and Recreation

Tourist activities within the project area are generally associated with the recreational opportunities. Transmission lines may have a negative impact on recreational activities if the transmission line interferes with the natural resources that provide these activities, for example, changing the aesthetic of a recreational destination in a way that reduces visitor use. Alternatively, a transmission line might increase recreational opportunities, for example, a ROW through a previously wooded area might provide increased opportunities for hunting or wildlife viewing. Transmission lines can impact tourism if they affect the overall experiences of visitors, either through aesthetic impacts, noise, or degradation of the natural or man-made resources that provide for tourist-type activities.

Tourist destinations near the proposed route include the Cedar Lake Farm Regional Park, Creeksbend Golf Course, rivers, and lakes (**Figure 9**). Popular activities include fishing, boating, swimming, biking, hiking, camping, hunting, snowmobiling, and golfing.

Potential Impacts

Impacts to tourism and recreational opportunities from the proposed project are anticipated to be minimal. The proposed route avoids areas that would be considered tourist destinations, and the Project would not preclude tourism activities or appreciably diminish the use or experience at tourist destinations. Although some tree clearing will be required, it will be adjacent to existing ROWs and should not affect wildlife viewing opportunities.

Noise impacts from project construction are anticipated to be short-term and intermittent, and operational noise will be below ambient noise levels. The proposed route generally parallels existing infrastructure (roadways and electric transmission/distribution lines) so new impacts to recreation areas would be minimal.

Mitigation

No impacts to tourism and recreational opportunities are anticipated and, therefore, no mitigation measures are proposed.

5.8 Archaeological and Historic Resources

Archeological resources are locations where objects or other evidence of archaeological interest exists, and can include aboriginal mounds and earthworks, ancient burial grounds, prehistoric ruins, or historical remains.[98] Historic resources are sites, buildings, structures, or other antiquities of state or national significance.[99]

GRE retained Merjent, Inc. (Merjent) to perform a literature review of the possible effects of the proposed Project on historic properties in the project area.[100] Merjent reviewed cultural resources site (archaeological sites and historic structures) and survey files from the State Historic Preservation Office (SHPO), archaeological site files on the Office of the State Archaeologist (OSA) online portal, as well as the General Land Office (GLO) maps and available historical aerial photography accessed online through the OSA Portal.[101]

GRE requested feedback on the Project from the 11 federally recognized Tribes with geography within Minnesota and the Minnesota Indian Affairs Council in its Project notification letters sent in April 2023. As of the date of filing the RPA, no Tribe has conveyed concerns regarding the Project.[102]

Potential Impacts

Construction of transmission lines can disrupt or remove archaeological resources. Placement of a transmission line near historic resources has the potential to impair or decrease the historic value of the resource.

According to the review performed by Merjent there is one archaeological site that intersects the Project route. While identified by historic documentation this site has not been verified in the field by a professional archaeologist. It is unlikely that this site would have intact deposits where it intersects the current Project given that the point of intersect is a small portion of an existing ROW. [103]

There is one additional archaeological site within one mile of the Project; however, it is at least 1,000 feet from the Project route. Due to distance, no impact to this site is anticipated. This site is described as a small lithic scatter initially identified in 2001.[104]

Merjent identified four historic buildings and structures located within the Project area, with one overlapping the Project route. Trunk Highway 19 (280th Street East/State Highway 19) is a linear resource which the Project intersects at various points. The aboveground nature of the transmission line Project makes impacting this resource unlikely. Poles supporting the existing

[98] *See* Minn. Stat. 138.31, subd. 14.
[99] *See* Minn. Stat. 138.51.
[100] RPA at p. 6-33, Appendix D.
[101] RPA at p. 6-33 OSA Portal. https://osa.gisdata.mn.gov/OSAportal.
[102] RPA at pp. 6-33-3-4, Appendix D.
[103] Ibid.
[104] Ibid.

MVC distribution lines are visible from Trunk Highway 19. Because the Project is collocated and parallels existing utility and road ROWs, it will not result in an appreciable change in viewshed.[105] The remaining historic buildings and structures will not be impacted due to distance from the Project. The remaining buildings and structures include a farmstead, a log outbuilding associated with a farmstead, and a bridge.[106]

Merjent reviewed nineteenth century General Land Office (GLO) maps and notes on file with the Bureau of Land Management.[107] The GLO map of the Project area illustrated conditions in 1870 as being prairie with many lakes and connecting streams and rivers. An unnamed trail is present near Cedar Lake. Aerial photographs from 1937 show that roads have been constructed and farms have been established with agricultural fields dominating the landscape. There is no trace of the GLO trail on historic aerials, by 1937 it had been superseded by roads and fields. Subsequent historic and modern aerial photographs show that the landscape of the Project area has remained largely the same since that time, with roads being the main addition to the area.[108]

Based on Merjent's cultural resource review and survey, no direct or indirect impacts to archaeological or historic resources are anticipated within the project area.

Mitigation

Avoidance of known archaeological and historic resources is the preferred mitigation strategy. As a standard HVTL permit condition, if previously unidentified archaeological sites are found during construction, the applicant would be required to stop construction and contact SHPO to determine how best to proceed. Should human remains be discovered, ground disturbing activity will stop and local law enforcement will be notified.

Given the lack of previous survey and that the Project area will intersect an archaeological site and a historic structure, Great River Energy will conduct a Phase I Archaeological reconnaissance of the final route.[109]

No impacts to archaeological and historic resources are anticipated; therefore, no mitigation is proposed.

5.9 Natural Resources

Transmission lines have the potential to impact the natural environment. These impacts are dependent upon many factors, such as the type of transmission line and how it is designed, constructed, and maintained. Other factors such as the environmental setting must also be considered. Impacts can and do vary significantly both within, and across, projects.

[105] Ibid.
[106] IRPA at p6-33.
[107] RPA at p. 6-33.
[108] Ibid.
[109] RPA at p. 6-34.

5.9.1 Air Quality

Air quality is a measure of how pollution-free the ambient air is and how healthy it is for humans, other animals, and plants. Emissions of air pollutants during construction and operation of new infrastructure can cause concern about degradation of air quality.

Overall air quality in Minnesota has improved over the last 20 years, but current levels of air pollution still contribute to health impacts.[110] Air quality in the project area is relatively better than more populated areas of the state such as the Twin Cities metro region.

The Clean Air Act (42 USC 7401 et seq. as amended in 1977 and 1990) is the principal federal statute governing air pollution. Under the Clean Air Act, the USEPA set National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants considered harmful to public health and the environment: carbon monoxide (CO), ozone, NO2, sulfur dioxide (SO2), lead, particulate matter equal to or less than 10 microns in diameter (PM10), and fine particulate matter equal to or less than 2.5 microns in diameter (PM2.5). The NAAQS include primary standards that are designed to protect human health and secondary standards that are intended to protect public welfare, including visibility and damage to crops and vegetation.

The USEPA and state agencies operate a system of air quality monitoring stations. Data from these monitoring stations are compared to the NAAQS to categorize the air quality of a particular area. Regions of the country that do not meet the NAAQS are designated as "nonattainment" areas. Some areas of the country do not have extensive air quality monitoring networks and are considered "unclassifiable." Unclassifiable regions are presumed to be in attainment with the NAAQS. Both Rice and Scott counties are designated as in attainment or unclassifiable for the NAAQS.

Potential Impacts

Potential air quality impacts can occur both during the construction and the operation of the Project.

Construction.

During construction, temporary air emissions will occur from the operation of construction equipment, vehicular traffic, and soil disturbance. Construction activities will be performed with standard heavy equipment such as backhoes, cranes, boom trucks, and assorted small vehicles over the course of a six-month period starting fall 2024. **Table 18** summarizes the estimated potential emissions of criteria pollutants from construction activities for the Project. Construction emissions are based on typical counts of diesel-fueled construction equipment, expected hours of operation, and estimated vehicle miles traveled.

[110] The State of Minnesota's Air Quality, January 2023 Report to the Legislature, https://www.pca.state.mn.us/sites/default/files/lraq1sy23.pdf.

Table 18: Construction Emissions of Criteria Pollutants (tons/year)[111]

Description	NOx	CO	VOC [a]	SO_2	PM_{10}	$PM_{2.5}$
Off-Road Engine Emissions	5.12	1.50	0.36	0.00	0.21	0.20
Unpaved Roads	--	--	--	--	1.58	0.16
Earthmoving	--	--	--	--	8.00	0.84
TOTAL	**5.12**	**1.50**	**0.36**	**0.00**	**9.79**	**1.21**

[a] Volatile organic compound.

Fugitive dust is a particulate air pollutant. Construction activities along the proposed route, such as clearing vegetation and driving utility poles, may create exposed areas susceptible to wind erosion. Construction of the project will create dust the magnitude of which is dependent on weather conditions and the specific construction activity taking place. Products containing calcium chloride or magnesium chloride are often used for dust control. Chloride products that are released into the environment do not break down, and instead accumulate to levels that are toxic to plants and wildlife. Any adverse impacts are anticipated to be localized, minimal, and temporary.

Operation

Transmission lines have the potential to produce small amounts of ozone (O_3) and nitrous oxide (NO_X). These compounds are created by the ionization of air molecules surrounding the conductor. Ozone production from a conductor is proportional to temperature and sunlight and inversely proportional to humidity.

Ozone and nitrous oxide are reactive compounds that contribute to smog and can have adverse impacts on human respiratory systems.[112] Accordingly, these compounds are regulated and have permissible concentration limits. The State of Minnesota has an ozone limit of 0.08 parts per million (ppm).[113] The federal ozone limit is 0.07 ppm.[114] Ozone and nitrous oxide emissions from the new 115 kV line are anticipated to be well below these limits.[115]

Mitigation

Temporary and localized air quality impacts caused by construction vehicle emissions and fugitive dust from ROW clearing and construction are expected to be short-term and minor. Exhaust emissions from diesel equipment will vary during construction but will be minimal and temporary. The magnitude of emissions is influenced heavily by weather conditions and the specific construction activity taking place. Appropriate dust control measures will be implemented, including but not limited to:

[111] RPA at p. 6-35, Table 6.7.1-1, Appendix F.
[112] https://www.epa.gov/criteria-air-pollutants
[113] Minn. R. 7009.0800, https://www.revisor.mn.gov/rules/?id=7009.0080.
[114] https://www.epa.gov/ozone-pollution/2015-national-ambient-air-quality-standards-naaqs-ozone
[115] RPA at 7-19.

- Reduced speed limits on unpaved roads, and water or other non-chloride-containing dust suppression applications.
- Water application to the right-of-way if erosion occurs during dry weather.
- Street sweeping where soils are tracked onto paved roads; and
- If the ROW is wet during construction activities, vehicle tracking of soil from the ROW will be minimized by using wooden or plastic matting at access points.
- The use of water or other non-chloride dust suppressants to control fugitive dust.

Greenhouse Gases

Greenhouse gases (GHG) are gaseous emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. The most common GHGs emitted from human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

The State of Minnesota is taking significant action to reduce the amount of greenhouse gas emissions produced in the state. As of 2020, Minnesota has experienced a 23 percent reduction in greenhouse gas emissions across all industry sectors.[116]

Potential Impacts and Mitigations

Construction of the transmission line will result in temporary minor greenhouse gas emissions from fuel combustion in construction equipment, commuter vehicles, and delivery trucks. **Table 19** summarizes the estimated potential emissions of greenhouse gas from construction activities for the Project. Emissions are based on typical counts of diesel-fueled construction equipment, expected hours of operation, and estimated vehicle miles traveled.

[116] MPCA DOC. January 2023. Greenhouse gas emissions in Minnesota 2005-2020.

Table 19: Preliminary Estimate Greenhouse Gas Emissions[117]

Description	CO_2 (Short Tons)	CH_4 (Short Tons)	N_2O (Short Tons)	CO_2e (Short Tons)
Off-Road Engine Emissions	171.49	0.01	0.00	172.07
Commuters and Delivery Vehicles	114.83	0.00	0.00	114.83
TOTAL	**286.32**	**0.01**	**0.00**	**286.90**

Notes:
CO_2 – carbon dioxide
CH_4 – methane; 1 short ton CH_4 = 25 short tons CO_2e
N_2O – nitrous oxide; 1 short ton N_2O = 298 short tons CO_2e
CO_2e – carbon dioxide equivalent
Source: 40 CFR 98 Table A-1: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98#Table-A-1-to-Subpart-A-of-Part-98

The Project does not include expanded services or increased system capacity. As such, there will be no changes to upstream or downstream greenhouse gas emissions during operation of the transmission line.

EPA's Greenhouse Gas Reporting Tool[118] shows emissions within Minnesota totaled 34,929,605 metric tons of carbon dioxide equivalent (CO_2e) (38,502,906 tons) in 2020. Accordingly, the preliminary estimate of Project greenhouse gas emissions identified here would be negligible.

5.9.2 Climate Change

Climate change refers to any significant change in measures of climate lasting for an extended period. GHGs trap heat in the atmosphere and contribute to climate change. The project's design incorporates elements that minimize impacts from more extreme weather events such as increased rainfall and flooding, storms, high winds, and heat waves that are expected to accompany a warming climate.

Changes in average precipitation or temperature over years or decades may indicate climate change. Generally, Minnesota's climate already is changing and will continue to do so. Noticeable effects into the future include warmer periods during winter and at night, increased precipitation, heavier downpours, increased summer heat, and the potential for longer dry spells.[119]

From 1895 to 2022, Scott County has experienced an increase in temperature of 0.17 degrees Fahrenheit (°F) per decade and an increase in precipitation of 0.36 inch per decade. During the

[117] RPA at p. 6-36, Table 6.7.1-2, Appendix G.
[118] https://ejscreen.epa.gov/mapper/
[119] https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html

same period, Rice County has experienced an increase in temperature of 0.15 °F per decade and an increase in precipitation of 0.61 inch per decade.[120]

Potential Impacts

A warming climate is expected to cause increased flooding, storms, and heat wave events. These events, especially an increased number and intensity of storms, could increase risks to the Project through high winds or flooding could impact the substation, transmission line poles. Heavy rainfall events could also lead to increased soil erosion.

Mitigation

The Project as proposed will be designed to withstand these changes and will increase reliability in the Project area. GRE is actively assessing risks to the reliable operation of its transmission system from the potential impacts of climate change and is working on opportunities to mitigate those risks. Over the last three years, GRE has invested over $67 million dollars in transmission resiliency improvement projects.[121]

5.9.3 Geology and Topography

The topography along the Project area is relatively level with intermittent rolling hills that rise in elevation approximately 50 to 100 feet above grade (**Figure 10**). Depth of glacial drift over bedrock varies from 100 to over 400 feet. The underlying bedrock includes Ordovician and Cambrian sandstone, shale, and dolomite. Cretaceous shale, sandstone, and clay underly the bedrock further to the north.

Potential Impacts

Transmission structures will generally be direct embedded in the soil approximately 13 feet below grade. The proposed project will not impact topography or geology.

Mitigation

No impacts to topographic or geologic resources will occur, therefore, no mitigation is proposed.

5.9.4 Surface Water

Hydrologic features in the project area and along the proposed route are shown in **Figure 11**. Hydrologic features, such as wetlands, lakes, rivers, and floodplains perform several important functions within a landscape, including flood attenuation, groundwater recharge, water quality protection and wildlife habitat production. The Project lies within the Minnesota River - Shakopee watershed, in the northeast portion of the Minnesota River Basin.[122]

---

[120] https://arcgis.dnr.state.mn.us/ewr/climatetrends

[121] RPA at p. 6-37.

[122] https://www.dnr.state.mn.us/watersheds/map.html

Rivers and Streams

Rivers and streams intersect the proposed route at six locations (**Figure 11**)[123] Four rivers and streams intersect the proposed alignment (**Appendix C, Page 1 to 3**), and two additional stream segments are located within the proposed route but are not crossed by the proposed alignment (**Appendix C, Page 1 and 2**). All streams are unnamed tributaries to Sand Creek which is approximately 4,500 feet to the west at its closest point from the proposed route (**Figure 11**).

Public Waters are wetlands, water basins and watercourses of significant recreational or natural resource value in Minnesota as defined in Minn. Stat. § 103G.005. The MDNR has regulatory jurisdiction over these waters, which are identified on the MDNR Public Waters Inventory maps.[124]

The proposed route intersects MDNR Public Waters at three locations[125] (**Figure 11**). Two public waters cross the proposed alignment (**Appendix C, Pages 1 and 3**) and one additional public water meanders into and out of the proposed route approximately 110 feet from the proposed alignment (**Appendix C, Page 2**). The crossed public waters are watercourses that are unnamed tributaries to Sand Creek, which is also a Public Water Watercourse.

Potential Impacts

During construction of the project, there is potential for adverse impacts to watercourses due to vegetation clearing, ground disturbances, and construction traffic. These activities can speed water flow and expose previously undisturbed soils, increasing erosion and the potential for sediment to reach surface waters. Disturbed soils will generally be limited to pole locations; however, areas outside these locations may be disturbed by construction traffic and by removal of vegetation.

The MDNR Public Waters Watercourses crossed by the proposed route are spaced such that construction activities will avoid impacts within the Ordinary High-Water Level of the Public Waters.

Mitigation

The primary means of mitigating impacts to surface waters is to select routes, alignments, and pole placements that avoid or span watercourses. The use of BMPs (e.g., silt fencing, matting, etc.) to control erosion and minimize impacts to water resources is a standard condition in the draft route permit (see **Appendix B, Sections 5.3.7 and 5.3.8**).

Construction of the project will require several permits from state and federal agencies, beyond a route permit from the Commission, (NPDES/SDS stormwater construction permit, DNR license

[123] RPA at p.6-38.

[124] https://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html

[125] MDNR Division of Ecological and Water Resources. Public Waters (PW) Basin and Watercourse Delineations. 6/10/2020. https://gisdata.mn.gov/dataset/water-mn-public-waters

to cross, etc.). Many of these permits and approvals are directed at the prevention and mitigation of water resource impacts.

Lakes or Ponds

There are no lakes or ponds crossed by the proposed alignment; however, two ponds are located within the proposed route (**Figure 11**). One pond is 165 feet south of the proposed alignment and south side of 280th Street East/State Highway 19, just east of Kanabec Avenue (**Appendix C, Page 3**). The second pond is located 65 feet north of the proposed alignment, north of 280th Street East/State Highway 19 and between Panama Avenue County Highway 23 and GRE's MV-EVX 115-kV transmission line (**Appendix C, Page 3**).

Several lakes and ponds are also near the proposed route. The next closest pond is located on the southern edge of the proposed route, south of 280th Street East/State Highway 19, approximately 1,500 feet west of Kanabec Avenue (**Appendix C, Page 2**). The closest lake is Cedar Lake which is located approximately 1,200 feet north of the western end of the proposed route (**Figure 11**).

In addition, a large shallow, open water wetland community is located at the northern edge of the proposed route, north of 280th Street East/State Highway 19 and situated between Jackson Avenue/Balsa Avenue and Panama Avenue/County Highway 23. This wetland community falls within the Scott County WPA **(Appendix C, Page 3)**.

The MDNR holds a flowage easement across portions of Township 113, Section 25, Range 23 south of Cedar Lake and west of Baseline Avenue in Scott County. In 1936, the MDNR Division of Waters purchased a flowage easement across these properties (**Figure 1 and Figure 11**). MDNR has the right to flow waters on these properties but has no other management or ownership interest.

Section 303(d) of the Federal Clean Water Act requires states to publish, every two years, a list of streams and lakes that are not meeting their designated uses because of various impairments. The list, known as the 303(d) list, is based on violations of water quality standards and listed waters are described as "impaired." In Minnesota, the MPCA has jurisdiction over determining 303(d) waters. There are no impaired waters crossed by the proposed route. The closest impaired waters[126] are Cedar Lake and Sand Creek. Cedar Lake is approximately 1,200 feet north of the proposed route and is listed as impaired for aquatic consumption and aquatic life due to mercury in fish tissue and nutrient/eutrophication biological indicators. Sand Creek is approximately 4,500 feet west of the proposed route and listed as impaired for aquatic life due to chloride, nutrient/eutrophication biological indicators, and turbidity.

[126] Minnesota Pollution Control Agency. Impaired Waterbodies. 5/4/2022. https://gisdata.mn.gov/dataset/env-impaired-water-2022

Potential Impacts

There are no lakes crossed by the proposed route and the proposed route will not impact the MDNR's existing flowage easement south of Cedar Lake. Ponds crossed by the proposed route are spaced such that construction activities will avoid impacts to those water resources.

Mitigation

The primary means of mitigating impacts to surface waters is to select routes, alignments, and pole placements that avoid or span surface waters. The use of BMPs (e.g., silt fencing, matting, etc.) to control erosion and minimize impacts to water resources is a standard condition in the draft route permit (see **Appendix B, Sections 5.3.7 and 5.3.8)**.

Construction of the project will require several permits from state and federal agencies, beyond a route permit from the Commission, (NPDES/SDS stormwater construction permit, DNR license to cross, etc.). Many of these permits and approvals are directed at the prevention and mitigation of water resource impacts.

5.9.5 Groundwater

Groundwater is water that exists underground in saturated zones beneath the land surface. The upper surface of the saturated zone is called the water table. Groundwater is the source of about 37 percent of the water that county and city water departments supply to households and businesses (public supply). It provides drinking water for more than 90 percent of the rural population who do not get their water delivered to them from a county/city water department or private water company. Groundwater is the source of about 40 percent of water used for public supplies and about 39 percent of water used for agriculture in the United States.[127]

Potential impacts to groundwater can occur where installation of structures requires drilling to depths that can penetrate shallow water tables or open access channels to deeper aquifers. As noted earlier, structures are anticipated to be directly embedded. If concrete foundations are used, some portion of the soluble components of the concrete can leach into groundwater prior to the setting and hardening of the concrete. If dewatering is necessary to place the foundations, the water removed from foundation sites could contain sediments or pollutants that may be introduced into surface waters, which can have an impact on groundwater.

Impacts to surface waters can also lead to impacts to groundwater. For example, construction activities can directly or indirectly lead to increased turbidity of surface waters through sedimentation. These contaminated surface waters might then flow to groundwater. Such impacts are typically minor and localized.

The MDNR divides Minnesota into six groundwater provinces. The Project is in the South-central Province, which is characterized by fine-grained glacial sediment such as clay and silt.

[127] United States Geological Survey (USGS), https://www.usgs.gov/faqs/what-groundwater.

Sedimentary bedrock aquifers are common and frequently used, while only limited extents of surficial and buried sand aquifers are present.[128]

Potential Impacts

No impacts to groundwater in the Project area are anticipated. Dewatering activities are not anticipated for this Project, and any effects on water tables would be localized and short term.

Mitigation

No impacts to groundwater resources are anticipated, therefore, no mitigation is proposed.

5.9.6 Wetlands

Wetlands provide valuable ecological services such as floodwater retention, nutrient assimilation, sediment entrapment, and wildlife habitat. Wetlands can be found in a variety of ecoregions and vary with soil, hydrology, and vegetation. Wetlands that are hydrologically connected to the nation's navigable rivers are protected federally under Section 404 of the Clean Water Act. Under the Clean Water Act, Section 401 water quality certification is also required for activities that may result in a discharge to waters of the United States. The MPCA administers Section 401 water quality certification on non-tribal lands in Minnesota. If the USACE authorizes the project under its General Permit/Letter of Permission permitting program, the MPCA waives its Section 401 Water Quality Certification authority. In Minnesota, wetlands are also protected under the Wetland Conservation Act, which is administered by the Board of Water and Soil Resources (BWSR) and the identified Local Government Unit.

GRE, in consultation with the USACE, St. Paul District, will seek coverage under the Utility Regional General Permit once design of the transmission line is complete. GRE has been assigned a Regulatory File No. (MVP-2017-01526-RMH) and a USACE Project Manager for this Project.[129]

The USFWS began producing maps of wetlands based on aerial photographs and Natural Resources Conservation Service soil surveys starting in the 1970s; these wetlands are known as the National Wetland Inventory (NWI). It is important to note that NWI wetlands are based on aerial imagery and are not field verified. Nevertheless, NWI wetlands provide a useful starting point for identifying potential wetland areas.

The Project route crosses several discrete wetland communities and wetland complexes.[130] Wetland Cowardin classifications crossed include Palustrine Forested (PFO), Palustrine Scrub-Shrub (PSS), and Palustrine Emergent (PEM). The proposed alignment cumulatively crosses 1,530 feet (0.29 mile) of PFO wetland, 637 feet (0.12 mile) of PSS wetland, and 5,742 feet (1.09 miles) of PEM wetland (**Appendix C, Page 1 to 3**).

[128] https://www.dnr.state.mn.us/groundwater/provinces/index.html
[129] RPA at p. 6-42, Appendix D.
[130] MDNR. National Wetland Inventory for Minnesota. 5/23/2019. https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014

Potential Impacts

Construction and maintenance of the proposed project has the potential to result in long-term and temporary loss of wetlands or wetland function. Direct impacts would occur in areas where construction activities occur within wetlands. During construction, there is also the possibility for indirect impacts to wetlands from sediment as the ground is disturbed by excavation, grading and construction traffic.

Crossing a wetland does not necessarily mean that the wetland will be impacted; in some cases, a wetland could be crossed by spanning it. However, where a wetland is crossed and such crossing requires construction activities within the wetland, there is a strong potential for impacts. Construction of transmission line structures typically includes vegetation clearing, movement of soils, and construction traffic. These activities could impair the functioning of wetlands. Even small changes in hydrology (e.g., periods of inundation, changes in flow, sedimentation) can impair the functioning of wetlands.

Even in areas where wetlands can be span, tree clearing may be required along the ROW. This may result in the conversion from one wetland type (Forested/Shrub wetland) into another wetland type (Emergent wetland) within the ROW. The potential of habitat conversion due to the removal of woody vegetation and the associated continual maintenance of vegetation within the ROW would result in the permanent conversion of the cover types. Consequently, the types and magnitude of wetland functions would change. Typical examples of changed wetland functions could include wildlife habitat, flood flow attenuation, and sediment stabilization and retention. Areas affected by the removal of forest vegetation could also be subjected to increased thermal variations during the summer and winter.[131]

Once construction of the Project is completed, there will be no significant impacts to wetlands because disturbed soil will be restored to previous conditions and the amount of land area converted to an impervious surface will only be associated with the cross-sectional area of the structures, which will be on the order of 200 square feet total for the Project. Temporary impacts to wetlands may occur if they need to be crossed during construction of the transmission line. Staging or stringing setup areas will not be placed within or adjacent to water resources to the extent practicable.

Mitigation

Wetland impact avoidance measures that will be implemented during design and construction of the transmission lines include spacing and placing the power poles at variable distances to span and avoid wetlands, where possible. The maximum distance that can be spanned is approximately 400 feet. The proposed alignment crosses six wetland areas[132] where the wetland distance exceeds 400 feet, which will require that a transmission pole be placed within the wetland. **Table 20** describes the span length and wetland community type of these six wetlands.

[131] WGC Demonstration Project EIS, DOE/EIS-0361. November 2007
[132] RPA at p.6-41.

Table 20: Wetlands Crossed by the Project Alignment with Span Lengths Longer than 400 feet[133]

Wetland Community Type	Span Length (feet)	General Location	Appendix C Map Page
Forested/Emergent Wetland	580	Western end of Proposed Route along Baseline Ave	1
Emergent Wetland	449	Western end of Proposed Route along Baseline Ave	1
Emergent Wetland	1,127	South of 280th St E / State Highway 19 and west of Leroy Ave	2
Emergent Wetland	1,345	South of 280th St E / State Highway 19 east of Leroy Ave	2
Emergent Wetland	862	South of 280th St E / State Highway 19 and east of Jackson Ave / County Highway 52	3
Emergent / Scrub-Shrub	847	South of 280th St E / State Highway 19 and east of Jackson Ave / County Highway 52	3

If wetlands cannot be avoided, impacts can be mitigated by a variety of strategies including: use of construction mats, constructing during winter months when the ground is frozen, assembling structures on upland areas prior to site installation, and transporting crews and equipment, to the extent possible, over improved roads and via routes which minimize transit over wetlands.

The draft route permit requires the permittee to avoid and minimize wetland impacts (**Appendix B, Section 5.3.8**). Implementation of best management practices includes, but is not limited to:

- Minimizing travel though wetlands by accessing wetlands using the shortest route and, where possible, accessing poles located near or in wetlands by roadways.
- When practicable, assembling structures on upland areas before bringing them to the site for installation.
- Placing staging and stringing setup areas away from water resources to the extent possible.
- Completing construction activities during frozen ground activities, when possible.
- Using construction mats to protect wetland vegetation.
- Potentially using all-terrain construction vehicles, designed to minimize impacts to soils in damp areas.

[133] RPA at p. 6-41, Table 6.7.2-1.

5.9.7 Floodplains

Floodplains are low-lying areas that are subject to periodic inundation due to heavy rains or snowmelt. Floodplain areas are generally found adjacent to lakes, rivers and streams. In their natural state, floodplains provide for temporary water storage during flooding events.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM)[134] for the Project area, the Proposed route would cross two "Zone X" floodplain areas described as areas of 500-year flood and areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. These two areas consist of 1) the large freshwater emergent wetland located south of Baseline Ave and north of State Highway 19 with associated waterbody running from northwest to southeast through the wetland; and 2) the large freshwater emergent wetland that is the USFWS Scott County Waterfowl Production Area (WPA) toward the eastern end of the proposed route along State Highway 19 (**Figure 11**).

Potential Impacts

Impact to the function of floodplains in the Project area is not anticipated.

Mitigation

No impacts to floodplains are anticipated from the Project, therefore no mitigation measures are proposed.

5.9.8 Soils

Transmission lines have the potential to impact soils directly and indirectly. Direct impacts to soils result from movement or compaction. Removal of vegetative cover can cause indirect impacts to soils through increased susceptibility to erosion. Soils in the project area have been formed by glaciation and alluvial deposits. The depth of glacial drift over bedrock varies from 100 to 400 feet. Soils in the area are generally very deep.

The Soil Survey Geographic Database (SSURGO) contains information about soil as collected by the National Cooperative Soil Survey over the course of a century. The information can be displayed in tables or as maps and is available for most areas in the United States and the Territories, Commonwealths, and Island Nations served by the USDA-NRCS. The information was gathered by walking over the land and observing the soil. Many soil samples were analyzed in laboratories. The maps outline areas called map units. The map units describe soils and other components that have unique properties, interpretations, and productivity.[135]

[134] Community Panel Numbers 270428 0100 C and 270428 0125 C, revised February 19, 1987. FEMA Flood Map Service Center | Welcome! Digital maps are not available for this area.
[135] https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/?cid=nrcs142p2_053627

Soils of the Ecological Classification subsection known as the Big Woods are generally soils dominantly loamy, with textures ranging from loam to clay loam whose parent material is glacial till and are classified primarily as Alfisols. Alfisols soils developed under forests.

There are two soil associations along the proposed route; typically, an association consists of one or more major soils and some minor soils. These soil associations are listed in **Table 21** and shown in **Figure 10**.

Table 21: Soil Associations in the Vicinity of the Project

Soil Association[136]	General Description[137]
Lester-Le Sueur-Cordova (s3503)	**Lester-Le Sueur-Cordova** association unit is characterized as very deep, well drained soils to poorly drained soils that formed in calcareous, loamy till. They are found in areas ranging from lower landscape positions on flats and upper drainageways to convex slopes on moraines and till plains. Slopes range from 1 to 70 percent.
Lerdal-Kilkenny-Hamel (s3617)	**Lerdal-Kilkenny-Hamel** association unit is characterized as very deep, poorly drained to moderately well drained soils that formed in clayey glacial till or flow till and underlying loamy glacial till on glacial moraines. They are found in gently sloping to moderately steep areas and in areas with convex slopes on higher lying terrain. Slopes range from 1 to 35 percent.

Potential Impacts

Construction activities have the potential to compact the soil as the result of the movement of heavy construction equipment. Vegetation will be cleared to facilitate construction of the project. This clearing will temporarily expose soils to the elements, which could cause soil erosion. Loss of soils during construction could adversely impact water resources in the area.

Ground disturbance and soil exposure would be primarily limited to the pole locations, which would typically consist of a 10- to 15-foot-deep hole between 2 to 4 feet in diameter. Impacts to physiographic features should be minimal during and after installation of the transmission line structures, and these impacts will be short term. There should be no long-term impacts resulting from this Project.

During final design geotechnical analysis will ensure that placement of poles is compatible with local soil conditions.

Mitigation

Potential impacts to soils can be mitigated by using BMPs and standard construction practices. A variety of methods can be employed to minimize soil erosion, including the prompt revegetation of disturbed soils. Common mitigation measure employed to minimize soil erosion include:

[136] USDA NRCS. Digital General Soil Map of the U.S. (STATSGO2). 10/13/2016. https://gisdata.mn.gov/dataset/geos-statsgo2

[137] https://www.nrcs.usda.gov/resources/data-and-reports/official-soil-series-descriptions-osd

- Scheduling construction in wetland areas during frozen ground conditions where possible.
- Use of construction mats in wetland areas when construction cannot be performed during frozen ground conditions.
- Seeding to establish temporary and permanent vegetative cover on exposed soil.
- Using mulch to form a temporary and protective cover on exposed soils. Mulch can help retain moisture in the soil to promote vegetative growth, reduce evaporation, insulate the soil, and reduce erosion. A common mulch material used is hay or straw.
- Erecting or using sediment control fences that are intended to retard flow, filter runoff, and promote the settling of sediment out of runoff via ponding behind the sediment fence.
- Using erosion control blankets and turf reinforcement mats that are typically single or multiple layer sheets made of natural and/or synthetic materials that provide structural stability to bare surfaces and slopes. Due to entanglement issues with small animals, the erosion control blankets will be limited to "bio-netting" or "natural netting" types, and specifically not products containing plastic mesh netting or other plastic components.

Measures to mitigate soil erosion are standard conditions within the draft route permit (**Appendix B, Section 5.3.7**).

5.9.9 Vegetation

Construction of transmission lines often requires the removal or disturbance of vegetation during construction. Additionally, vegetation may be impacted if invasive or non-native species is introduced to the ROW during construction or restoration, or by changes in habitat (e.g., soils, water flows) that adversely impact plant growth.

Construction and operation of the proposed project may cause short-term and/or long-term impacts on vegetation. The EA assesses impacts on vegetation by primarily using the USGS GAP land cover mapping (See Section 4.3 Environmental Setting and Figure 5) and aerial photography interpretation to identify vegetation cover within a proposed route.

Pre-settlement vegetation of the Project area was comprised of oak woodland and maple-basswood forests with aspen dominated forest located along the western margin of the Big Woods subsection. The current vegetation and land use is primarily made up of cropland (75%) and pasture (5-10%). The remaining areas of the subsection are comprised of upland forest or wetland (**Figure 5**).

Potential Impacts

The use of construction equipment during site preparation (grading, excavation, and soil stockpiling) may result in short-term adverse impacts on existing vegetation, including localized physical disturbance and compaction. Construction activities, such as site preparation and installation of structures, may have short-term impacts on vegetation. Construction activities involving establishment and use of access roads, staging, and stringing areas would also have short-term impacts on vegetation by concentrating surface disturbance and equipment use.

Construction activities would cause long-term impacts on vegetation by permanently removing vegetation at each structure footprint (2 to 4 feet diameter per structure) and within portions of the ROW that are currently dominated by forest or other woody vegetation. The Applicant would permanently convert forested areas and shrub lands to low-stature vegetation by clearing woody vegetation throughout the entire ROW. GRE will clear approximately 16.7 acres of trees within the 100-foot-wide ROW associated with the proposed alignment.[138]

Permanent loss of forest may lead to fragmentation by reducing intact blocks of forest vegetation and create long-term, regional, adverse, indirect impacts to species dependent on large contiguous blocks of interior forest. Construction-related removal of vegetation and conversion to open habitats could have indirect impacts on native vegetation by increasing the potential for spread of invasive species as well as increasing the effects of light penetration, wind, and humidity that occur more prominent at edges between habitats.

Construction-related clearing of woody vegetation within the ROW would result in the widening of existing corridors or bisecting (fragmenting) forests and shrub lands to establish new ROWs. Alteration of vegetation community composition and structure would occur at the edge of newly cleared forests or shrub lands.

In areas where the new transmission line would be located adjacent to an existing ROW (roadways, pipelines, electrical distribution lines), these effects would largely be limited to one side of the ROW and would not create newly fragmented areas. Impacts related to the permanent conversion of forest vegetation to low-stature open vegetation are expected in areas where new or expanded ROW would be created and less so in situations where an existing ROW is overlaid. As the proposed route will primarily follow existing road and distribution line corridors or be in agricultural fields, which will minimize impacts to previously undisturbed vegetation, minimal impacts to native vegetation are anticipated.

Construction of any transmission line could lead to the introduction or spread of noxious weeds or other invasive species. Construction activities that could potentially lead to introduction of noxious weeds and invasive species include ground disturbance that leaves soils exposed for extended periods, introduction of topsoil contaminated with weed seeds, vehicles importing weed seed from a contaminated site to an uncontaminated site, and through conversion of landscape type, particularly from forested to open settings. Noxious weeds have potential to

[138] RPA at p. 6-43.

dominate and displace native plants and plant communities, permanently altering ecosystem functions.

In Minnesota, noxious weeds are managed at the state level through the Minnesota Department of Agriculture (MDA), which administers the Minnesota Noxious Weed Law. The MDA lists four categories of noxious weeds with differing levels of eradication, control, reporting, transport, sales, and propagation requirements. There are 12 weeds on the eradicate list, 8 on the control list, 5 restricted species, and 4 specially regulated plants. Prohibited noxious weeds "are known to be detrimental to human or animal health, the environment, public roads, crops, livestock or other property." None of the plants on these lists is to be transported, propagated, or sold in the state. Weeds on the list include annual, biennial, and perennial plants. Counties may create and administer their own lists of noxious weeds; however, the counties across the proposed project have not listed any species or rules above and beyond the MDA noxious weed lists.

The Applicant would routinely clear woody vegetation from the transmission line ROW to maintain low-stature vegetation that would not interfere with the transmission line. Maintenance and emergency repair activities could result in direct impacts on vegetation from removal of vegetation, localized physical disturbance, and compaction caused by the use of equipment. Maintenance and emergency repair-related impacts on vegetation would be short-term and more localized than construction-related impacts.

Mitigation

The proposed route follows existing infrastructure (road and distribution line ROW) for much of its length. By so doing, the proposed route places new HVTL where there is already existing linear infrastructure, this tends to minimize the impacts of vegetation loss, the creation of fragmented areas, the clearing of trees to facilitate access to the transmission line ROW, and conversion of forested areas to low-stature ground cover.

Impacts to non-forested areas will be temporary and will primarily occur during construction of the proposed project. To minimize impacts to trees the Applicant will limit tree clearing and removal to the HVTL ROW and areas that impact the safe operation of the facilities.[139]

Potential impacts to vegetation can be mitigated by using BMPs and standard construction practices to minimize soil erosion (including the prompt revegetation of disturbed soils) and conducting surveys for sensitive plants during appropriate periods of the growing season to properly identify their presence and/or absence along the selected ROW before clearing begins. If sensitive plants or communities are identified during surveys, individual avoidance and minimization measures would be evaluated and submitted to the appropriate resource agencies. Preparation and development of a Vegetation Management Plan, in consultation with resources agencies, is a standard condition in the draft route permit (see **Appendix B, Section 5.3.9**) and GRE has identified the need for such a plan.[140]

[139] RPA at 6-43.
[140] RPA at p.6-43.

Mitigation measures to reduce the spread of nonnative plant species during construction include: regular frequent cleaning of construction equipment and vehicles; minimization of ground disturbance to the greatest degree practicable and rapid revegetation of disturbed areas with native or appropriately certified weed-free seed mixes; conducting field surveys of the ROW prior to construction to identify areas that currently contain noxious weed (weed surveys during construction would identify infestations of the ROW and staging sites); attending to new infestations within the ROW by identifying and eradication as soon as practicable in conjunction with property owners input.

5.9.10 Wildlife

The Project is located in the MDNR Nongame Wildlife Central Region.[141] The landscape types and vegetation communities throughout the project area provide forage, shelter, nesting, overwintering, and stopover habitat for a wide range of resident and migratory wildlife species; wildlife species may include ruffed grouse, sharp-tail grouse, partridge, rabbits, squirrels, red and gray fox, raccoon, deer, bear, muskrat, mink, beaver, migratory waterfowl (geese, ducks, trumpeter swans, herons) and various birds (meadowlark, field sparrow, thrush, woodpeckers, shore birds).

There are no MDNR WMAs crossed by the proposed route. The closest MDNR WMA is the St. Patrick's WMA, which is located approximately 1.6 miles to the northeast of the proposed route.

GRE reviewed the USFWS National Realty[142] information and easement documents associated with the Scott County WPA (**Figure 9**) managed by the Minnesota Valley Wetland Management District[143] located along 280th Street East/Minnesota Highway 19 toward the end of the proposed route near Panama Avenue/County Highway 23. This WPA consists of three separate easements within a wetland area to the north of 280th Street East/Minnesota Highway 19. GRE has coordinated with the USFWS regarding this easement;[144] the proposed alignment avoids structure placement within this WPA.

Potential Impacts

Construction activities that generate noise, dust, or disturbance of habitat may result in short-term indirect impacts on wildlife. During construction of the proposed project, wildlife would generally be displaced within the anticipated ROW. These impacts are expected to be short-term and localized. Common species habituated to human presence may continue to utilize habitats adjacent to the ROW during construction.

Construction of the proposed project may result in long-term adverse impacts on wildlife from the loss or conversion of habitat and habitat fragmentation. The proposed project would expand

[141] https://www.dnr.state.mn.us/eco/nongame/central.html

[142] RPA at p. 6-43, Appendix D.

[143] Ibid.

[144] Ibid.

an existing cleared corridor, which may convert some areas from forest and shrub land to low-stature vegetation. The Applicant would permanently clear woody vegetation within the anticipated ROW by widening an existing ROW. Wildlife species previously occupying forested communities in the ROW would be displaced in favor of species that prefer more open vegetation communities.

Impacts are expected to be incremental and localized in situations where an existing ROW is expanded.

Conversion of vegetation cover type alters species use by changing plant community composition and structure. When forested plant communities are converted to open communities, there are corresponding changes in wildlife communities. Species that rely on well-developed forest canopies for nesting, foraging, or shelter are displaced from the portion of the landscape where this alteration occurs. Species that rely on shrubby or grassland habitats may be less susceptible to and may even benefit under alterations associated with transmission lines because they would undergo fewer changes in vegetation community structure and environmental factors, such as light intensity.

Habitat fragmentation reduces the size of contiguous blocks of vegetation, such as forest; this reduces the total area of contiguous habitat available to wildlife species and increases the isolation of the habitat. Opportunistic and adaptable animals often succeed in highly fragmented habitats. Non-native invasive or pioneering plant species may encroach where disturbance provides a competitive advantage and an avenue of introduction, such as where habitat fragments occur. The alteration of plant community composition and structure can adversely affect those species that rely on the presence of certain plant species or vegetative cover. Fragmentation effects are greatest where large contiguous blocks are broken up into smaller patches that reduces interior forest habitat necessary for some species such as songbirds. The effects would generally be greatest where new corridor is created, rather than where the transmission line expands or parallels existing infrastructure ROWs (roadways and electrical transmission/distribution lines).

The Applicant would routinely maintain the ROW to support low-stature non-woody vegetation; emergency repairs may require additional vegetation clearing. Operation, maintenance, and emergency repair activities may have long-term indirect impacts on wildlife, including the displacement of birds, burrowing animals, and other species utilizing the ROW or its vicinity for foraging, breeding, or nesting. These impacts are expected to be long-term and localized.

Increased risk of avian collisions and potential electrocution with transmission conductors and equipment is possible with the development of all transmission lines. Electrocution occurs when an arc is created by contact between a bird and energized lines or an energized line and grounded structure equipment. Electrocution occurs more frequently with larger bird species, such as hawks, because they have wider wingspans that are more likely to create contact with the conductors.

Transmission lines may present the possibility for avian collisions. Several factors, such as body size, weight, and flight behavior, affect the potential for birds to collide with overhead power lines. Larger birds, such as waterfowl, are generally the most likely to collide with transmission lines. Impacts are likely to be higher around features that attract birds, such as wetlands, lakes, and feeding sites.

Potential Impacts – Bees/Apiary

During the scoping comment period several residents of the Country Hollows Development expressed concern over the potential impacts of HVTLs on bees and bee colonies given that a small apiary lies at the entrance to the development.

In 2010, the Electric Power Research Institute (EPRI) produced a Research Paper indicating that bees use sensory and environmental cues to navigate between their hive and food sources and to communicate with other bees. In addition, they will use geomagnetic fields to communicate information. The Resource Paper indicates that there is no evidence that bee navigation or communication is affected by the local electric field.[145] The Research Paper concluded that the only adverse effects to beehives are when the electric field is high enough to produce conditions prone to shock.

In 2013, EPRI prepared a Technical Report to determine if the electric magnetic field (EMF) produced by high voltage transmission lines has negative effects on native bee abundance, diversity, development, and behavior.[146] That study found no indication of negative impacts of EMF on bees and no statistically significant differences were found in floral visitation or pollination success in areas directly under the lines versus areas of similar habitat at least 100 meters away from the easements. This study also discusses the benefits of integrated vegetation management in HVTL corridors, which includes periodic cutting of tall vegetation and management of invasive species contributing to increased floral diversity and abundance and increased potential nesting habitat and therefore, higher bee abundance and species richness as compared to mowing.

The benefits of HVTL rights-of-way on bees were further supported by 2018 EPRI study which found that, due to the linear shape of ROWs, they may serve as corridors allowing pollinators to disperse between fragmented habitats and forage through the landscape.[147] Furthermore, ROWs are a benefit to pollinator populations in agricultural landscapes when they provide a natural or semi-natural habitat.[148]

---

[145] EPRI. 2010. Honeybees and Power Line EMF Environments. Resource Paper – Electric Magnetic Fields (EMF) Health Assessment and Radio-Frequency Safety Program. November 2010.

[146] EPRI. 2013. Use of Transmission Line Easements for the Benefit of Native Bees

[147] EPRI. 2018. Overview of Power Companies and Pollinators. Available online at: https://xerces.org/sites/default/files/2018-07/18-017_01_Overview%20of%20powerlines%20and%20pollinators.pdf

[148] Menz, M.H. et al. 2011. Reconnecting plants and pollinators : challenges in the restoration of pollination mutualisms. Available online at: https://xerces.org/sites/default/files/2018-07/18-017_01_Overview%20of%20powerlines%20and%20pollinators.pdf

A 2023 study conducted in the Maule region of Chile focused on honeybees along an HVTL and mobile phone infrastructure corridor in an ephemeral herbaceous vegetation community dominated by the non-native California poppy (*Eschscholtzia californica*). The study evaluated tall structures (approximately 66 feet) that generated EMF close to 100 milligauss (mG) recorded between 39 and 56 feet from the base of the tower and at 10 to 12 inches. For comparison, Section 6.3 of the Route Permit application identifies the maximum magnetic field under expected peak demand conditions for Project 115-kV transmission line is 9.85 mG, which is 10 times lower than the EMF evaluated in this study. This study found that although EMF did not affect honeybee abundance in the study area, it caused honeybees to preferentially forage in areas with lower *E. californica* abundance farther away from the transmission line towers even if there was higher *E. californica* abundance near the towers. The authors attribute this to the potential decreased cognitive and motor abilities and orientation capacities associated with the exposure to EMF and concluded that decreased pollinator visitation may contribute to reduced plant reproductive success at a local scale. [149]

Another study completed in 2018 assessed acute exposure of flying insects to EMF in a laboratory setting to simulate potential exposure of pollinators in the field crossing an EMF boundary of a powerline. These EMF levels in this study ranged from 200 mG to 1,000 mG at ground level below the powerline conductors to 10,000 mG to 70,000 mG within one meter of the conductors. [150] For comparison, this is between 20 and 102 times higher than the maximum magnetic field under expected peak demand conditions for the Project 115-kV transmission (Section 6.3 of the Route Permit application). That study found that short-term exposure (i.e., 1 minute) to EMF impacted "the cognitive abilities of bees by reducing olfactory learning acquisition, and that the magnitude was dependent upon the strength of the EMF". Exposure also increased wingbeat frequency and reduced the number of successful foraging flights to a food source. Performance also varied depending on the hive of origin.

A 2019 study exposed honeybees to 50 Hz ELF EMF in a laboratory setting to investigate the potential effects of ELF (extreme low frequency) EMF on aggressive learning and aggression levels. Bees in this study were exposed for 17 hours to 1,000 mG to 10,000 mG.[151] For comparison, this is between 102 and 1,015 times higher than the maximum magnetic field under expected peak demand conditions for the Project 115-kV transmission (Section 6.3 of the Route Permit application). The results indicate that beehives placed under power lines with short-term exposure to similar levels of ELF EMF at ground level can affect honeybees in terms of their "conditioning to negative stimuli and the intensity of their aggressive behavior". The ecological impacts may include honeybees' latency in responding to new threats; however, increased aggression levels may allow for greater resiliency to environmental stresses and immune challenges. The study acknowledges that there are other factors in the decision-making process

[149] Molina-Montenegro, Marco et al. May 2023. Electromagnetic fields disrupt the pollination service by honeybees. Available online at https://www.science.org/doi/10.1126/sciadv.adh1455

[150] Shepherd, S. et al. May 2018. Extremely Low Frequency Electromagnetic Fields Impair the Cognitive and Motor Abilities of Honeybees. Available online at: https://www.nature.com/articles/s41598-018-26185-y

[151] Shephard, S. et al. October 2019. Increased Aggression and Reduced Aversive Learning in Honeybees Exposed to Extremely Low Frequency Electromagnetic Fields. Available online at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0223614#pone.0223614

of how a honeybee may react to an environmental stressor and the consequences are not known at this time. It is not yet understood how the honeybees would respond to negative stimuli with exposure to ELF EMF in the field; however, it is possible that long-term chronic exposure to ELF EMFs could lead to reduced cognitive abilities.

Mitigation

Displacement of fauna is anticipated to be minor and temporary in nature, and no long-term population-level impacts are anticipated from the proposed project.

Electrocution occurs more frequently with distribution lines than transmission lines because the conductors are often closer together or closer to grounded hardware on distribution lines. Because the structures would be larger and the phase spacing for the proposed project's conductors greater compared to distribution lines, avian electrocutions are less likely to occur.

The Applicant will construct the HVTL according to Avian Power Line Interaction Committee (APLIC) recommended safety design standards regarding avian collisions and avian electrocution with HVTLs.[152]

The application of swan flight diverters in areas of likely impact, such as near waterbodies, wetlands, or feeding areas can mitigate potential collisions. They are designed for use on overhead conductors to create greater visibility for avian flight paths on overhead lines and tower down guys. They offer little wind resistance and serve to reduce hazards to both lines and birds.

From the limited literature review conducted, it does not appear that the expected levels of EMF resulting from this Project would result in any negative impacts to bees foraging within the HVTL ROW. Additionally, the Country Hollow Lane alignment modification adopts a prudent avoidance approach in routing the transmission line relative to the apiary at the entrance to the development.

5.9.11 Rare and Unique Natural Resources

The ROI for rare and unique natural resources varies for species and communities. The ROI for an analysis of impacts to federally and state-listed species includes a one-mile buffer surrounding the proposed routes to obtain a broad view of species that may be present, since no formal surveys have been conducted for the proposed project. The ROI for the analysis of impacts to rare communities includes the anticipated ROW of the proposed transmission line and the footprint of the other elements of the proposed project.

Minnesota Statutes, Section 84.0895, Protection of Threatened and Endangered Species, requires the MNDNR to adopt rules designating species as endangered, threatened, or species of special concern. The resulting list of these species is codified in Minnesota Rules, Chapter 6134, Endangered Threatened, and Special Concern Species. The Endangered Species Statute also

[152] RPA at p. 6-44.

authorizes the MNDNR to adopt rules that regulate treatment of species designated as endangered and threatened at the state level at Minnesota Rules, part 6212.1800 to part 6212.2300, Threatened and Endangered Species.

A state-listed endangered species is defined as a species threatened with extinction throughout all or a significant portion of its range within Minnesota. A state-listed threatened species is defined as being likely to become endangered in the foreseeable future throughout all or a significant portion of its range in Minnesota. A species is of special concern if, although the species is not endangered or threatened at the state level, it is extremely uncommon in Minnesota or has unique or highly specific habitat requirements that deserves careful monitoring of its status. Minnesota's Endangered Species Statutes and the associated rules impose a variety of restrictions, including a take permit program, and several exemptions pertaining to threatened or endangered species. Species of special concern, though often ecologically important, are not protected by Minnesota's Endangered Species Statue or the associated rules.

The DNR has established several classifications of rare communities across the state, including Scientific and Natural Areas (SNAs), Minnesota Biological Survey (MBS) Sites of Biodiversity Significance, High Conservation Value Forest, and MBS native plant communities.

SNAs are areas of land designated to preserve natural features and rare resources of exceptional scientific and educational values.

The DNR MBS assigns a biodiversity significance rank to all sites surveyed across the state. These ranks are used to communicate statewide native biological diversity of each site and help to guide conservation and management activities. There are four biodiversity significance ranks: outstanding, high, moderate, and below. A site's biodiversity significance rank is based on the presence of rare species populations, the size, and condition of native plant communities within the site, and the landscape context of the site.

The DNR MBS also identifies native plant communities across the state. A native plant community is a group of native plants that interact with each other and their environment in ways that have not been greatly altered by modern human activity or introduced organisms. Native plant communities provide a range of ecological functions that are increasingly recognized as valuable for the quality of life in Minnesota. In addition to the habitat value native plant communities provide, they have also played an important role in the development of Minnesota's cultural history and heritage.

DNR High Conservation Value Forests are broadly defined as areas of outstanding biological or cultural significance. The DNR is required by Minnesota Statutes, chapter 89, State Forests; Tree Planting; Forest Roads and Minnesota Statutes, Chapter 89A, Sustainable Forest Resources, to manage a broad set of objectives and forest resources, including the management and protection of rare species, communities, features, and values across the landscape.

GRE submitted a formal Natural Heritage Review Request (2022-00769) on April 12, 2023, through the MDNR's Minnesota Conservation Explorer (MCE); an automated response provided by the MDNR on April 12, 2023, indicated that the Project will not negatively affect any known occurrences of rare features.[153] Merjent, on behave of GRE, consulted the DNR Natural Heritage Inventory System data through License Agreement LA 1066 on February 15, 2022, and did not identify any features within 1 mile of the proposed route.[154]

Although the loggerhead shrike (*Lanius ludovicianus*), a state-listed species, was not identified as part of the Natural Heritage review, during the EA scoping comment period the representative from the MDNR recommended that the EA discuss the presence of suitable habitat in the vicinity of the Project and precautions that the Applicant could incorporate into its construction plans to minimize potential impacts.

The USFWS list of federally threatened, endangered, proposed, and candidate species was reviewed by the GRE and/or their consultant to obtain information on federally-listed species that could be present in the project area.[155] Based on the official species list provided by the USFWS,[156] one species federally listed under Endangered Species Act (ESA), one species proposed for listing, and one candidate species have been previously documented within the vicinity of the Project (**Table 22**). No federally designated critical habitat is present within the project area.

Table 22: Federally Protected Species w/in the Project Area[157]

Common Name	Scientific Name	Federal Status
Northern long-eared bat	*Myotis septentrionalis*	Endangered
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered
Monarch butterfly	*Danaus plexippus*	Candidate

The Bald and Golden Eagle Protection Act (BGEPA) provides additional protections and regulations specific to bald eagles and their nests. A public comment, submitted to eDockets on December 15, 2023, provided photographs of bald eagle activity on Baseline Ave and indicated that bald eagles are nesting near the proposed project alignment.[158]

Loggerhead shrike. The loggerhead shrike (*Lanius ludovicianus*), a state-listed endangered species, has been observed within two miles of the proposed route. Loggerhead shrikes live in areas of upland grasslands and sometimes in agricultural areas with short grass vegetation and perching sites such as hedgerows, shrubs, and small trees. They may occur in both native and non-native grasslands, including pastures, old fields, shelterbelts, and farmyards.

[153] RPA at p. 6-45, Appendix D.
[154] RPA at p. 6-45, Appendix D.
[155] RPA at p. 6-45, Appendix D.
[156] Ibid.
[157] RPA at p. 6-45, Table 6.7.5-1.
[158] Lisa Duoos Smrkar. Public Comment. December 15, 2023. eDocket # 202312-201252-01

Based on the MDNR Rare Species Guide[159], the main contribution to the decline of this species is related to habitat loss of grassland areas with scattered shrubs or small trees for nesting, and environmental contamination largely associated with pesticide use. It is possible that there is suitable habitat for the species in the Project area; however, the element occurrence for this species provided in the Natural Heritage Inventory System (NHIS) data is approximately 1.7 miles from the proposed route and was documented in 1990. Based on the Breeding Bird Survey, there are no recent observations within either Scott or Rice counties[160]. The Project would not result in a loss of grassland habitat except in the very limited area associated with pole placement, and tree and shrub clearing would be minimized to the extent practicable and almost exclusively occur in locations collocated with existing infrastructure. Furthermore, loggerhead shrikes are known to use transmission lines as a perch for scouting and hunting prey. The MDNR "Landowners Guide for Maintaining and Encouraging Loggerhead Shrikes"[161] states that "*Shrikes use grassy, open areas with scattered trees and shrubs such as pastures, prairie patches and grassy roadsides. A few trees and shrubs along with fences and powerlines provide nesting sites and perches from which to hunt*."

In the event that loggerhead shrikes are present within the Project area, GRE would anticipate that impacts to loggerhead shrike potentially suitable habitat would be temporary. GRE will coordinate with the MDNR on this species.

Northern long-eared bat. The northern long-eared bat was proposed for listing as a federally endangered species in 2013 (78 Federal Register 61046-61080). In April of 2015, the USFWS listed the northern long-eared bat as federally threatened (80 Federal Register 18023-18028). In November of 2022 the USFWS reclassified the northern long-eared bat as endangered under the Endangered Species Act. The northern long-eared bat inhabits caves and mines in winter; in summer northern long-eared bats roost in live and dead trees with loose, flakey, or shaggy bark, crevices, or hollows. The USFWS has not identified designated critical habitat for the northern long-eared bat currently.[162]

Tricolored Bat. The tricolored bat is one of the smallest bats species native to North America. The species overwinters in caves and mines where available. However, throughout much of its range in the southern United States, roadside culverts, tree cavities, and abandoned water wells may also serve as suitable overwintering habitat. During the active season (generally, April 1 to October 31), the species may be found roosting among leaf clusters (live and dead) on living or recently dead deciduous hardwood trees. Roost choice may also vary by region and this species has been observed roosting in eastern red cedar trees and pine needles, as well as within manufactured structures such as barns and bridges.[163] On September 13, 2022, the USFWS published a proposed rule listing the tricolored bat as federally endangered under the ESA.

[159] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABPBR01030
[160] https://mnbirdatlas.org/species/loggerhead-shrike/
[161] http://files.dnr.state.mn.us/eco/rsg/shrikeflyer.pdf
[162] https://www.fws.gov/Midwest/endangered/mammals/nleb/index.html
[163] RPA at p.6-46.

Monarch Butterfly. The monarch butterfly is a large butterfly with an approximate 3-4-inch wingspan and characterized by bright orange coloring on the wings, with distinctive black borders and veining. The species can be found in a wide variety of habitats including prairies, grasslands, urban gardens, road ditches, and agricultural fields, provided a supply of nectaring plants are available for adult foraging and milkweed plants are present for laying eggs and as a food source for caterpillars.[164]

On December 17, 2020, the USFWS published the result of its 12-month review of the monarch butterfly and determined that listing the species under the ESA was "warranted but precluded," meaning the species meets the criteria for listing as an endangered or threatened species, but the USFWS cannot currently implement the listing because there are other listing actions with a higher priority. The species is now a candidate for listing; however, candidate species are not protected under the ESA.[165] The USFWS has added the monarch to the updated national listing workplan and based on its listing priorities and workload, intends to propose listing the monarch in Fiscal Year 2024, if listing is still warranted at that time, with a possible effective date within 12 months of the proposed rule. The USFWS will also conduct an annual status review to determine if changes in prioritization are necessary.

Bald Eagle. The U.S. Secretary of Interior listed the bald eagle under the Endangered Species Preservation Act in 1967. Upon creation of the federal Endangered Species Act in 1978 the bald eagle was listed for protection as threatened or endangered in all 48 of the contiguous states. In June 2007, USFWS officially announced the bald eagle had successfully recovered, and the species was removed from the list of threatened and endangered species. Federally the bald eagle, and their nests, are provided protection under the MBTA and the BGEPA.[166]

Minnesota has the third largest breeding population in the U.S., only behind Alaska and Florida. The bald eagle in Minnesota has seen continued population increases, range expansion, and greater adaptation and tolerance of human disturbance.[167]

GRE has committed to completing a bald eagle nest survey prior to beginning construction.[168]

Potential Impacts

Based on the USFWS Determination Key (DKey) for the NLEB, the Project "may affect, but is not likely to adversely affect" the species.[169] With that determination of effect, a "Consistency Letter" was generated. GRE will commit to the minimization and avoidance measures outlined in the DKey; therefore, no impacts are anticipated.

---

[164] RPA at p.6-46.

[165] Ibid.

[166] Bald Eagle, U.S. Fish and Wildlife Service, https://www.fws.gov/species/bald-eagle-haliaeetus-leucocephalus

[167] MN Rare Species Guide, Bald Eagle, https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNKC10010

[168] Email communication between R. Davis (EERA) and M. Strohfus, December 14, 2023.

[169] RPA at p. 6-47, Appendix D.

Potential impacts to individual tricolored bats may occur if clearing or construction takes place when the species is roosting in its summer habitat, in trees outside of hibernacula. Bats may be injured or killed if occupied trees are cleared during this active window. Tree clearing activities conducted when the species is in hibernation and not present on the landscape will not result in direct impacts to individual bats but could result in indirect impacts due to removal of suitable roosting habitat.[170]

Suitable habitat for monarchs may be present within the Project area. If the USFWS determines the species should be listed and protections for the species coincide with Project planning, permitting, and/or construction, GRE will review Project activities for potential impacts to the species and develop appropriate avoidance and mitigation measures.

Bald eagles can experience loss of habitat and potentially nesting disturbance during construction and maintenance activities, during the operational life of the transmission line there is also the potential for collisions and electrocution.

Constructing within and/or adjacent to an existing utility ROW minimizes impacts to habitat in this area. GRE will continue to coordinate with the MDNR and USFWS to avoid and minimize Project impacts on sensitive species.

Mitigation

The proposed route follows or overlays existing infrastructure for the majority of its length. By so doing, the proposed route places the new HVTL where there is already existing linear infrastructure (roadways and electrical transmission/distribution lines), this tends to minimize the impacts on rare and unique natural resources (flora, fauna, and communities).

As part of the standard Vegetation management Plan requirement, or as a Special Condition in the HVTL route permit, the Applicant may be required to conduct field surveys to identify any rare species prior to construction within the ROW of the selected route if deemed necessary by one or more resource agency.

GRE has stated that the following general measures will be used to help avoid or minimize impacts to area wildlife and rare natural resources during and after the completion of the proposed transmission line:[171]

- BMPs will be utilized to prevent erosion of the soils in the areas of impact.
- Sound water and soil conservation practices will be implemented during construction and operation of the Project to protect topsoil and adjacent water resources and minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, and stabilizing restored soil.

[170] RPA at p. 6-47.

[171] RPA at pp. 6-47 to 6-48.

- Disturbed areas will be re-vegetated with native species and wildlife conservation species, where applicable if the landowner agrees.
- Raptor protection measures will be implemented, including following APLIC Avian Safe Design recommendations and placement of bird flight diverters on the line after consultation with USFWS.
- Scheduling construction activities near any active bald eagle nests to minimize disturbance.

5.10 Cumulative Impacts

In addition to analyzing the direct and indirect impacts of the proposed project, Minnesota's environmental review rules require the evaluation of "cumulative potential effects" which is defined as "the effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects" (Minnesota Rules, part 4410.0200, subpart 11). Consideration of cumulative potential effects is intended to aid decision-makers so that they do not make decisions about a specific project in a vacuum. Effects that may be minimal in the context of a single project may accumulate and become significant when all projects are considered.

When making the determination as to what is "reasonably likely to occur", EERA considers whether any applications for permits have been filed with any units of government or whether detailed plans and specifications have been prepared for the project, among other considerations.[172] A project need not be permitted to be reasonably likely to occur.

Past actions are those actions and their associated impacts that occurred within or influenced the geographic region of influence of each resource and have shaped the current affected environment of the proposed project area.

GRE conducted a review of foreseeable projects (federal, state, or local unit of governments) in the Project area and along the proposed route that may affect or be affected by the Project;[173] entities contacted included were MnDOT, MPCA, Scott County, and Rice County. GRE also coordinated with Xcel Energy and MVC to determine if there are any other additional potential transmission or distribution projects in this area.

Current and reasonably foreseeable future projects within the Project area are summarized in **Table 23** and shown in **Figure 12**. Cumulative impacts analysis must be conducted within the context of the resources evaluated in this EA. The magnitude and context of the effect on a

[172] Minn. R. 4410.0200, subp. 11a
[173] RPA at pp. 6-51 to 6-52.

resource depends on whether the cumulative effects exceed the capacity of a resource to sustain itself and remain productive.[174] If cumulative impacts are expected to exceed these thresholds, they would be considered significant.

Table 23: Current and Reasonably Foreseeable Projects[175]

Project Name / Responsible Agency	General Location	Anticipated Timing	General Description	Reference
Jackson Ave / County Road 52 (Rice County)	Near the connection point of the Proposed Project with Great River Energy's MV-EVX line, intersects with 280th St E / State Highway 19	Rice County anticipates completion by October 2023	Paving of Jackson Ave / County Road 52	Rice County Highway Dept. 2023 Maintenance & Construction Plan: https://www.ricecountymn.gov/172/Maps
Great River Energy Removal of 115-kV MV-CDT transmission line	North of the Project area on the existing CapX2020 structures that run east-west along 260th St E	Anticipate completion by August 2025	Involves the removal of 4.5 miles of the 115-kV transmission line on the CapX2020 structures	Great River Energy (see **Chapter 1**)
CapX2020 2nd Circuit	North of the Project area on the existing CapX2020 structures that run east-west along 260th St E	Anticipate completion by August 2025	String the 2nd 345-kV transmission line (2nd circuit) on the existing CapX2020 structures	Consultation with Xcel Energy
Minnesota Valley Burial of Distribution Lines	Along Baseline Ave and along 280th St E / State Highway 19	Summer 2024	Burial of distribution lines where the Project overtakes the existing lines	Consultation with Minnesota Valley

GRE plans to commence construction of the Project in fall 2024 once required permits and approvals are obtained. GRE anticipates construction will take place over eight months and the Project will be energized in summer 2025.

The current and reasonably foreseeable projects occurring in the Project area are primarily maintenance of existing infrastructure, as is the case of the Minnesota Valley burial of existing lines and Rice County Road paving projects.

GRE's removal of the existing 4.5-mile 115-kV MV-CDT transmission line (conductor) from Xcel Energy's CapX2020 structures and Xcel Energy's subsequent stringing of the second 345-kV circuit on the CapX2020 structures will not require the installation of any additional infrastructure (structures) in the Project area. Impacts will be temporary, and minor, associated with the short-term construction activity to remove the old line and string the new line.

[174] Council on Environmental Quality – Executive Office of the President. Considering Cumulative Effects under the National Environmental Policy Act. January 1997.
[175] RPA at p. 6-51, Table 6.11-1.

Given the relatively small size of the proposed project, its anticipated minimal human and/or environmental impact, and the anticipated impacts of reasonably foreseeable projects, cumulative impacts are anticipated to be minimal.

6 Commission Request for Additional Information

Minn. Stat. § 216E.04, subd. 5, anticipates that the Commission will have the opportunity to identify other routes for consideration prior to environmental review of a project.

Through an Order dated October 26, 2023[176], the Commission requested that the EA for the Cedar Lake Reroute Project evaluate two additional items:

1. An expanded route width between the Cedar Lake Substation and Highway 19. The environmental assessment shall provide an assessment of potential impacts a quarter mile South and West of the proposed alignment from the substation to Highway 19 and a quarter mile to the east of the proposed alignment from the intersection of 270th Street West and Baseline Road to Highway 19; and
2. An analysis of a complete under build for the full length of the proposed route paralleling Highway 19 of the existing distribution line that is now located South of Highway 19 or other modifications that co-locate or remove the distribution infrastructure from the route corridor in coordination with the electric distribution provider MVC.

6.1 Baseline Avenue Expanded Route

The Commission's October 26, 2023, Order requested EERA to provide an assessment of potential impacts within an expanded route width along Baseline Ave. – a quarter mile South and West of the proposed alignment from the existing Cedar Lake Substation to Highway 19, and a quarter mile to the east of the proposed alignment from the intersection of 270th Street West and Baseline Road to Highway 19 (see **Figure 13**).

The Expanded Route Width crosses Helena and Cedar Lake Township, Scott County, and at its southern end, crosses into Lanesburgh Township, Le Sueur County.

Potential Downstream Permit Additions with the Expanded Route

- WCA – LeSueur County Soil and Water Conservation District
- Road Crossing/Driveway/ROW Permits – Lanesburgh Townshp, Le Sueur County
- Over-Width Load Permits - Lanesburgh Townshp, Le Sueur County

[176] Commission Order, Route Alternatives, October 26, 2023. eDocket No. 202310-199921-01 .

6.1.1 Potential Impacts in the Expanded Route

Socioeconomic

The socioeconomic setting of the Project Area was evaluated on a regional basis, comparing data for Scott County, Rice County, Le Sueur County and the State of Minnesota. No data was available for Helena, Cedar Lake, Wheatland, or Lanesburgh Townships. Data compiled from the U.S. Census Bureau QuickFacts are summarized in **Table 24**.

Table 24: County Level Population, Income, and Poverty Data [177]

Location	2020 Population	White Alone Population	Median Income (2017-2021)	Percent Below Poverty Level	Language Other than English Spoken at Home (2017-2021)
State of Minnesota	5,706,494	78.1%	$77,706	9.3%	12.1%
Scott County	150,928	78.2%	$109,031	4.6%	13.5%
Rice County	67,097	80.2%	$71,384	9.4%	13.1%
Le Sueur County	28,672	96.2%	$80,425	6.7%	5.8%

Table 25 identifies the minority populations, low-income populations, and populations with a language other than English spoken at home for Scott, Rice and Le Sueur counties and census tracts crossed by the Proposed Route and Commissioner's Expanded Route. The most recent available data was used: U.S. Census 2021 American Community Survey 5-Year Estimate Data File# B17017, File# B03002, and File# DP02.

Table 25: County and Census Tract Level Minority Populations, Low Income, and Non-English Speaking Households[178]

County/Census Tract	2021 Population	Percent Total Minority [a]	Percent Below Poverty Level	Language Other Than English Spoken at Home (2017-2021)
Scott County	149,568	20.8	4.0	13.5
Census Tract 811.01	3,035	1.9	1.4	1.2
Census Tract 812	6,609	10.3	5.4	2.4
Rice County	66,795	19.2	9.4	11.6
Census Tract 701.01	3,417	5.6	9.0	2.8

[177] Data Source: US Census QuickFacts, downloaded 11/13/2023: U.S. Census Bureau QuickFacts: United States
[178] Data Source: US Census QuickFacts, downloaded 11/13/2023: U.S. Census Bureau QuickFacts: United States

Le Sueur County	28,567	9.6	8.0	5.8
Census Tract 9501.01	3,566	4.1	5.5	1.4
[a] "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White.				

Table 26 identifies the minority populations by race and ethnicity and low-income populations within Minnesota, Scott County, Rice County, and Le Sueur County and U.S. Census block groups crossed by the Project. U.S. Census 2021 American Community Survey 5-Year Estimate Data File# B17017 and File# B03002 for the race, ethnicity, and poverty data were analyzed at the block group level.

Table 26: Minority Populations by Race and Ethnicity and Low-Income Populations within the Project Area (Percentage)[179]

State/County/Census Block Group	White	Black/ African American	American Indian or Alaskan Native	Asian	Native Hawaiian/ Pacific Islander	Some Other Race	Two or More Races	Hispanic or Latino	Total Minority[a]	Below Poverty Level
State of Minnesota	78.3	6.5	0.8	5.0	0.0	0.3	3.4	5.6	21.7	9.2
Scott County	79.2	4.8	0.4	6.2	0.0	0.3	3.7	5.5	20.8	4.0
Census Tract 811.01, Block Group 1	98.3	0.0	0.0	0.5	0.0	0.0	0.8	0.4	1.7	2.1
Census Tract 811.01, Block Group 3	99.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0
Census Tract 812, Block Group 4	95.6	0.4	0.0	0.5	0.0	1.5	1.2	1.0	4.6	2.4
Rice County	84.0	6.2	0.5	2.3	0.1	3.2	3.8	8.5	19.2	9.4
Census Tract 701.01, Block Group 1	99.1	0.0	0.1	0.2	0.0	0.0	0.6	0.6	1.6	9.0
Le Sueur County	94.0	0.8	0.3	0.4	0.0	2.4	2.2	6.5	9.6	8.0
Census Tract 9501.01, Block Group 2	99.6	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.4	5.5
[a] "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White										

[179] Data Source: US Census QuickFacts, downloaded 11/13/2023: U.S. Census Bureau QuickFacts: United States

As presented in **Tables 25 and 26**, no census tracts or block groups are considered environmental justice communities. Thus, no environmental justice impacts are anticipated in an Expanded Route Width along Baseline Avenue.

Recreation

There are approximately 3.1 miles of local snowmobile trails[180] and 0.3 mile of Grant-in-Aid (GIA) snowmobile trails[181] occurring within the Expanded Route Width along Baseline Avenue, as shown in **Figures 2 and 9**.

Land-based Economies

Table 27 quantifies the land uses found within the Expanded Route Width along Baseline Avenue; it is also illustrated in **Figure 5**. The predominant land use is agricultural followed by residential and urban developments and natural land uses consisting of forested and wetland areas. Based on available aerial photographs, there are approximately 166.9 acres of trees within the Expanded Route Width along Baseline Avenue.

Table 27: Land Use Types within the Expanded Route Width along Baseline Avenue

Land Use Type	Expanded Route
	Acres
Row & Close Grain Crop Cultural Formation	505.9
Pasture & Hay Field Crop	11.0
Agricultural Land Use Subtotals	*517.0*
Developed & Urban	119.2
Recently Disturbed or Modified	7.4
Developed / Disturbed Land Use Subtotals	*126.6*
Central Boreal Forest	0.4
North-Central Beech-Maple-Basswood Forest	68.7
North-Central Oak-Hickory Forest & Woodland	3.0
Northern & Central Native Ruderal Forest	2.4
Silver Maple-Green Ash-Sycamore Floodplain Forest	13.0
Eastern North American Freshwater Marsh	20.4
Open Water	<0.1
Natural Land Use Subtotals	*108.0*
Total	**751.6**
Source: https://www.usgs.gov/programs/gap-analysis-project/science/land-cover-data-download (2011)	

[180] Digitized from Scott County Sno-Trails Incorporated Map (2016-2017).
[181] https://gisdata.mn.gov/dataset/trans-snowmobile-trails-mn

Water Resources

Wetlands

The hydrologic features in the Expanded Route Width along Baseline Avenue are shown in **Figures 2 and 11**. **Table 28** presents the different wetland types found within the Expanded Route Width along Baseline Avenue by type, which are also shown on **Figure 2**. The wetlands within this portion of the Expanded Route Width occur primarily within large contiguous complexes; one located starting on the west side of Baseline Avenue at the intersection of Baseline Avenue and 263rd St E and extending south for approximately 3,150 feet. Another complex is located on the east side of Baseline Avenue occurring along a waterbody; the Expanded Route Width crosses approximately 610 feet of this wetland.

A third wetland complex is located on the southern portion of the Expanded Route Width, just north of State Highway 19 / 280th St E. This wetland complex also runs along a waterbody and the Expanded Route Width crosses 840 feet of this wetland. Because these wetland complexes are longer than 400 feet in length, pole placement within these wetland complexes would likely be necessary, in addition to vegetation clearing and permanent conversion of forested wetland types within the full 100-foot ROW.

Table 28: Wetlands within the Expanded Route Width along Baseline Avenue

Wetland Type	Expanded Route
	Acres
Freshwater Emergent Wetland	120.0
Freshwater Forested Wetland	21.1
Freshwater Forested / Emergent Wetland	7.4
Freshwater Scrub-Shrub Wetland	3.2
Freshwater Pond	2.1
Riverine	0.8
Total	**154.6**
Wetland Crossings that Exceed 400 Feet	3
Source: https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014 (May 2019)	

Rivers and Streams

As shown in **Table 29**, there are 4 waterbodies located within the Expanded Route Width along Baseline Avenue, with the potential for up to seven waterbody crossings depending on the specific alignment. Portions of two of these waterbodies are public waters administered by the Minnesota Department of Natural Resources (MDNR). These waterbodies are also shown in **Figures 2 and 11**.

Table 29: Waterbodies within the Expanded Route along Baseline Avenue

Waterbody Name	Kittle Number	Public Water	Hydrology	Length within Expanded Route (miles)	No. of Potential Crossings
Unnamed Stream	M-055-023-012	Public Ditch / Public Water Watercourse	Perennial	0.2	3
Unnamed Stream	M-055-023-012	NA	Connector (Wetland)	0.3	1
Unnamed Stream	M-055-023-012-001	Public Water Watercourse	Intermittent	1.1	1
Unnamed Stream	MAJ-070215255	NA	Perennial	0.1	1
Unnamed Stream	MAJ-070215183	NA	Intermittent	0.4	1
			Total	**2.1**	**7**

Source: https://gisdata.mn.gov/dataset/water-dnr-hydrography (2023); https://gisdata.mn.gov/dataset/water-mn-public-waters (2020).

Approximately 0.6 acres of a Minnesota Board of Waters & Soil Resources (BWSR) Reinvest in Minnesota (RIM) Riparian Conservation Easement[182] occurs within the Expanded Route along Baseline Ave, shown in **Figure 2**. BWSR works with local Soil and Water Conservation Districts to target, protect and restore high priority habitat complexes through this easement program[183]. There may be restrictions associated with these easements, including prohibiting woody vegetation clearing.

Flora, Fauna, Rare and Unique Resources

The proposed alignment in getting from the existing Cedar Lake Substation to Baseline Ave, and ultimately south to Highway 19 will impact agricultural land, forest land, forested wetlands, and emergent wetlands. The proposed alignment currently locates vegetation and habitat impacts along property lines, road ROW, and the edges of existing plant communities.

Any alignment located west of Baseline Ave elsewhere within the expanded route to get from the existing Cedar Lake Substation to Baseline Ave, and to Highway 19 will have to cross the same, if not more, agricultural land, forested land, forested wetland and emergent wetland. Additionally, moving the alignment to another location west of Baseline Ave, within the expanded route, will cross forested wetland and emergent wetland further from the edge and closer to the habitat interior. Impacting habitats closer to their interior can have greater impacts on both vegetation and wildlife by increasing the potential for invasive plant species to establish within the habitat block, creating additional "edge effect", and increasing fragmentation of the habitat block.

[182] https://gisdata.mn.gov/dataset/bdry-bwsr-rim-cons-easements
[183] https://bwsr.state.mn.us/rim-wetlands

6.2 Minnesota Valley Electric Cooperative

The Commission's October 26, 2023, Order requested that the EA include an analysis of a complete under build for the full length of the proposed route paralleling Highway 19 of the existing distribution line that is now located South of Highway 19 or other modifications that co-locate or remove the distribution infrastructure from the route corridor in coordination with the electric distribution provider, Minnesota Valley Electric Cooperative.

With respect to the proposed 115 kV line along Highway 19, it is Great River Energy's understanding that Minnesota Valley Electric Cooperative (MVEC) is planning to bury its distribution lines for the entire length of the new 115-kV line. This would eliminate the need to clear and maintain a separate right-of-way for the distribution line.[184]

MVEC plans to bury the distribution lines after Great River Energy has acquired the necessary easements for the Project, which would enable the distribution line to be out of the way, allowing for construction of the 115-kV line to proceed on schedule and achieve the desired in-service date. [185]

If the distribution lines were to be attached to the 115-kV structures as underbuild, there would likewise not need to be a separate right-of-way. However, the structures would need to be five to 10 feet taller to accommodate the underbuild. The distance between poles would also be less than the typical 300- to 400-foot spans or inset distribution poles would be required; either case would result in more and taller structures. Aesthetic impacts would be greater with underbuild than with burial.[186]

The existing distribution lines serve some industrial customers, and an underbuild scenario would likely require some outages on those customers, which can be reduced by burying the distribution lines.[187]

[184] Email communication between R. Kirsch (EERA) and R. Davis (EERA) and M. Strohfus (GRE), November 28, 2023.
[185] Id.
[186] Id.
[187] Id.

7 Unavoidable Impacts

During construction of the proposed HVTL, there would be temporary unavoidable adverse impacts on the existing flora and fauna, soil, and traffic; in those locations where construction would occur adjacent to an existing ROW (roadways and electrical distribution/transmission lines) the impacts would be expected to be minimized. Some of these impacts may occur, on a lesser scale, during maintenance of the transmission line. Longer-term, adverse impacts related to construction and maintenance of the proposal transmission line include loss of forested areas within the ROW; visual impacts; impacts to migratory birds from collisions with the lines; and potential impacts to property values.

There are few commitments of resources associated with the proposed project that are irreversible and irretrievable, but those that do exist are primarily related to construction. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored because of the action.

The proposed project will require the commitment of land (a ROW of approximately 6.3 miles in length and 100 feet wide) and while it is possible that the structures and conductors could be removed, and the ROW returned to the natural landscape, this is unlikely to happen in the foreseeable future.

The proposed project may result in the loss of some forest areas. While these are not irreplaceable, replacing them will take a significant amount of time. The ROW for certain land uses will be lost, but since the new HVTL will overlay the existing ROW, the increased land area would be incremental. In most cases, this ROW can continue to be used for many purposes; however, some other areas, such as forested areas or areas that could have been used for other construction, will be converted during the lifetime of the project.

Construction resources that could be used include aggregate resources, concrete, steel, and hydrocarbon fuel. These resources would be used to construct the project. During construction, vehicles would be traveling to and from the site utilizing hydrocarbon fuels. However, once built, the proposed HVTL will not consume raw materials.

8 Application of Routing Factors

The Commission is charged with locating high voltage transmission lines in a manner that is "compatible with environmental preservation and the efficient use of resources" and that minimizes "adverse human and environmental impact(s)" while ensuring electric power reliability (Minnesota Statutes, section 216E.02). Minnesota Statute, section 216E.03, subdivision 7(b) identifies considerations that the Commission must consider when designating HVTL routes.

Minnesota Rules, part 7850.4100 lists 14 factors for the Commission to consider in its route permitting decisions, including impacts on human settlements, impacts on land-based economies, and impacts on the natural environment:

A. Effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services.
B. Effects on public health and safety.
C. Effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining.
D. Effects on archaeological and historic resources.
E. Effects on the natural environment, including effects on air and water quality resources and flora and fauna.
F. Effects on rare and unique natural resources.
G. Application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity.
H. Use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries.
I. Use of existing large electric power generating plant sites.
J. Use of existing transportation, pipeline, and electrical transmission systems or rights-of-way.
K. Electrical system reliability.
L. Costs of constructing, operating, and maintaining the facility which are dependent on design and route.
M. Adverse human and natural environmental effects which cannot be avoided.
N. Irreversible and irretrievable commitments of resources.

This Section discusses the proposed route and its merits relative to the factors in Minnesota Rule 7850.4100 for routing HVTLs.

Factors M and N—*the unavoidable and irreversible impacts of the project*—were discussed in Section 6.0.Factor I – *the use of existing large electric power generating plant sites* – is not relevant to this Project and is not discussed further here.

Factor G ("mitigate adverse environmental impacts") has several parts and speaks generally to environmental impacts. For purposes of discussion here, and with respect to factor G, it is assumed that the proposed Project is designed to maximize energy efficiencies and accommodate expansion capacity. With respect to environmental impacts, the examination of such impacts suggested by routing factor G is included in the discussion of other factors and elements that more specifically address an environmental impact (as in factor E, effects on flora and fauna). A description of mitigative measures that could be used to avoid and minimize impacts is thoroughly addressed in the descriptions of impacts in previous sections of this document. To the extent that special conditions may be appropriate for particular Elements, those mitigative measures are identified in the individual resource subsections.

8.1 Relative Merits

This EA reviews the proposed project relative to the routing factors in Minnesota Rule 7850.4100. This review looks not only at the Factors, but also the Elements that make up those Factors (Factor: human settlement; Elements: displacement, noise, aesthetics, cultural values, recreation, and public services).

With adherence to BMPs during construction and operation, and to the general permit conditions found in the Draft Route Permit (**Appendix B**) it is anticipated that minimal negative impacts would result from the development of the proposed Project.

8.1.1 Factor: Effects on Human Settlement (A)

Elements: noise, displacement, cultural values, public services, transportation, recreation, property values, electronic interference, emergency services, zoning/land use

Impacts related to noise, cultural values, public services, transportation, recreation, electronic interference, emergency services, and property values are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Draft Route Permit (**Appendix B**). Displacement of residences or business properties is not anticipated in any of the proposed components of the Project.

Element: aesthetics

Aesthetic impacts from development of the Project are anticipated to be minimal; the HVTLs will be visible from adjacent road ways and parcels but given that most of the proposed route is parallel to infrastructure (distribution lines, pipelines, and road ROWs), the impacts are anticipated to be incremental.

Element: consistency with local land use and planning

Current land use within the proposed route consists of mainly rural residential, open, and public lands and commercial areas. The proposed Project is compatible with existing land use and zoning regulations.

Impacts to forested land will be the most obvious impact to overall land cover along the proposed route, with an estimated potential impact of 16.7 acres of trees over approximately 2.1 miles within the 100-foot-wide ROW.

8.1.2 Factor: Effects on Public Health and Safety (B)

Elements: EMF/electric fields, air quality, and safety
Based on the predicted EMF levels for the Project, no adverse health impacts from electric or magnetic fields are anticipated for persons living or working near any of the components of the proposed Project.

Potential air quality impacts associated with the Project come from two primary sources: ozone & nitrogen oxide emissions from operating the HVTL and short-term emissions from construction activities. Emissions from operating any of the proposed lines are anticipated to have negligible impacts on air quality. Air emissions during construction would primarily consist of emissions from construction equipment and would include carbon dioxide, NOX, and particulate matter (PM); dust generated from earth disturbing activities would also give rise to PM; these potential impacts will be minimal and temporary.

Where work areas overlap public areas, such as along roadways, construction activities may present potential impacts to public health and safety. These are anticipated to be minimal with use of standard construction techniques, traffic control measures during deliveries, and the general conditions identified in the Draft Route Permit (**Appendix B**).

Operation of the Project (with the appropriate BMPs and standard HVTL permit conditions) is not anticipated to be a public health or safety concern, especially considering the substation's secured access.

8.1.3 Factor: Effects on Land-Based Economies (C)

Elements: forestry, agriculture, tourism, and mining
Impacts to forestry, agriculture, tourism, and mining are avoided by the proposed Project through the route selection process; therefore, potential impacts are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Draft Route Permit (**Appendix B**).

8.1.4 Factor: Effects on Archaeological and Historic Resources (D)

No known archaeological or historical sites were identified within the the proposed ROW.

The procedures outlined in the Draft Route Permit (**Appendix B**) provide an outline of the process for resolution should any previously unknown archaeological resource or human remains be encountered.

8.1.5 Factor: Effects on Natural Environment (E)

Element: air
Impacts to air quality are anticipated to be negligible with the use of standard construction techniques and the general conditions in the Draft Route Permit (**Appendix B**).

Element: surface water
The proposed transmission line crosses four rivers and streams; two additional streams are located within the route but are not crossed by the proposed alignment. Streams crossed by the alignment are spaced such that construction activities will avoid impacts to those water resources with the use of standard construction techniques, MDNR License to Cross restrictions, and the general conditions identified in the Draft Route Permit (**Appendix B**).
.
Element: wetlands
Wetland impact avoidance measures that will be implemented during design and construction of the transmission lines include spacing and placing the power poles at variable distances to span and avoid wetlands, where possible. The maximum distance that can be spanned is approximately 400 feet. The proposed alignment crosses six wetland areas where the wetland distance exceeds 400 feet, which will require that a transmission pole be placed within the wetland. In areas that cannot be spanned the impacts to wetlands are expected to be minimal with the use of standard construction techniques, MDNR License to Cross restrictions, restoration requirements and the general conditions in the Draft Route Permit (**Appendix B**).

Even in areas where wetlands can be spanned, tree clearing may still be required along the ROW. This may result in the conversion from one wetland type (Forested/Shrub wetland) into another wetland type (Emergent wetland) within the ROW. The potential of habitat conversion due to the removal of woody vegetation and the associated continual maintenance of vegetation within the ROW would result in the permanent conversion of the cover types. Consequently, the types and magnitude of wetland functions would change.

Element: floodplains
Impacts to floodplains are expected to be minimal with the use of standard construction techniques and the general conditions in the Draft Route Permit (**Appendix B**).

Element: soils and groundwater
Impacts to soils and groundwater are anticipated to be minimal with the use of standard construction techniques and the general conditions in the Draft Route Permit (**Appendix B**).

Element: vegetation
Impacts to non-cropland vegetation are anticipated, the impacts will be minimized by using the existing road system to the extent practical and parallel to existing distribution lines.

With the use of standard BMP construction techniques, restoration efforts, development and compliance with vegetation management plan and the other general conditions in the Draft Route Permit (**Appendix B**) impacts to vegetation are anticipated to be incremental.

Element: wildlife
Impacts to wildlife are anticipated to be minimal to moderate (temporary displacement due to incremental habitat loss) with the use of standard design (APLIC and flight diverters) and construction techniques (BMPs), and the general conditions in the Draft Route Permit (**Appendix B**).

8.1.6 Factor: Effects on Rare and Unique Natural Resources (F)

No direct impacts to any rare and unique natural resources are anticipated; any indirect impacts should be minimal with the use of design (spanning sensitive resources, co-locating the ROW) and construction techniques (BMPs associated with the MDNR License to Cross) and the general conditions in the Draft Route Permit (**Appendix B**).

8.1.7 Factor: Use or paralleling of existing ROW, survey lines, natural division lines, Agricultural Field Boundaries (H)

The proposed route was designed to maximize the paralleling of existing roads, survey boundaries, field lines, natural division lines, and existing distribution lines.

8.1.8 Factor: Use of existing transportation, pipeline, and existing transmission systems or rights-of-way (J)

See Section 7.1.7.

8.1.9 Factor: Electrical System Reliability (K)

The Project, along with the CapX2020 second 345-kV circuit, will ensure that Great River Energy maintains reliable and resilient service to electric customers. The Project will address reliability concerns and, because it facilitates the CapX2020 second circuit, the Project will facilitate increased deliverability of renewable resources from southern Minnesota to the southwest metropolitan area.

8.1.10Factor: Unavoidable Impacts (M)

See discussion in Section 6.0.

8.1.11Factor: Irreversible and Irretrievable Commitments of Resources (N)

See discussion in Section 6.0.

FIGURES

BLANK PAGE

APPENDIX A
EA SCOPING DECISION

APPENDIX B
DRAFT ROUTE PERMIT

APPENDIX C
DETAILED AERIAL ROUTE MAPS