

GREAT RIVER ENERGY

APPLICATION TO THE
MINNESOTA PUBLIC UTILITIES COMMISSION
FOR A ROUTE PERMIT FOR THE

PILOT KNOB TO BURNSVILLE 115-kV TRANSMISSION LINE REBUILD AND UPGRADE PROJECT IN DAKOTA COUNTY, MN

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LIST OF ACRONYMS

AIMD	Active Implantable Medical Devices
ALJ	administrative law judge
APE	area of potential effect
APLIC	Avian Power Line Interaction Committee
Applicant	Great River Energy
Application	Route Permit Application
BMPs	best management practices
BWSR	Board of Water and Soil Resources
CFR	Code of Federal Regulations
CH ₄	Methane
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
Commission	Minnesota Public Utilities Commission
CSAH	County State Aid Highway
CWI	County Well Index
dBA	Decibel – A weighted
DKey	Determination Key
DOC	Department of Commerce
EA	Environmental Assessment
DOC-EERA	Energy Environmental Review and Analysis
DWSMAs	Drinking Water Supply Management Areas
EF	electric fields
EJ	Environmental Justice
EJScreen	Environmental Justice Screening Tool
ELF	Extremely Low Frequency
EMF	electromagnetic fields
EQB	Minnesota Environmental Quality Board
ESA	Endangered Species Act
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
G	Gauss
GLO	General Land Office
HVTL	High Voltage Transmission Line
I-35E	Interstate Highway 35E
IPaC	Information for Planning and Consultation
IMDs	implantable medical devices
kV	Kilovolt
kV/m	kilovolts per meter

kW	Kilowatt
LGU	Local Government Unit
mA rms	milliAmperes root mean square
MCE	Minnesota Conservation Explorer
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MDNR	Minnesota Department of Natural Resources
Merjent	Merjent, Inc.
MF	magnetic fields
mG	Milligauss
MGS	Minnesota Geological Survey
MIAC	Minnesota Indian Affairs Council
Minn. R.	Minnesota Rules
Minn. Stat. §	Minnesota Statutes Section
MISO	Midcontinent Independent System Operator
MnDOT	Minnesota Department of Transportation
mph	miles per hour
MPCA	Minnesota Pollution Control Agency
MRO	Midwest Reliability Organization
N2O	nitrous oxide
NAC	Noise Area Classifications
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NIEHS	National Institute of Environmental Health Sciences
NLEB	northern long-eared bat
NO	nitrogen oxide
NO2	nitrogen dioxide
NOx	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Services
NSPM	Northern States Power
NWI	National Wetlands Inventory
OSA	Office of the State Archaeologist
ppb	Parts per billion
PEM	Palustrine Emergent
PFO	Palustrine Forested
PM2.5	fine particulate matter equal to or less than 2.5 microns in diameter
PM10	particulate matter equal to or less than 10 microns in diameter
Project	Rebuild the existing 69-kV transmission lines to new 115-kV transmission lines and upgrade the Burnsville Substation
Promising Practices	Promising Practices for EJ Methodologies in NEPA Reviews

Proposed Alignment	the general path that a transmission line will follow
Proposed Route	The corridor in which Great River Energy proposes to build the approximately 8.75-mile transmission line presented in this Route Permit Application.
PSS	Palustrine Scrub-Shrub
ROW	right-of-way
SF ₆	Sulfur hexafluoride
SHPO	State Historic Preservation Office
SO ₂	sulfur dioxide
STATSGO2	Digital General Soil Map of the United States
“Study Area”	one-mile buffer of the Proposed Alignment used to conduct a cultural resources literature review
SWPPP	Stormwater Pollution Prevention Plan
THPO	Tribal Historic Preservation Office
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WHP	Wellhead Protection
WHPA	Wellhead Protection Areas

Route Permit Application – Alternative Process Completeness Checklist

Authority	Required Information	Location in Application
Minn. Stat. § 216E.04, subd. 2(3)	Alternative Review of Applications. Alternative review is available for high voltage transmission lines (HVTL) of between 100 and 200 kV	2.2
Minn. Stat. § 216E.04, subd. 4; Minn. R. 7850.2800, Subp. 1(C)	Subpart 1. Eligible Projects. An applicant for a site permit or a route permit for one of the following projects may elect to follow the procedures of parts 7850.2800 to 7850.3900 instead of the full permitting procedures in parts 7850.1700 to 7850.2700: high voltage transmission lines of between 100 and 200 kilovolt (kV)	2.2; Appendix C
Minn. R. 7850.2800, Subp. 2.	Subpart 2. Notice to Minnesota Public Utilities Commission (Commission). An applicant for a permit for one of the qualifying projects in subpart 1, who intends to follow the procedures of parts 7850.2800 to 7850.3700, shall notify the Commission of such intent, in writing, at least ten days before submitting an application for the project	2.2; Appendix C
Minn. R. 7850.3100	Contents of Application (alternative permitting process) The applicant shall include in the application the same information required in part 7850.1900, except the applicant need not propose any alternative sites or routes to the preferred site or route. If the applicant has rejected alternative sites or routes, the applicant shall include in the application the identity of the rejected sites or routes and an explanation of the reasons for rejecting them	This document.
Minn. R. 7850.1900, Subp. 2 (as applicable per Minn. R. 7850.3100)	Route Permit for HVTL A. a statement of proposed ownership of the facility at the time of filing the application and after commercial operation	3.5
	B. the precise name of any person or organization to be initially named as permittee or permittees and the name of any other person to whom the permit may be transferred if transfer of the permit is contemplated	3.5
	C. rejected alternative routes and the reasons for rejecting	Chapter 5
	D. a description of the proposed high voltage transmission line and all associated facilities including the size and type of the high voltage transmission line	1.4; 3.1; 3.2
	E. the environmental information required under 7850.1900, Subp. 3	Chapter 7
	F. identification of land uses and environmental conditions along the proposed routes	Chapter 7
	G. the names of each owner whose property is within any of the proposed routes for the high voltage transmission line	Appendix E
	H. United States Geological Survey topographical maps or other maps acceptable to the chair showing the entire length of the high voltage transmission line on all proposed routes	Figure 1-1; Figure 3-1; Appendix A

Authority	Required Information	Location in Application
	I. identification of existing utility and public rights-of-way along or parallel to the proposed routes that have the potential to share right-of-way (ROW) with the proposed line	3.1.2
	J. the engineering and operational design concepts for the proposed high voltage transmission line, including information on the electric and magnetic fields of the transmission line	Chapter 4; 7.3
	K. cost analysis of each route, including the costs of constructing, operating, and maintaining the high voltage transmission line that are dependent on design and route	3.3
	L. a description of possible design options to accommodate expansion of the high voltage transmission line in the future	4.3
	M. the procedures and practices proposed for the acquisition and restoration of the ROW, construction, and maintenance of the high voltage transmission line	Chapter 6
	N. a listing and brief description of federal, state, and local permits that may be required for the proposed high voltage transmission line	2.3; Table 2.3-1
	O. a copy of the Certificate of Need or the certified HVTTL list containing the proposed high voltage transmission line or documentation that an application for a Certificate of Need has been submitted or is not required	2.1
Minn. R. 7850.1900, Subp. 3	Environmental Information A. a description of the environmental setting for each site or route	7.1
	B. a description of the effects of construction and operation of the facility on human settlement, including, but not limited to, public health and safety, displacement, noise, aesthetics, socioeconomic impacts, cultural values, recreation, and public services	7.2; 7.3; 7.4
	C. a description of the effects of the facility on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining	7.4
	D. a description of the effects of the facility on archaeological and historic resources	7.5
	E. a description of the effects of the facility on the natural environment, including effects on air and water quality resources and flora and fauna	7.6; 7.3.5
	F. a description of the effects of the facility on rare and unique natural resources	7.6.7
	G. identification of human and natural environmental effects that cannot be avoided if the facility is approved at a specific site or route	7.7
	H. a description of measures that might be implemented to mitigate the potential human and environmental impacts identified in items A to G and the estimated costs of such mitigative measures	Chapter 7
Minn. R. 7850.2100, Subp. 2 (applicable per Minn. R. 7850.3300)	Notice of Project Notification to persons on the Commission's general list, to local officials, and to property owners	To be provided

Authority	Required Information	Location in Application
Minn. R. 7850.2100, Subp 4	Publication of notice in a legal newspaper of general circulation in each county in which the route is proposed to be located.	To be published
Minn. R. 7850.2100. Subp. 5	Confirmation of notice by affidavits of mailing and publication with copies of the notices	Submit when available
Minn. R. 7850.4100	Factors to be Considered in Permitting a HVTL A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services	7.2; 7.4.5
	B. effects on public health and safety	7.3
	C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining	7.4
	D. effects on archaeological and historic resources	7.5
	E. effects on the natural environment, including effects on air and water quality resources and flora and fauna	7.6; 7.3.5
	F. effects on rare and unique natural resources	7.6.7
	G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity	Chapter 4; 3.1.2; Chapter 7
	H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries	3.1.2
	I. use of existing large electric power generating plant sites	Not applicable
	J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way	3.1.2
	K. electrical system reliability	1.5; 8.1
	L. costs of constructing, operating, and maintaining the facility which are dependent on design and route	3.3
	M. adverse human and natural environmental effects which cannot be avoided	7.7
	N. irreversible and irretrievable commitments of resources	7.7
Minn. R. 7850.4300, Subps. 1 and 2	Prohibited Routes Wilderness areas. No high voltage transmission line may be routed through state or national wilderness areas Parks and natural areas. No high voltage transmission line may be routed through state or national parks or state scientific and natural areas unless the transmission line would not materially damage or impair the purpose for which the area was designated, and no feasible and prudent alternative exists. Economic considerations alone do not justify use of these areas for a high voltage transmission line	No wilderness areas or parks are crossed

Authority	Required Information	Location in Application
Minn. Stat. §216E.03, Subd.7(b) (applicable per Minn. Stat. §216E.04, Subd. 8), House File 7 amendments (2023)	Considerations in designating sites and routes (1) Evaluation of research and investigations relating to the effects on land, water and air resources of large electric power generating plants and high voltage transmission lines and the effects of water and air discharges and electric and magnetic fields resulting from such facilities on public health and welfare, vegetation, animals, materials and aesthetic values, including base line studies, predictive modeling, and evaluation of new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment	Chapter 7
	(2) Environmental evaluation of sites and routes proposed for future development and expansion and their relationship to the land, water, air, and human resources of the state	4.3
	(3) Evaluation of the effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects	Not applicable
	(4) Evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants	Not Applicable
	(5) Analysis of the direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired	7.2; 7.4
	(6) Evaluation of adverse direct and indirect environmental effects that cannot be avoided should the proposed site and route be accepted	Chapter 7
	(7) Evaluation of alternatives to the applicant's proposed site or route proposed pursuant to subdivisions 1 and 2	Chapter 5
	(8) Evaluation of potential routes that would use or parallel existing railroad and highway rights-of way	3.1.2; Chapter 5; Chapter 7
	(9) Evaluation of governmental survey lines and other natural division lines of agricultural land to minimize interference with agricultural operations	3.1.2; 7.4.1
	(10) Evaluation of the future needs for additional high voltage transmission lines in the same general area as any proposed route, and the advisability of ordering the construction of structures capable of expansion in transmission capacity through multiple circuiting or design modifications	4.3
	(11) Evaluation of irreversible and irretrievable commitments of resources should the proposed site or route be approved	7.7
	(12) When appropriate, consideration of problems raised by other state and federal agencies and local entities	Not applicable
	(13) Evaluation of the benefits of the proposed facility with respect to (i) the protection and enhancement of environmental quality, and (ii) the reliability of state and regional energy supplies	Chapter 8; 1.5
	(14) evaluation of the proposed facility's impact on socioeconomic factors	7.2.4

Authority	Required Information	Location in Application
	(15) evaluation of the proposed facility's employment and economic impacts in the vicinity of the facility site and throughout Minnesota, including the quantity and quality of construction and permanent jobs and their compensation levels. The commission must consider a facility's local employment and economic impacts and may reject or place conditions on a site or route permit based on the local employment and economic impacts.	6.4

1 INTRODUCTION

Great River Energy submits this Route Permit Application (Application) to the Minnesota Public Utilities Commission (Commission) for a Route Permit to rebuild and upgrade portions of its 69-kilovolt (kV) transmission lines within the cities of Eagan, Burnsville, and Apple Valley with approximately 8.75 miles of 115-kV high voltage transmission line (HVTL), referred to as the Pilot Knob to Burnsville 115-kV Transmission Line Rebuild and Upgrade Project (Project). As shown in the **Figure 1-1**, the Project will include rebuilding and upgrading three sections of the transmission lines between the following existing substations: (1) between the Pilot Knob and Deerwood substations; (2) between the Deerwood and River Hills substations; and (3) between the River Hills and Burnsville substations. The Project would also involve upgrades and modifications at the Burnsville Substation. The Project occurs within the cities of Eagan, Burnsville, and Apple Valley in Dakota County, Minnesota.

This Project will enable Great River Energy to maintain reliable and resilient service to electric cooperative members, including Dakota Electric Association, first by installing new equipment built to modern design standards, and second by having the ability to operate at 115 kV in the future. The ability to operate at the higher voltage will ensure that there is sufficient electrical capability to serve increased electrical demand in the future.

1.1 Great River Energy Organization and System Background

Great River Energy is a not-for-profit wholesale electric power cooperative based in Maple Grove, Minnesota. Great River Energy provides electricity and related services to approximately 1.7 million people through its 27 member-owner cooperatives and customers. Through its member-owners, Great River Energy serves two-thirds of Minnesota geographically and parts of Wisconsin. This includes Dakota Electric Association, the distribution cooperative serving the area in which the Project will be located (**Figure 1-2**), and transmission customers. Great River Energy's electric system is interconnected directly with neighboring suppliers and is a member of the Midwest Reliability Organization (MRO) and Midcontinent Independent System Operator (MISO).

Great River Energy and its cooperatives' mission is to provide safe, reliable, competitively priced energy to those served. Great River Energy owns over 4,300 miles of transmission line (69-kV or higher) in Minnesota, North Dakota, South Dakota, and Wisconsin. Great River Energy carefully designs and maintains a portfolio of power generation facilities and transmission resources to deliver reliable and affordable wholesale electricity to the regional electricity market and member-owner and customer cooperatives.

1.2 Project Contact

The contact for the Project and this Application is:

Mark Strohfus
Great River Energy
Project Manager, Transmission Permitting
12300 Elm Creek Blvd.
Maple Grove, MN 55369
763-445-5210
MStrohfus@GREnergy.com

1.3 Project Location

The Project is located within the City of Eagan, City of Burnsville, and the City of Apple Valley in Dakota County, Minnesota. The Proposed Route is located in the Township, Ranges, and Sections shown in **Table 1.3-1**.

Table 1.3-1. Townships, Ranges, and Sections Crossed by the Proposed Route

City Name	Township	Range	Sections
City of Eagan	27N	23W	20, 21, 22, 27, 28, 29, 30, 31, 32
City of Burnsville	27N	24W	25, 35, 36
City of Burnsville	115N	20W	17, 20
City of Apple Valley	115N	20W	20

1.4 Proposed Project

Great River Energy proposes to rebuild and upgrade the existing 69-kV transmission system to a 115-kV system which spans from the Pilot Knob Substation in Eagan to the Burnsville Substation in Burnsville. The Project also includes upgrades at the Burnsville Substation. Great River Energy proposes that the Project generally follow the existing transmission line right-of-way and alignment, with minor realignments proposed on Blackhawk Road near its intersection with Interstate Highway 35E (I-35E) and at the connection to the Burnsville Substation.

An overview of the Proposed Route is shown in **Figure 1-1**. **Appendix A** contains a series of larger scale aerial photo maps depicting the Proposed Alignment, right-of-way (ROW), and requested route width (Proposed Route) for the Project, including the existing substation locations and the Burnsville Substation upgrade footprint.

Great River Energy estimates the Project will cost approximately \$32.8 million and anticipates starting construction in Winter 2025/2026 and energizing the Project in the spring of 2028.

Great River Energy will replace the existing structures primarily with direct-imbedded steel poles, 60 to 95 feet above ground and placed 300 to 400 feet apart. The existing structures are typically 55 to 80 feet above ground and approximately 200 to 300 feet apart. Concrete foundation poles will be required at highway crossings and specialty poles may be required in some locations (e.g., to cross under an existing line, for angle poles, or in areas where soil conditions are poor, and guying is not practical). One or two switch poles will be needed where a transmission line connects to a substation.

The existing 69-kV transmission lines and associated structures will be removed during installation of the new lines.

Great River Energy has existing easements for the 69-kV transmission line and anticipates renewing or amending these easements, as needed for the Project. Great River Energy currently holds an approximately 70-foot-wide ROW associated with the existing 69-kV transmission line (typically 35 feet off each side of the transmission centerline), which it intends to maintain for the new 115-kV transmission line. GRE also anticipates that the Project may require some renewed and/or amended easements, or new easements where additional space or rights are needed and/or to accommodate the Project. Where the Project parallels road ROW, Great River Energy plans to place structures approximately one to five feet outside of the road ROW, to the extent that there are no other conditions necessitating other placement (e.g., other buried utilities).

Dakota Electric Association has existing overhead distribution lines on portions of the existing 69-kV structures. Where this occurs, it is Great River Energy's understanding that Dakota Electric Association will attach the distribution lines as under-build to the Project's new structures. Because the distribution lines are owned and maintained by Dakota Electric Association, Dakota Electric Association will conduct any work related to those distribution lines.

There are four existing substations located along the Project including the Pilot Knob Substation (owned by Great River Energy), Deerwood Substation (owned by Dakota Electric Association), River Hills Substation (owned by Dakota Electric Association), and the Burnsville Substation

What is a route, alignment, and ROW?

A "route" is a wide corridor that is defined by the Public Utilities Commission in a route permit. It establishes the area in which Great River Energy will generally be authorized to construct its transmission line. As discussed later in this application, the route width varies along the length of the transmission line.

An "alignment" is the general path that a transmission line will follow. This application includes a Proposed Alignment, which is Great River Energy's initial thoughts on where the line will be built and where it turns or crosses from one side of a road to the other. The final alignment will likely be somewhat different due to input from landowners, agencies, and owners of other utilities in the area.

A "ROW" or "right-of-way" is a space around high voltage transmission lines that Great River Energy maintains and protects from encroachments to ensure safe and reliable operation of the transmission line. Great River Energy anticipates seeking a 70-foot ROW, 35 feet perpendicular from both sides of the transmission centerline, for the Project. Where the transmission line parallels roads, Great River Energy will seek approximately 40 feet of ROW from landowners. The landowner will be compensated for the ROW as part of the easement acquisition process.

(owned by Great River Energy). As part of this Project, Great River Energy proposes to conduct upgrades at the Burnsville Substation to enable operation of the Project at 115 kV in the future, including the removal of existing bus work, installation of new bus work, breakers, and control equipment. These upgrades will require an expansion of the facility's footprint by approximately 0.06 acre, which will be located on Great River Energy's existing parcel.¹ This expansion will occur in the northwest corner of the substation, as shown on **page 14 of Appendix A**.

1.5 Project Need and Purpose

The Project is needed to maintain reliability to end-use customers, prepare for future load growth, and preserve the existing looping² that serves the Deerwood and Rivers Hill substations. Those substations provide service to Dakota Electric Association's electric cooperative members (see **Chapter 5**).

The Project meets these needs first by installing new equipment built to modern design standards and second having the ability to operate at 115 kV in the future. The ability to operate at the higher voltage will ensure there is sufficient electrical capability to serve increased electrical demand in the future. The electric transmission system in the area is shown on **Figure 1-3**.

1.6 Potential Environmental Impacts

Great River Energy analyzed the potential environmental effects of the proposed Project. Generally, Project effects are anticipated to be temporary and/or minor. The Project will occur almost entirely within the existing Great River Energy transmission line ROW and will parallel existing roads for the entirety of its length. No homeowners will be displaced by the Project. All land impacted during construction will be restored to the extent possible, and landowners will be compensated for any damages due to construction, operations, or structure and conductor placement.

Environmental justice communities are crossed by the Proposed Alignment. These communities may temporarily experience increased traffic and demand for public services during construction activities; however, Project benefits include maintaining reliable electrical services to these communities and a temporary increase in local business revenue.

The routing of the Project minimizes potential tree removal but may require the permanent removal of approximately 9.5 acres of trees within the ROW. There are no wetlands crossed by the Proposed Alignment; therefore, Great River Energy does not currently anticipate placing poles within wetlands.

¹ Additional work at the Burnsville Substation is, and will be, ongoing that is not associated with the Project. This includes the replacement of obsolete oil-filled breakers with new, more reliable gas-filled breakers, the removal of a 115-kV capacitor bank that is no longer used, and modifications to bus work.

² Looping is when more than one energy source can supply power to a substation. For example, the Deerwood Substation can receive power from the Pilot Knob Substation via transmission lines on Pilot Knob Road and Deerwood Drive, or if this pathway is not in operation, it can receive power from the River Hills Substation via transmission lines on Cliff Road, Blackhawk Road, and Deerwood Drive.

Great River Energy will develop its final alignment based on the permitted route to further avoid and minimize impacts to environmental resources, in compliance with federal, state, and local regulations and in coordination with applicable federal, state, and local agencies.

Unavoidable impacts include a minor change in aesthetics associated with taller pole structures relative to the existing structures, temporary disruption of access to recreational activities along the Proposed Alignment (e.g., bike trails) during construction, and the presence of additional traffic during construction on the local roads. These and other potential environmental effects, as well as applicable avoidance and minimization measures, are described in more detail in **Chapter 7** of this Application.

The Department of Commerce, Energy Environmental Review and Analysis (DOC-EERA) is responsible for environmental review of the Project and will prepare an Environmental Assessment (EA) that analyzes the Project's potential environmental impacts.

1.7 Public Involvement

Great River Energy held open houses at the Eagan Community Center in Eagan, Minnesota, and at the Diamondhead Education Center in Burnsville, Minnesota, on July 25 and 26, 2023, respectively. Great River Energy staff were available to provide information to members of the public and answer questions concerning the Project. Large posters showing the existing/proposed transmission line alignment and pictures of what the pole structures would look like were also available for review.

Invitations to the meeting, including a Project fact sheet with maps, were mailed to more than 1,100 documented landowners within and adjacent to the Proposed Route as well as to representatives from regulatory agencies and local governments. Advertisements were also placed in two regional newspapers: the Pioneer Press and the Sun This Week. Copies of these communications are provided in **Appendix B**. Great River Energy also maintains a web site that contains Project information at: https://greatriverenergy.com/transmission_project/pilot-knob-burnsville-transmission-line-rebuild-project/.

Seventeen people attended the Open Houses over the two days. Thirteen of the attendees were landowners within the Proposed Route. The remainder of the attendees included government representatives and landowners who wanted to confirm they were not proximate to the route.

Great River Energy technical representatives provided information about the Project and answered questions and/or responded to comments concerning:

- the reason for the Project;
- the process for permitting;
- tree/vegetation cutting or removal;
- easement requirements and acquisition; and
- Project timeline.

Some landowners had questions regarding electric magnetic fields (EMF) and transmission line safety. Some landowners expressed concern regarding the Project's impact on their trees and other vegetation and asked about impacts to a family cemetery.³

The public will be afforded additional opportunities to participate and comment on the Project in accordance with Minnesota laws and regulations. This process is described in **Section 2.2**. The first opportunity for public involvement in the regulatory process is a public information and scoping meeting conducted by Commission staff and the DOC-EERA staff after the Commission's acceptance of this Application as complete.

There are two options for citizens/landowners/interested persons to receive Project information:

1. Subscribe to the Commission's eDockets system (self-service, must subscribe for each docket of interest), receive email notifications when new documents are filed. Note - subscribing may result in a large number of emails.

- a). Visit the website: mn.gov/puc
- b). Select the green box labeled *Subscribe to a Docket*
- c). Type your e-mail address
- d). For *Type of Subscription*, select *Docket Number*
- e). For *Docket Number*, select 23 in the first box, type 410 in the second box
- f). Select *Add to List*
- g). Select *Save*

2. Sign up for the Project mailing list – sign up to receive notices about Project milestones and opportunities to participate (e.g., meetings, comment periods); may request email or U.S. Mail (not self-service, must contact Commission staff to sign up). Contact docketing.puc@state.mn.us or 651-201-2234 with the docket number (23-410), your name, mailing address, and email address.

³ Refer to **Section 7.5** for additional information regarding cemeteries along the Proposed Route.

2 REGULATORY PROCESS

2.1 Certificate of Need Not Required

Minnesota Statutes Section (Minn. Stat. §) 216B.243, subdivision 2, states that “[n]o large energy facility shall be sited or constructed in Minnesota without the issuance of a Certificate of Need by the Public Utilities Commission...” A large energy facility is defined as “any high-voltage transmission line with a capacity of 100 kV or more with more than ten miles of its length in Minnesota or that crosses a state line.”⁴ The proposed Project is less than ten miles in length and does not cross a state line; therefore, a Certificate of Need is not required.

2.2 Route Permit

Minn. Stat. § 216E.03, subdivision 2, provides that “[n]o person may construct a high voltage transmission line without a route permit from the commission.” An HVTL is defined by Minn. Stat. § 216E.01, subd. 4, as “a conductor of electric energy and associated facilities designed for and capable of operation at a nominal voltage of 100 kV or more and is greater than 1,500 feet in length.” Because the Project consists of a 115-kV transmission line that is greater than 1,500 feet in length, a Route Permit from the Commission is required.

Minn. Stat. § 216E.04 provides for an Alternative Review Process for transmission lines between 100- and 200-kV; the Project is proposed as 115-kV and thus qualifies for alternative review. The permitting timeline for the Alternative Review Process is shorter than the timeline required for transmission lines over 200-kV. Great River Energy notified the Commission on October 31, 2023, pursuant to Minnesota Rules (Minn. R.) 7850.2800, Subp. 2 of its intent to use the Alternative Review Process and file its Application under Minn. R. 7850.2800 to 7850.3900. A copy of the notification letter is provided in **Appendix C**.

The rules that apply to the review of Route Permit Applications are found in Minn. R. Ch. 7850. Minn. R. 7850.1900, subparts 2 and 3, set forth the information that must be included in a Route Permit Application.

Under the Alternative Review Process, an Applicant is not required to propose any alternative routes but must disclose any other routes that were considered but rejected by the Applicant (Minn. Stat. § 216E.04, subd. 3). Further, an Environmental Impact Statement is not required under the Alternative Review Process. Instead, DOC-EERA is required to prepare an EA (Minn. Stat. § 216E.04, subd. 5). Unlike the full Route Permit process for higher voltage lines, a formal contested case hearing is not required (Minn. Stat. § 216E.04, subd. 6). The Alternative Review Process procedures are discussed below in **Section 2.2.2**.

⁴ Minn. Stat. § 216B.2421, subd. 2(3) (2006).

The regulatory process described in this section is the process that is followed to satisfy all the requirements under the Alternative Review Process Route Permit rules. *See* Minn. R. Ch. 7850.

2.2.1 Notice of Application

In accordance with Minn. Stat. § 216E.04, subd. 4, and Minn. Stat. § 216E.03, subd. 4 within 15 days of filing this Application, Great River Energy will mail a notice of the filing to each owner whose property is along the Project's proposed route, to those persons who have registered their names with the Commission and expressed an interest in large energy projects, and to the tribal government and local government units (LGUs) whose jurisdictions are reasonably likely to be affected by the proposed Project. In addition, Great River Energy will publish notice in a local newspaper in each county where the Project is proposed that announces the filing of this Application. *See* Minn. Stat. § 216E.04, subd. 4; Minn. R. 7850.2100.

An electronic version of the Application will be available on eDockets in docket number 23-410 and on the DOC-EERA webpage. The Application will also be available on Great River Energy's transmission projects webpage at: https://greatriverenergy.com/transmission_project/pilot-knob-burnsville-transmission-line-rebuild-project/.

2.2.2 Environmental Review Process

Upon acceptance of an Application for a Route Permit as complete, DOC-EERA will conduct an environmental review of the Project, which requires preparation of an EA. *See* Minn. R. 7850.3700. The EA will contain information on the human and environmental impacts of the Project and addresses mitigation measures for all routes considered.

The process DOC-EERA must follow in preparing the EA is set forth in Minn. R. 7850.3700. This process requires DOC-EERA to schedule at least one scoping meeting and associated public comment period. The purpose of the meeting is to provide information about the Project and permitting process, answer questions, and gather input regarding potential impacts and mitigative measures that should be studied in the EA. The meeting also provides an opportunity to solicit potential route or route segment alternatives that mitigate impacts. Great River Energy, DOC-EERA, and the Commission will have representatives available during the public meeting to answer questions and provide information for the public. The public meeting will be held within 60 days after the Application is accepted and deemed complete.

Once the scoping meeting has been held and after the public comment period closes, the Commissioner of the DOC will issue a scoping decision describing the issues and alternatives that will be evaluated in the EA. DOC-EERA will prepare the EA based on the scoping decision. Upon completion of the EA, DOC-EERA will publish notice of its availability in the *EQB Monitor*, a weekly publication of the Minnesota Environmental Quality Board (EQB) that can be accessed on the EQB webpage, www.eqb.state.mn.us/monitor.html. DOC-EERA will also send notice to persons who have placed their names on the Project mailing list (**Section 1.7**). A copy of the EA will be available electronically through eDockets and the DOC-EERA webpage. The EA will become part of the record for consideration by the Commission.

After the EA is issued, a public hearing and associated public comment period will be held to again solicit public input and to create an administrative record. The Commission will select a person to preside at the hearing, which, in practice, is usually an administrative law judge (ALJ) from the Office of Administrative Hearings. The Commission will establish the procedures to be followed at the hearing. *See* Minn. R. 7850.3800.

Once the hearing is concluded, the ALJ will prepare a report based on the record. After the report is issued, the matter will come to the Commission for a decision. During an open meeting, the Commission will deliberate and make a decision as to the route for the Project, using the criteria set forth in Minn. Stat. 216E.03, subdivision 7(b), and Minn. R. 7850.4100 to guide its decision.

A route permit under the Alternative Review Process shall be issued six months after the Commission's determination that the Application is complete. This timeframe may be extended up to three months for just cause or upon agreement by the Applicant. *See* Minn. Stat. § 216E.04, subd. 7.

2.3 Other Permits/Approvals

In addition to the Route Permit sought in this Application, several other permits, license, approvals, or consultations may be required to construct the Project depending on the actual route selected and the conditions encountered during construction. A list of the local, state, and federal permits that may be required for this Project is provided in **Table 2.3-1**. Each of these requirements and their applicability to the Project are discussed in the application sections as listed in the table. Any required permits will be obtained by Great River Energy in a timely manner.

Table 2.3-1. Summary of Possible Permits, Licenses, Approvals, and Consultations

Permit	Jurisdiction
Federal	
Section 404 Clean Water Act Permit	United States Army Corps of Engineers
Endangered Species Act / Migratory Bird Treaty 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
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, City of Eagan, City of Apple Valley and City of Burnsville Local Government Units
Utility Accommodation on Trunk Highway ROW	Minnesota Department of Transportation

Permit	Jurisdiction
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	Dakota County, City of Eagan, City of Apple Valley and City of Burnsville
Over-Width Load Permits	Dakota County, City of Eagan, City of Apple Valley and City of Burnsville
Other	
Crossing Permits/Agreements	Other utilities such as pipelines

2.3.1 Federal Approvals

Section 404 Permit Clean Water Act Permit

A Section 404 permit is required from the U.S. Army Corps of Engineers (USACE), St. Paul District if there are discharges of dredged or fill material into waters of the United States. Based on wetland mapping using Minnesota Department of Natural Resources (MDNR) National Wetland Inventory (NWI) data, the Project would have minimal impacts to wetlands. If wetlands are impacted by the final alignment, impacts are anticipated to be eligible for coverage under the Minnesota Utility Regional General Permit. Great River Energy, in consultation with the USACE, St. Paul District, will seek coverage under the appropriate permit once design of the transmission line is complete. **Section 7.6.4** discusses the potential impacts to wetlands associated with the Proposed Route.

U.S. Fish and Wildlife Service Endangered Species Act and Migratory Bird Treaty Act

In accordance with the Endangered Species Act, Great River Energy will assess whether the activity may affect any federally listed threatened, endangered, or proposed threatened and endangered species, designated critical habitat, or proposed critical habitat. Great River Energy will coordinate with the U.S. Fish and Wildlife Service (USFWS) once design of the transmission line is complete. **Section 7.6.7** discusses the potential impacts to federally listed threatened and endangered species associated with the Proposed Route.

The Migratory Bird Treaty Act prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS. Great River Energy will work with the USFWS to identify any areas that may require marking transmission line shield wires and/or to use alternate structures to reduce the likelihood of avian collisions once design of the transmission line is complete. **Section 7.6.7** discusses the potential impacts to migratory bird species associated with the Proposed Route.

Federal Aviation Administration Part 7460 Airport Obstruction Evaluation

Title 14 Code of Federal Regulations (CFR) Part 77 requires that anyone building a structure near an airport report their intentions to the 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. **Section 7.2.7** discusses potential impacts to airports.

2.3.2 State of Minnesota Approvals

State Endangered Species Consultation

Minn. Stat § 84.0895 prohibits the take, import, transport, or selling of any portion of an endangered species or wild animal or plant. To determine if a project will impact a state listed threatened or endangered species, Great River Energy will consult with the MDNR Natural Heritage and Nongame Research Program, which collects, manages, and interprets information about nongame species. The results of initial consultation regarding the Proposed Route are provided in **Section 7.6.7**.

Historic, Archaeological, and Tribal Cultural Resources

Great River Energy will assess whether the Project might have the potential to cause effects to an historic property, listed on, eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places (NRHP).

The Minnesota Field Archaeology Act (Minn. Stat § 138.32-138.42) establishes the Office of the State Archaeologist (OSA); requires licenses to engage in archaeology on nonfederal public land; establishes ownership, custody, and use of objects and data recovered during survey; and requires state agencies to submit development plans to the OSA, Minnesota State Historic Preservation Office (SHPO), and the Minnesota Indian Affairs Council (MIAC) for review when there are known or suspected archaeological sites in the area.

Minnesota's Private Cemeteries Act (Minn. Stat § 307.08) affords all human burial grounds and remains older than 50 years and located outside of platted or identified cemeteries protection from unauthorized disturbance. This statute applies to burials on either public or private lands or waters and includes prehistoric Indian burial mounds as well as historic cemeteries.

Great River Energy submitted a literature review of archaeological and historic properties in the Project area to the Minnesota SHPO in a letter dated August 8, 2023; SHPO response to this letter was received on September 25, 2023. Further, Great River Energy requested feedback on the Project from the 11 federally recognized Tribes with geography within Minnesota and the MIAC in its Project notification letters sent in August 2023. Further details of initial consultation regarding the Proposed Route are provided in **Section 7.5**, and correspondence is provided in **Appendix D**.

Water Appropriation General Permit – Construction Dewatering

Minn. Stat. § 103G.265 requires the MDNR 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. A water use permit from the MDNR is required for all uses 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 poles, as further discussed under **Section 7.6.4**.

National Pollutant Discharge Elimination System Construction Stormwater General Permit

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. This permit will be acquired if construction of the Project will cause a disturbance of one or more acres.

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 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. As discussed above, the Project is likely to qualify for a USACE Section 404 Minnesota Utility Regional General Permit; the MPCA has already issued a Section 401 Certification associated with this permit.

Wetland Conservation Act

The Minnesota Board of Water and Soil Resources (BWSR) administers the state Wetland Conservation Act. The Project may cause minimal impacts to wetlands, if any. If wetlands are impacted as part of this Project, Great River Energy anticipates being eligible for the Exemption for Utilities in accordance with Minn. Stat. § 103G.2241, subd. 6, and Minn. R. 8420.0420, Subp. 6, which allows the utility exemption for installation, maintenance, repair, or replacement of lines if (a) the impacts have been avoided and minimized to the extent possible; and (b) the proposed project significantly modifies or alters less than one-half acre of wetlands. Further discussion on the potential impacts to wetlands associated with the Proposed Route are provided in **Section 7.6.4**.

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 will cross I-35E at multiple locations, Cedar Ave / State Highway 77, and State Highway 13E and will have structures located within MnDOT ROWs. Great River Energy will apply for the permits once it has a final line design. Project construction work will not commence along the highway until the permits are issued. Great River Energy has started coordinating with the MnDOT, as documented in the correspondence provided in **Appendix D**.

Miscellaneous Work Permit for Trunk Highways

A Miscellaneous Work Permit is required by the MnDOT for placement of temporary obstructions on the ROW (e.g., survey vehicles) and vegetation removal. After the Route Permit is issued, Great River Energy will apply for this permit as applicable.

Oversize / Overweight

An Oversize and / or Overweight permit is required by MnDOT when a vehicle is transporting an oversize / overweight load on Minnesota roadways. If any transport load qualifies as oversize or overweight, the transportation contractor will apply for the appropriate permit.

2.3.3 Local Approvals

After the Commission approves a route and any appropriate design engineering is completed, Great River Energy will work with LGUs to obtain any of the following approvals, if necessary.

Road Crossing/Driveway/Right-of-Way Permits

These permits may be required to clear, cross, or occupy county, township, or city road ROW. Great River Energy will apply for these permits once the transmission line design is complete and acquire them prior to applicable construction activities.

Over-Width/Loads Permits

These permits may be required to move oversize or heavy loads on county, township, or city roads.

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3 PROPOSED PROJECT

Great River Energy proposes to rebuild and upgrade portions of its existing 69-kV DA-PLX, DA-PD, DA-DE, DA-RE and DA-BR transmission lines with approximately 8.75 miles of new 115-kV transmission line to supply power to the Pilot Knob, Deerwood, River Hills, and Burnsville substations (**Figure 1-1**). The Project also involves modifications and upgrades to the Burnsville Substation, which is owned by Great River Energy.

This Project will enable Great River Energy to maintain reliable and resilient service to electric cooperative members, including Dakota Electric Association, first by installing new equipment built to modern design standards, and second by having the ability to operate at 115 kV in the future. The Project will be built to provide 115-kV service to meet long-term planning needs in the Project area but will initially operate at 69-kV.

The proposed Project is located within the cities of Eagan, Burnsville, and Apple Valley in Dakota County, Minnesota. An overview of the Proposed Route is shown in **Figure 1-1**, Proposed Route widths are shown in **Figure 3-1**, and **Appendix A** contains a series of larger scale aerial photo maps depicting the Proposed Alignment, Proposed Route, and 70-foot-wide ROW for the Project.

3.1 Transmission Line

3.1.1 Proposed Alignment

As described in **Section 1.4**, the Proposed Alignment refers to the centerline of the transmission line. This Application includes a Proposed Alignment which generally follows the existing 69-kV transmission systems with some slight modifications. The final alignment may differ due to input from landowners, agencies, and owners of other utilities in the area.

The Project will begin at Great River Energy's existing Pilot Knob Substation located approximately at the intersection of Wilderness Run Road and Pilot Knob Road / County State Aid Highway (CSAH) 31 in the City of Eagan in Dakota County. The Proposed Alignment will extend west from the Pilot Knob Substation and then follow the existing 69-kV DA-PLX double circuit transmission line ROW north for approximately one mile through a primarily residential area along Pilot Knob Road / CSAH 31 (**pages 1-3 of Appendix A**). At the intersection of Pilot Knob Road / CSAH 31 and Deerwood Drive, the line turns directly west following the existing 69-kV DA-PD single circuit ROW for approximately 1.2 miles along Deerwood Drive to the Deerwood Substation owned by Dakota Electric Association (**pages 3-4 of Appendix A**). From the Deerwood Substation, it will continue for approximately 650 feet within Great River Energy's existing 69-kV DA-DE transmission line ROW to the intersection of Deerwood Drive and Blackhawk Road. The line then continues south for approximately 1.6 miles following Blackhawk Road until Cliff Road / CSAH 32 along the 69-kV DA-DE ROW (**pages 4-7 of Appendix A**).

Great River Energy is proposing to move the Project alignment from the existing 69-kV DA-DE ROW for approximately 1,250 feet north of Blackhawk Road's I-35E crossing (**page 6 of**

Appendix A). The purpose of this alignment change is to avoid using I-35E to access this portion of the route for construction, operations, and maintenance activities. The alignment change would allow Great River Energy to access this portion of the route from Blackhawk Road from the east side of the road where there are no residences.

At the intersection of Blackhawk Road and Cliff Road, the line turns west to follow Cliff Road for approximately 1.5 miles along the existing 69-kV DA-RE ROW to the Dakota Electric Association owned River Hills Substation (**pages 7-8 of Appendix A**). The line then continues from the River Hills Substation west along Cliff Road E / CSAH 32 for another 0.7 miles into the City of Burnsville along Great River Energy's 69-kV DA-BR ROW (**page 9 of Appendix A**). The line turns southwest at the intersection of Cliff Road E / CSAH 32 and State Highway 13E and follows State Highway 13E for approximately 0.4 miles, and then directly south for 2 miles along CSAH 11 (**pages 9-14 of Appendix A**).

Approximately 770 feet of the line along CSAH 11, from the north side of I-35E to the I-35E entry / exit ramps south of the interstate, is located in the City of Apple Valley. The line then moves back into the City of Burnsville as it crosses to the west side of CSAH 11 and ultimately into the Burnsville Substation (**pages 13-14 of Appendix A**). Great River Energy is proposing to shift the alignment of the Project from the existing 69-kV ROW for approximately 450 feet as the Project enters the Burnsville Substation to allow the Project to connect on the western side of the facility rather than the eastern side when the Project is energized at 115 kV (**page 14 of Appendix A**).

Great River Energy would remove the existing 69-kV transmission line and pole structures as the new poles and 115-kV line are installed.

3.1.2 Identification of Existing Utility and Public Rights-of-Way

As described above and shown in the route maps provided in **Appendix A**, approximately 95 percent of the Project will be constructed within the existing Great River Energy 69-kV ROW, and the Project will parallel existing road ROW for 100 percent of the Proposed Alignment. The 0.4-mile segment of the route along State Highway 13E is also collocated with a natural gas pipeline owned by Northern Natural Gas Company (**page 9 of Appendix A**).

3.1.3 Right-of-Way

The ROW is the physical land area along the Proposed Alignment that is needed to construct, operate, and maintain the transmission line; this is the area that will be maintained by Great River Energy. Great River Energy currently holds an approximately 70-foot-wide ROW associated with the existing 69-kV transmission line (typically 35 feet off each side of the transmission centerline), which it intends to maintain for the new 115-kV transmission line.

Great River Energy anticipates that the Project will require some renewed and/or amended easements. Some new easements may be required where additional space is needed and/or if the Project shifts from the existing alignment. Great River Energy representatives will work directly with individual landowners to acquire the necessary easements for the Project.

3.1.4 Route Widths

A “route” or “route width”, referred to herein as the Proposed Route, is a corridor that is defined by the Commission in a route permit. The Proposed Route is wider than the ROW to provide flexibility in the Proposed Alignment and ROW placement to address human and environmental concerns and physical constraints (e.g., other utilities) that arise after the Route Permit has been issued.

Within this Application, Great River Energy is generally requesting a 400-foot Proposed Route width; however, Great River Energy is requesting varied route widths for specific portions of the route to account for existing infrastructure, mitigate potential engineering challenges, and/or to facilitate any necessary realignments to accommodate agency and/or landowner requests. The route width areas are shown in **Figure 3-1** and are numbered consistent with the descriptions below. Detailed descriptions of each route width area and the requested widths are as follows:

1. The entire 5.4-acre parcel where the Pilot Knob Substation is located (**page 1 of Appendix A**).
2. A 400-foot-wide route for approximately 1 mile along Pilot Knob Road / CSAH 31 until the intersection with Deerwood Drive (**pages 1-3 of Appendix A**).
3. A 200-foot-wide route along Deerwood Drive and Blackhawk Road until the I-35E crossing (**pages 3-6 of Appendix A**).
4. The entire 2-acre parcel where the Deerwood Substation is located (**page 4 of Appendix A**).
5. An approximately 500-foot-wide route (at its widest point) along the proposed 1,250-foot minor reroute north of Blackhawk Road’s I-35E crossing (**page 6 of Appendix A**).
6. A 200-foot-wide route for approximately 1,800 feet along the Blackhawk Road until the intersection with Cliff Road / CSAH 32 (**pages 6-7 of Appendix A**).
7. A 400-foot-wide route for approximately 2.2 miles along Cliff Road / Cliff Road E / CSAH 32 until the intersection with State Highway 13E (**pages 7-9 of Appendix A**).
8. The entire 0.5-acre parcel where the River Hills Substation is located (**page 8 of Appendix A**).
9. A 500-foot-wide route for approximately 2,000 feet along State Highway 13E (**page 9 of Appendix A**).
10. A 400-foot-wide route for 2 miles along CSAH 11 (**pages 9-14 of Appendix A**).
11. A 200-foot-wide route for approximately 1,000 feet along I-35E until the Burnsville Substation (**page 14 of Appendix A**).

12. The entire 5.4-acre parcel where the Burnsville Substation is located to accommodate the substation upgrades and different potential connection points into the substation (**page 14 of Appendix A**).

3.2 Substation

Substations are a part of the electric generation, transmission and distribution system and contain high-voltage electric equipment to monitor, regulate, and distribute electricity safely and reliably. The upgrades at the Burnsville Substation are needed to connect the Project to the substation when it will be operated at 115 kV. Great River Energy is proposing to expand the existing substation footprint by approximately 0.06 acre. Activities will include the removal of existing bus work, and installation of new bus work, breakers, and control equipment as well as providing a connection to the Project ROW as it enters/exits the substation (**page 14 of Appendix A**). The expansion and all of the work at the substation will be completed on the existing parcel that Great River Energy owns.

The Burnsville Substation is already equipped with breakers and relays. This equipment is designed to protect human health, as well as all of the equipment on the transmission system, by de-energizing the transmission line should any unsafe line faults occur.

No modifications to other substations are proposed as part of this Project. Separately, Great River Energy will be conducting work within the existing Pilot Knob Substation. That work is separate from the Project and required due to age and condition of the equipment. Both the Deerwood and River Hills Substations are owned by Dakota Electric Association. No modifications are anticipated at these substations other than to connect the new transmission line to the substation.

3.3 Project Costs

Estimated costs for the proposed Project are approximately \$32.8 million. Costs and tasks are divided into six phases as summarized in **Table 3.3-1**.

Table 3.3-1. Estimated Great River Energy Project Costs

Project	Planning and State Permitting	Land Acquisition/ Permits	Design	Procurement	Construction	Close Out	Total
Transmission Line	\$1,545,329	\$8,427,610	\$124,546	\$5,698,549	\$11,094,829	\$2,096,668	\$29,987,531
Switches	\$36,984	\$6,414	\$409,598	\$617,510	\$712,595	\$55,496	\$1,838,597
Substation	\$8,824	\$15,686	\$68,627	\$524,510	\$349,020	\$33,333	\$1,000,000
Total	\$1,591,137	\$8,449,710	\$1,602,771	\$6,840,569	\$12,156,444	\$2,185,497	\$32,826,128

All capital costs for the Project will be borne by Great River Energy.

3.3.1 Transmission Line Construction Costs

In urban areas, single pole construction costs and easement costs are approximately \$2,000,000 per mile (2021). The proposed Project's costs are anticipated to be higher due to congestion from existing roads and homes, the need to cross several large highways, and escalating material costs for the Project.

3.3.2 Substation

The estimated costs for work at the Burnsville Substation to operate the Project at 115 kV are approximately \$1,000,000.

3.3.3 Operation and Maintenance Costs

The estimated annual cost of ROW maintenance and operation of Great River Energy's transmission lines (69-kV to 500-kV) in Minnesota currently averages about \$2,000 per mile. Storm restoration, annual inspections, and ordinary replacement costs are included in these annual operating and maintenance costs.

3.4 Project Schedule

Great River Energy anticipates starting construction in Winter 2025/2026 and energizing the Project in Spring 2028. The Project is expected to be constructed in three separate phases as shown in **Table 3.4-1** to avoid extended outages on the distribution systems (e.g., the Deerwood Substation will remain energized via the River Hills Substation while the lines between the Deerwood and Pilot Knob Substations are being rebuilt).

Table 3.4-1. Estimated Construction Phase Timelines

Construction Phase		Line Name	Start Construction	Finish Construction
1	Deerwood Substation to Pilot Knob Road	DA-PD	Jan 2026	Jul 2026
	Double circuit line on Pilot Knob Road to Pilot Knob Substation	DA-PLX	Apr 2026	Dec 2026
2	Deerwood Substation to River Hills Substation	DA-DE, DA-RE	Mar 2027	Oct 2027
3	River Hills Substation to Burnsville Substation	DA-BR	Oct 2027	Apr 2028

Table 3.4-2 summarizes the permitting schedule that would enable the Project to be in service by Spring 2028.

Table 3.4-2. Anticipated Permitting Schedule

Route permit application filed	November 2023
Scoping meeting	February 2024
Public hearing	June 2024
Commission meeting	September 2024
Written order issued	October 2024

3.5 Proposed Ownership

Great River Energy will own the 8.75-mile 115-kV transmission line from the Pilot Knob Substation to its connection point with the Burnsville Substation, inclusive of the Pilot Knob and Burnsville Substations.

3.6 Construction Practices

Great River Energy intends to employ its standard practices to construct the Project. These standard practices have been established and incorporate BMPs to meet internal, state, and federal requirements, balance construction costs, and minimize impacts to landowners and the environment. Construction practices to be followed are described in more detail in **Section 6.2**.

3.7 Operation and Maintenance Practices

Great River Energy will periodically perform inspections, maintain equipment, and repair damage to the transmission line. Regular maintenance and inspections will be performed over the life of the facility to ensure a reliable system. Annual inspections will be done by foot, snowmobile, All-Terrain Vehicle, pickup truck, or by aerial means. These inspections will be limited to the acquired ROW and areas where obstructions or terrain require access outside of the transmission line ROW but within the terms of the easement. If problems with the transmission line are found during inspection, repairs will be performed, and landowners will be compensated for any losses or damages incurred to their property.

Great River Energy's Transmission Construction & Maintenance Department will conduct vegetation surveys and remove vegetation that will interfere with the safe operation of the transmission line (**Section 6.5**). A three to seven-year cycle of vegetation maintenance is desirable. ROW practices include a combination of mechanical and hand clearing, along with targeted application of herbicides where allowed.

ENGINEERING AND OPERATIONAL DESIGN CONSIDERATIONS

4 ENGINEERING AND OPERATIONAL DESIGN CONSIDERATIONS

4.1 Transmission Structure and Design Considerations

4.1.1 Structures and Design Considerations

Potential structure designs and photographs are provided in **Diagrams 4-1** and **4-2**. Structure dimensions are provided in **Table 4.1-1**.

Table 4.1-1. 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 - 95	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 4-1. Typical Transmission Structure Types

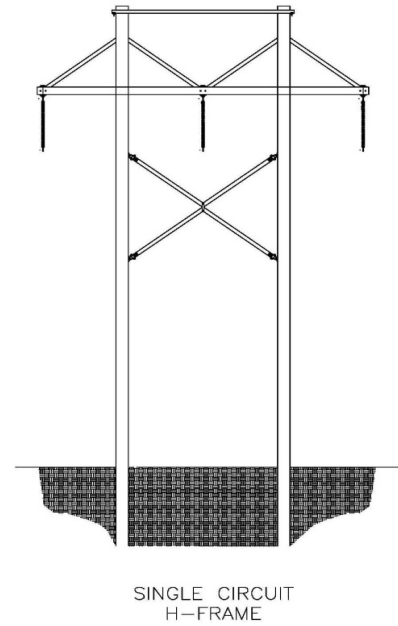
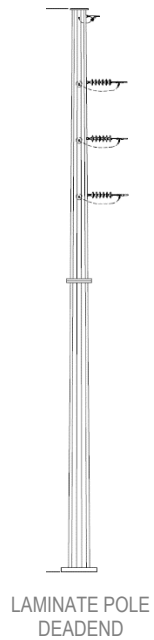
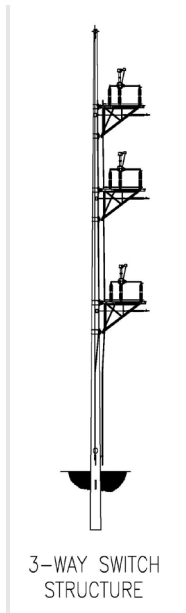
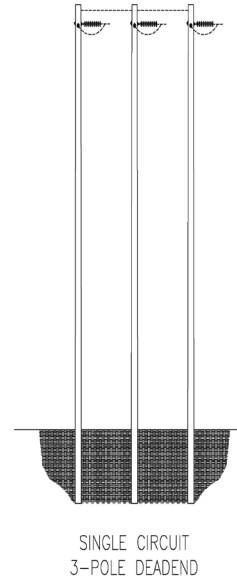
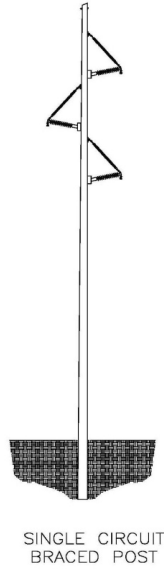
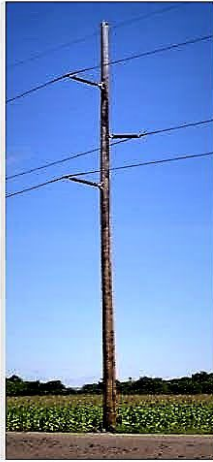


Diagram 4-2. Photos of Typical 115-kV Transmission Structures



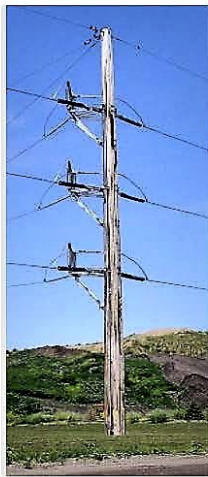
Single Circuit



Braced Post



3-Pole Deadend



Switch



Steel Deadend



H-Frame

The majority of the new 115-kV transmission line will consist of single circuit, horizontal post, or braced post direct-embedded monopole steel structures spaced approximately 300 to 400 feet apart. Transmission structures will typically range in height from 60 to 95 feet above ground, depending upon the terrain and environmental constraints. The average diameter of the direct-embedded steel structures at ground level would be 20 inches.

Laminated wood structures or steel structures on concrete foundations 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, and/or the angle of deflection the pole location causes on the transmission

line. Specific sizing of these structures will be determined after a route permit is issued and detailed engineering design is initiated.

Multi-pole (e.g., 3-pole deadend) and/or 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 proposed 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). Specific sizing of these structures will be determined after a Route Permit is issued and detailed engineering design is initiated. In some cases where overhead clearances require the use of H-frame structures, it may be necessary to also bury the optical ground shield/communication wire. In such a situation, the optical ground wire (PPGW) would be directionally bored underground between the two structures adjacent to the H-frame structure. Great River Energy does not currently anticipate the Proposed Route will require H-frame or 3-pole structures.

A deadend structure is used to change direction and / or wire tension on a transmission line. Deadend structures are also used as a “storm structure” to limit the number of structures damaged by a cascading effect due to higher line tensions when a pole is knocked down by a storm. Deadend structures can use wood, wood laminate, direct steel embedded, or steel on concrete foundation structures and can have a larger cross section than the typical structures. The location of deadend will be structures will be determined after a route permit is issued and detailed engineering design is initiated.

4.1.2 Transmission Line Clearance Requirements

NESC sets minimum clearances of the conductors from structures adjacent to or within the ROW. NESC clearance requirements are summarized in **Table 4.1-2**. For a 115-kV transmission line like the Project, the NESC minimum clearance under a 48 mile per hour (mph) wind is 8.6 feet. When there is no wind, the conductors must have a clearance of 9.1 to 11.6 feet from various structures as listed in **Table 4.1-2**. In addition, Great River Energy typically requires the blowout to remain within the ROW under a more extreme wind condition of 94 mph. The amount of blowout is dependent on a number of factors including the span length and conductor type. On a typical 115-kV transmission line with a 300-foot span, blowout is approximately five feet with 48 mph winds and approximately eight feet with 94 mph winds.⁵ The final line design evaluates blowout based on actual span distances and the type of conductor being used.

Table 4.1-2. NESC Clearance Requirements for 115-kV

Risk Case	Minimum Separation (feet)	
	No Wind	NESC 45 mph wind
From a lighting support, traffic signal support, or support structure for another line.	9.1	8.6
From any other buildings, walls, projections, structures, bridges, etc.	11.6	8.6

⁵ NESC also has standards regarding vegetation management which necessitates typically greater clearance distances. See **Section 6.5** for vegetation management requirements.

4.1.3 Conductors

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-clad steel supported (795 ACSS) or a conductor with similar capacity. The shield wire will be 0.528 optical ground wire.

4.1.4 Distribution Lines

Great River Energy does not own, operate, or install low voltage distribution lines. On some projects, Great River Energy has allowed other distribution utilities to attach distribution lines to its high voltage transmission line structures. This is commonly called “underbuild” or “underbuilt.” Dakota Electric Association has existing distribution lines underbuilt on Great River Energy’s existing 69-kV structures. Great River Energy currently understands that Dakota Electric Association plans to attach these lines to the new 115-kV structures installed by Great River Energy. This work will be undertaken by Dakota Electric Association and will not be conducted or directed by Great River Energy.

4.1.5 Service Life

The service life of a transmission line is approximately 40 years, although based on experience, it is quite possible that the line and structures will last longer than 40 years.

4.1.6 Annual Availability

An average 115-kV transmission line is expected to be available approximately 99.9 percent of the year. Great River Energy expects that this line should not be out of service for any extended period of time, other than the rare times when scheduled maintenance is required or when a natural event, such as a tornado, thunderstorm, or ice storm causes an outage.

4.1.7 Outages

All necessary outages are coordinated in accordance with MISO requirements and procedures that are established and followed by all MISO members to meet personnel safety and NESC transmission grid reliability requirements. Coordination is accomplished through well-defined outage scheduling procedures that utilize web-based tools, allow for study affirmation and ultimately approval of the submitted outage. Once approved, detailed switching orders are developed and shared with all parties involved using well-defined processes to ensure safety of personnel performing the work and transmission grid reliability. While distribution systems are not subject to MISO requirements, Great River Energy will also coordinate outages with Dakota Electric Association.

4.2 Substation Design Considerations

The work at the Burnsville Substation will include relocating where the transmission line taps into the substation. While the Project operates at 69 kV, the tap will remain in the current location on

the eastern half of the north side. For the line to operate at 115 kV, the tap location will need to be relocated to the western half of the north side where the 115-kV bus work is currently located.

The Burnsville Substation will be undergoing modifications not associated with the Project prior to issuance of the Route Permit. This work is necessary for existing age and condition issues to ensure reliable operation of the substation and will include replacing oil-filled breakers with more reliable gas-filled breakers; replacing obsolete relays and controls with modern, vendor supported ones; and replacing the electrical operating system control building.

4.3 Design Options to Accommodate Future Expansion

Minnesota statutes and rules require the consideration of the potential for a project to accommodate future improvements to the transmission system. The Project is designed to maintain reliability requirements in the area and it will have the ability to operate at 115 kV when electric loads increase. The work at the Burnsville Substation will also allow the Project to expeditiously switch from operating at 69 kV to operating at 115 kV to serve increased electrical demand in the future.

5 ALTERNATIVE ROUTES CONSIDERED AND REJECTED

5.1 Alternative Requirement

Minn. Stat. § 216E.04, subdivision 3, and Minn. R. 7850.3100 require an applicant to identify any alternative routes that were considered and rejected for the Project.

5.2 Other Great River Energy Rebuild and Upgrade Options

The Project is in part needed to maintain the existing looping (providing more than one energy source) that serves the Deerwood and Rivers Hill substations. Accordingly, the rebuild scenario was selected and an alternative was not considered viable if it did not interconnect to these substations because it would not meet the Project need. Any alternative routes interconnecting these substations would create new ROW, whereas the Project is proposed to be almost entirely located in existing transmission line ROW.⁶

One alternative rebuild scenario (**Figure 5-1**) was considered and rejected due to lower reliability and potential expansion of a county highway system. Rather than rebuilding and upgrading Great River Energy's existing 69-kV DA-PKX transmission line that extends north of the Pilot Knob Substation, an alternative was evaluated whereby the following lines would be rebuilt and upgraded: the 69-kV DA-PKX transmission line that extends 0.5-mile south from the Pilot Knob Substation to Cliff Road / CSAH 32; and the 69-kV DA-RE transmission line that extends 1.5 miles east on Cliff Road / CSAH 32 to connect to the Proposed Route at the intersection of Cliff Road / CSAH 32 and Blackhawk Road. This approximately 2-mile section was rejected for the following reasons:

- This alternative would have lower reliability because the power supply to the Deerwood Substation would be solely dependent on the 1.7-mile DA-DE primarily following Blackhawk Road. The Project allows for power to be supplied east from the Pilot Knob Substation if the DA-DE line were to be out of services.
- Dakota County approached Great River Energy about wanting to widen Cliff Road / CSAH 32 west of Pilot Knob Road / CSAH 31. The road ROW is very congested, and a widening of the road would require the line to be placed further into the parcels. The highway project was not approved during the last county budget cycle. Nevertheless, the Project will open up this segment of road for future expansion as Great River Energy intends to decommission this line segment once the Project is in service.
- The existing 69-kV ROW is adjacent to East Thomas and Thomas Lake (Minnesota public waters) and three residential parks: Thomas Lake Park, Clearwater Park and Well Site Park.

⁶ As noted in **Section 3.1.1**, a short segment of the new line will deviate from the alignment of the existing transmission lines to facilitate safer maintenance of the new line. This segment is proposed to be co-located with existing road ROW.

Rebuilding and upgrading to the 115-kV transmission line through this area could potentially result in additional tree clearing, wetland impacts, impacts to MDNR-managed public waters and recreational impacts relative to the Proposed Route.

- Cultural resources literature review of this route identified two historic structures located immediately adjacent to the existing route, which may also be impacted by tree clearing and have associated viewshed impacts.

RIGHT-OF-WAY ACQUISITION, CONSTRUCTION, RESTORATION, OPERATIONS AND MAINTENANCE PROCEDURES

6 RIGHT-OF-WAY ACQUISITION, CONSTRUCTION, RESTORATION, OPERATIONS AND MAINTENANCE PROCEDURES

Design and construction of transmission lines occur through multiple stages including identification of existing ROWs (**Section 3.1.2**); transmission line design; ROW acquisition; construction; restoration; and operation and maintenance. Each stage is discussed in further detail in the sections that follow.

6.1 Landowner Coordination and Right-of-Way Acquisition Procedures

Great River Energy has initiated landowner outreach by providing information on the Project via letters mailed to potentially impacted landowners (**Appendix E**), interested parties and federal, state, and local governmental officials; publishing notices in area newspapers; and holding an Open House meeting (**Section 1.8, Appendix B**). Great River Energy will continue to engage with landowners throughout the permitting process to answer any questions they may have regarding the easement process or the Project.

Great River Energy currently has approximately a 70-foot-wide ROW associated with the existing 69-kV transmission line (typically 35 feet off each side of the transmission centerline); where the transmission line follows roads, approximately 30 feet of the ROW overlaps road ROW and approximately 40 feet overlaps private or public property. Great River Energy intends to utilize that ROW; however, it may become necessary to obtain renewed and/or amended easements, or new easements where additional space or rights are needed and/or to accommodate the Project.

New ROW and easements will be required for the rerouted section along Blackhawk Road and its intersection with I-35E. The impacted parcels are currently owned by Dakota County and MnDOT.

Great River Energy representatives will work directly with individual landowners to negotiate the necessary easement amendments or new easements.

During formal land rights acquisition, Great River Energy will provide the landowners a copy of the route permit, the transmission line easement, offer of compensation, information on the Project schedule, construction practices, vegetation removal, and damage settlement. Additional information may also be given to each landowner regarding preliminary pole placement (if available at that time), structure design or photos, and power line safety. Great River Energy would respond to any comments or questions landowner may have including those with respect to the transmission line construction practices or operations of the transmission line.

In addition to permanent easements necessary for the construction of the line, agreements may be obtained from certain landowners for temporary construction or staging areas for storage of poles, vehicles, or other related items.

As part of early transmission design work, Great River Energy will need to complete preliminary survey work and may need to acquire some soil characteristics data. Great River Energy will notify landowners in the event site access for soil boring is required to determine soil suitability in areas where special transmission structure design may be required.⁷

If a mutually acceptable agreement cannot be reached through Great River Energy's work with landowners, Minnesota law provides that Great River Energy can use its rights of eminent domain to obtain the rights necessary for the Project. *See* Minn. Stat. §§ 222.36, 301B.02, and 308A.201, subd. 13. If necessary, Great River Energy will commence a condemnation action, pursuant to Minn. Stat. Ch. 117, to obtain the necessary rights. Before the action is started, Great River Energy typically obtains an appraisal and provides it to the landowner. The landowner also has certain rights of reimbursement to obtain its own appraisal. Within a condemnation action, the landowner has the ability to contest the condemnation action. If the Court determines that Great River Energy may obtain the required easements through condemnation, then the Court appoints an impartial panel of qualified valuation commissioners. Those commissioners view the landowner's property and conduct a hearing at which the landowner and Great River Energy present their evidence about the fair market value impacts that the easements have on the property. The commissioners then issue an award setting the amount of compensation. If a landowner or Great River Energy is not satisfied with the award, either may file an appeal in which the just compensation will be set following a trial. If no appeal is filed, Great River Energy pays the amount of the award. At any point in the condemnation process, the landowner and Great River Energy can reach a settlement and dismiss the action.

6.2 Construction Procedures

As described further below, construction will follow Great River Energy's standard construction and mitigation best practices. Construction typically occurs as follows:

- surveying and staking the ROW;
- ROW clearing and preparation;
- grading / filling, as needed;
- installation of foundations;
- installation of poles and related equipment;
- conductor stringing;
- installation of any required aerial markers; and
- removal of the existing 69-kV structures.

Procedures to be used for construction of the transmission line are discussed below. Equipment used in the transmission line construction process includes boom trucks, skid steers, cranes, backhoes, and assorted small vehicles.

⁷ Survey work and geotechnical studies do not require that the Commission issue a route permit for this work to occur. Minn. R. 7850.1200, Subp. 5.

6.2.1 Transmission Line Construction

After land rights have been secured and prior to any construction activities starting, landowners will be notified of the Project schedule and other related construction activities.

The first phase of the transmission line construction activities will involve survey staking of the transmission line centerline and/or pole locations, followed by removal of trees and other vegetation from the ROW. The width of the ROW will be cleared of vegetation for construction to ensure safe and reliable access and construction; during Project operations and maintenance, Great River Energy will implement wire / border zone vegetation management practices, as discussed further in **Section 6.5**.

All materials resulting from clearing operations will either be stacked outside of the ROW for use by the property owner or removed and disposed of otherwise as agreed to with the property owner during easement negotiations or in accordance with agency requirements.

Where clearing is required in wetlands, no more than one inch of chips, shred, or mulch will be allowed in wetlands. Larger trees and shrubs will be moved outside of the wetlands for processing in upland areas to ensure no more than one inch of residue is left in wetlands. Clearing in wetlands will be conducted when the ground and wetlands are frozen, or mats will be used to minimize impacts to vegetation. The proposed Alignment does not cross wetlands; however, there are a limited number of wetlands crossed by the ROW (see **Section 7.6.4**).

The final survey staking of pole locations may again occur after the vegetation has been removed and just prior to structure installation.

The second phase of construction will involve structure installation and stringing of conductor wire. During this phase, existing underground utilities will be identified along the route through the required Gopher State One Call process.

If temporary removal or relocation of fences is necessary, installation of temporary or permanent gates will be coordinated with the landowner.

Transmission line structures are generally designed for installation at existing grades. Therefore, structure sites will not be graded or leveled unless it is necessary to provide a reasonably level area for construction access and activities. For example, if vehicle or installation equipment cannot safely access or perform construction operations properly near the structure, minor grading of the immediate terrain may be necessary.

Great River Energy will employ standard construction and mitigation practices as well as industry specific BMPs. BMPs address ROW clearing, erecting transmission line structures, and stringing transmission lines. BMPs for each specific project are based on the proposed schedules for activities, prohibitions, maintenance guidelines, inspection procedures, and other practices. In some cases, these activities, such as schedules, are modified to incorporate BMP installation that will assist in minimizing impacts to sensitive environments. Any contractors involved in construction of the transmission line will adhere to these BMP requirements.

The majority of the proposed structures will be directly imbedded steel poles, which will be installed by augering a hole typically 10 to 20 feet deep and three to five feet in diameter for each pole. Any excess soil from the excavation will be spread and leveled near the structure in uplands or removed from the site if requested by the property owner or regulatory agency. Concrete foundations may be required for large angles or for longer spans such as interstate highway crossings, and the steel structure will be mounted on top. The foundations are typically five to eight feet in diameter and 15 to 45 feet deep with one foot exposed above the existing ground level. Concrete trucks will be used to bring the concrete in from a local concrete batch plant.

After a direct embedded pole is set into the hole, the void space will be backfilled with crushed rock. Based on typical soil types in Minnesota, it is anticipated that poles 60 to 95 feet above ground poles will be buried approximately 12 to 17 feet into the ground. In poor soil conditions (e.g., peat, marl, soft clay, loose sand) a galvanized steel culvert is sometimes installed vertically with the structure set inside.

The new structures will generally be installed five to ten feet from the existing structures. After a number of proposed structures have been erected, Great River Energy will begin to install the shield wire and conductors by establishing stringing setup areas within the permanent ROW or temporary ROW as negotiated with the landowner. These stringing setup areas will be located at deadend structures along the Proposed Route and occupy approximately 15,000 square feet for linear segments of the line and approximately 30,000 square feet for angled segment of the line. The existing transmission lines will be moved from the existing structures to the new structures. The existing lines will then be used to pull the new conductor through the new structures. Temporary guard or clearance structures will be installed, as needed, over existing distribution or communication lines, streets, roads, highways, railways, or other obstructions after any necessary notifications are made or permits obtained. This will ensure that conductors will not obstruct traffic or contact existing energized conductors or other cables. In addition, the conductors will be protected from damage.

All construction will be completed in accordance with state, NESC, and Great River Energy construction standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, erection of power poles, and stringing of transmission line conductors.

6.2.2 Substation Construction

All of the construction activities at the Burnsville Substation will take place on the existing land owned by Great River Energy. Work activities related to existing age and condition issues are allowed under Minn. R 7850.1500 Subp. 1.A. The line will continue to operate at 69 kV until electric demand or load growth justifies the need to operate it at 115 kV, at which time, the DA-BR termination at the substation will be moved from the east side to the west side of the substation.

6.3 Restoration Procedures

Disturbed areas will be restored to their original condition to the maximum extent practicable, or as negotiated with the landowner.

Post-construction reclamation activities will include removing and disposing of debris, removing all temporary facilities (including staging and laydown areas), employing appropriate erosion control measures, reseeding areas disturbed by construction activities with vegetation similar to that which was removed with a seed mixture certified as free of noxious or invasive weeds, and restoring the areas to their original condition to the extent possible. In cases where soil compaction has occurred, the construction crew or a restoration contractor uses various methods to alleviate the compaction, or as negotiated with landowners.

Great River Energy will contact landowners after construction is complete to determine if the clean-up measures have been to their satisfaction and if any other damage may have occurred. If damage has occurred to crops, fences, or the property, Great River Energy will compensate the landowner. In some cases, an outside contractor may be hired to restore the damaged property as near as possible to its original condition.

6.4 Construction Work Force Required

Great River Energy anticipates 15 to 25 daily contract workers will be employed during construction of the Project. Great River Energy will also have a construction supervisor onsite throughout the construction phase.

Great River Energy has a buy local policy that states, “preference shall be given to local suppliers. Local suppliers are those suppliers or contractors who are physically located in Great River Energy’s service territory (Minnesota / Wisconsin) and/or in states where Great River Energy has a physical location (North Dakota). Great River Energy’s operating guideline, in order of importance, is to buy Local → Domestic → Eligible Countries. Sources from non-eligible countries will be considered in extreme circumstances or as a last resort.”

Great River Energy typically hires contractors who pay their employees at or better than prevailing wages.

6.5 Operation and Maintenance

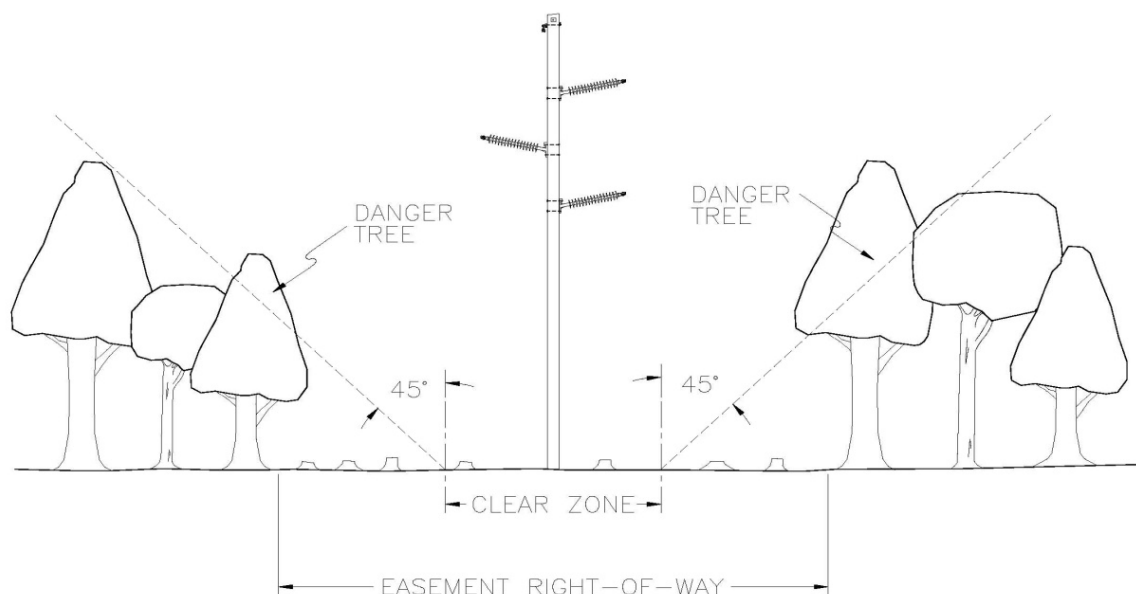
Access to the ROW of a completed transmission line is required to perform periodic inspections, conduct maintenance, and repair damage. Regular maintenance and inspections will be performed during the life of the transmission line to ensure its continued integrity. Generally, Great River Energy will inspect the condition of the transmission line and structures once per year. Inspections will be limited to the ROW and to areas where off-ROW access is required due to ROW obstructions or terrain impediments. If problems are found during inspection, repairs will be performed, and property restoration will occur, or the landowner will be provided reasonable compensation for any damage to the property.

The ROW will be managed to remove vegetation that interferes with the operation and maintenance of the transmission line. Shrubs that will not interfere with the safe operation or accessing and traversing the ROW of the transmission line will be allowed to reestablish in the ROW. Great River Energy will use an integrated vegetation management plan that incorporates a wire / border zone practice for ROW clearing and maintenance. As a general practice, low-growing brush, or tree species will be allowable at the outer limits (e.g., the “border zone”) of the easement

area. Taller tree species that endanger the safe and reliable operation of the transmission facility will be removed. In developed areas and to the extent practical, existing low-growing vegetation that will not pose a threat to the transmission facility or impede construction or maintenance may remain in the border zone, as agreed to during easement negotiations. The area below the outer conductors plus 10 to 15 feet (e.g., the “wire zone” or “clear zone”) will be cleared of all shrubs and trees to ensure maintenance trucks can access the line and no vegetation interferes with the safe operation of the transmission line.

The NESC states that “vegetation that may damage ungrounded supply conductors should be pruned or removed.” Trees beyond the easement area that are in danger of falling into the energized transmission line, could grow into the wire zone or are otherwise deemed to be a hazard to the safe operation of the line (e.g., “danger trees”) may be removed or trimmed to eliminate the hazard as shown in **Diagram 6-1**, if allowed by the terms in the easement. Danger trees generally are those that are dead, diseased, weak, or leaning towards the energized conductors. Tree trimming may be possible to minimize tree removal based on negotiations with individual landowners.

Diagram 6-1. Standard Tree Removal Practices during Transmission Line Operations



Great River Energy’s practice generally provides for the inspection of 115-kV transmission lines every two years to determine if clearing is required. ROW clearing practices will include a combination of mechanical and hand clearing, along with herbicide application (where allowed), to remove or control vegetation growth.

7 ENVIRONMENTAL ANALYSIS

This portion of the Application provides a description of the human and environmental resources in the Project area, potential impacts to these resources, and any proposed mitigative measures. The Project area is defined as the general area within an approximate 2-mile radius of the Project, unless otherwise defined in the following subsections.

7.1 Environmental Setting

The Project lies in the southwest portion of the St. Paul-Baldwin and Moraines Subsection of the Minnesota & NE Iowa Morainal Section of the Eastern Broadleaf Forest Province, according to the MDNR Ecological Classification System. The MDNR describes the St. Paul-Baldwin and Moraines Subsection as:

The northern boundary of this subsection consists of a Superior Lobe end moraine complex (St. Croix Moraine). To the west, terraces associated with the Mississippi River separate the subsection from the Anoka Sand Plain subsection. The southern boundary coincides with the southern edge of the Rosemount Outwash Plain. The subsection encompasses part of the seven county metropolitan area and as a result is affected by urban development. Topography is lower in comparison to other areas in the state, and is dominated by a large moraine and areas of outwash plain. Soils in this subsection are primarily Alfisols (soils formed under forested vegetation) with areas of Mollisols (soils formed under prairie vegetation) present on the outwash plains. Oak and aspen savanna were the primary communities, but areas of tallgrass prairie and maple-basswood forest were common. Presently, urban development is the primary land use.⁸

The environmental setting of the Project area primarily consists of urban development with isolated pockets of forested areas and hydrologic features, such as wetlands, ponds, and lakes associated with city parks or stormwater management.

There are existing transmission lines within the Project area, including the existing Great River Energy 69-kV system, and Xcel Energy's 115-kV and two 345-kV transmission lines that extend east from the Black Dog Electric Generating Facility on the Minnesota River. Northern Natural Gas and CenterPoint Energy also maintain natural gas transmission and distribution pipelines in the Project area (**Figure 5-1**). There are also many state and county highways, and local city roads throughout the Project area (**Section 7.2.7**).

⁸ MDNR. Undated. Ecological Classification System: Eastern Broadleaf Forest Province– Minnesota & NE Iowa Morainal Section – St. Paul-Baldwin and Moraines Subsection. <https://www.dnr.state.mn.us/ecs/222Md/index.html>. Accessed September 19, 2023.

The landscape and characteristics of the Project area are further described in the following subsections and are depicted in **Figures 7-1** through **7-7**. The characteristics of the Project area are typical of the surrounding areas and does not preclude development of this Project.

7.2 Human Settlement

7.2.1 Aesthetics

The Project will replace the existing 69-kV infrastructure with 115-kV infrastructure within the same Great River Energy transmission line ROW, with two minor realignments near the intersection of Blackhawk Road and I-35E and near the Burnsville Substation. The existing structure heights range between 55 to 80 feet above ground and will be replaced with structures from 60 to 95 feet tall; the 69-kV poles will be removed. Some tree clearing and trimming will be necessary within Great River Energy's 70-foot-wide ROW.

Within the City of Eagan, the Proposed Route is located primarily within planned development and residential areas along Pilot Knob Road / CSAH 31 and Deerwood Drive. Along Blackhawk Road and Cliff Road / Cliff Road E / CSAH 32, there are also commercial and residential uses, Carnelian Park, additional planned developments, and public facilities. Similarly, the Proposed Route within the City of Burnsville occurs within residential areas with some businesses (**Section 7.2.5**). Along CSAH 11, the route is adjacent to Terrace Oaks Park West, which is maintained by the City of Burnsville (**Section 7.4.5**). Approximately 770 feet of the line along CSAH 11, from the north side of I-35E to the I-35E entry/exit ramps south of the interstate, is located in the City of Apple Valley.

The Project will continue to be visible along the roadways and will appear similar to the existing 69-kV system. The visual effect will depend largely on the perceptions of the observers across these landscapes but will remain similar to current conditions. Although the area already has existing transmission lines in the viewshed, the visual contrast added by the taller transmission structures and lines and associated tree clearing/trimming may be perceived as a visual disruption.

Impacts and Mitigation

Because the Project will use existing Great River Energy transmission line ROW and will parallel existing road ROW (**Section 3.1.2**), aesthetic impacts are anticipated to be minimal. The new transmission line structures will be 5 to 15 feet taller with larger insulators, which might increase the visual impacts perceived by a viewer.

Where trees need to be cleared, this change to the landscape is typically a noticeable visual impact to receptors. The Proposed Alignment was developed in part to minimize the amount of tree clearing, which helps to minimize visual impacts.

Great River Energy will work with landowners to identify concerns related to the transmission line and aesthetics. In general, mitigation includes enhancing positive effects as well as minimizing or eliminating negative effects. 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.

7.2.2 Displacement

No displacement of residential homes, structures, or businesses will occur as a result of this 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 (**Table 4.1-2**). The Proposed Route provides sufficient design flexibility and distances from existing homes and structures for a transmission line design that achieves the requisite clearances.

Table 7.2-1 summarizes the residential and non-residential buildings at various distances to the Proposed Alignment for the Project. Great River Energy does not anticipate placing the new line closer to homes and building than currently exists with the 69-kV line.

Table 7.2-1. Building Distances from Proposed Alignment

Building Type	0-50 feet	50-100 feet	100-150 feet	150-200 feet	Total
Home	15	51	70	9	145
Business	5	9	14	6	34
Outbuilding	2	7	8	44	61
Total	22	67	92	59	240

Impacts and Mitigation

No residences or businesses are anticipated to be displaced by the Project. The Project will be designed in compliance with local, state, NESC, and Great River Energy standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings (including residences), strength of materials, and ROW widths.

Great River Energy will work with landowners to address alignment adjustments or pole placement, as necessary.

7.2.3 Noise

There will be temporary noise associated with the construction phase of the Project, and from operation of the Project.

Because human hearing is not equally sensitive to all frequencies of sound, the most noticeable frequencies of sound are given more “weight” in most measurement schemes. The A-weighted scale corresponds to the sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA, which is the A-weighted sound level recorded in units of decibels.

A noise level change of 3 dBA is considered the lowest perceptible level of change to human hearing. A 5 dBA change in noise level is considered clearly noticeable. A 10 dBA change in noise level is perceived as a doubling of noise loudness, while a 20 dBA change is considered a dramatic change in loudness. **Table 7.2-2** shows noise levels associated with common, everyday sources.

Table 7.2-2. Common Noise Sources and Levels

Sound Pressure Level (dBA)	Noise Source
110	Rock band at 5 meters
100	Jet flyover at 300 meters
90	Gas lawnmower at 1 meter
80	Food blender at 1 meter
70	Vacuum cleaner at 3 meters
60	Normal speech at 1 meter
50	Dishwasher next room, quiet urban daytime
40	Library, quiet urban nighttime
30	Bedroom at night
20	Quiet rural nighttime
10	Broadcast recording studio
0	Threshold of hearing
Source: Minnesota Pollution Control Agency. 2015. A Guide to Noise Control in Minnesota. Available online at: https://www.pca.state.mn.us/sites/default/files/p-gen6-01.pdf .	

Established daytime and nighttime noise standards per Minn. R. 7030.0040 by Noise Area Classifications (NAC) are provided in **Table 7.2-3**. The standards are expressed as limiting levels of dBA within a one-hour period; L_{50} is the dBA not to be exceeded over 50 percent of the time (30 minutes) within an hour, while L_{10} is not to be exceeded over 10 percent of the time (6 minutes) within the hour.

Table 7.2-3. MPCA Noise Limits by Noise Area Classification (dBA)⁹

Applicable Noise Area Classification	Description	Daytime (7a – 10p)		Nighttime (10p – 7a)	
		L ₅₀	L ₁₀	L ₅₀	L ₁₀
1	Residential-type Land Use Activities	60	65	50	55
2	Commercial-type Land Use Activities	65	70	65	70
3	Industrial-type Land Use Activities	75	80	75	80

Land areas are assigned an NAC based on the land use activities at the location of the receiver and determine the noise standards applicable to that land use activity. The NAC is listed in the MPCA noise regulations to distinguish the categories. Residential areas, churches, educational and health services, and similar type land use activities are included in NAC 1; commercial-type land use activities are included in NAC 2; and industrial-type land use activities are included in NAC 3.

Receptors along the Proposed Route include residences, businesses, and churches.

Noise Related to Transmission Line and Substation Construction

Construction noise is generally expected to occur during daytime hours as the result of heavy equipment operation and increased vehicle traffic associated with the transport of construction personnel and materials to and from the work area. Construction activities will be performed with standard heavy equipment such as backhoes, cranes, boom trucks, and assorted small vehicles. Construction equipment noise levels will typically be less than 85 dBA at 50 feet when equipment is operating at full load¹⁰ and will only occur when equipment is operating. Upon completion of construction activities, noise associated with construction equipment will cease.

Noise Related to Substation Operation

The upgrades at the Burnsville Substation are needed to connect the Project to the substation when it will be operated at 115 kV. Great River Energy is proposing to expand the existing substation footprint by approximately 0.06 acre that will include the removal of existing bus work, and installation of new bus work, breakers, and control equipment and the 115-kV ROW that will enter/exit the substation. A typical 115-kV transformer will result in noise levels of about 50 dBA at a distance of approximately 50 feet from the transformer. No perceptible change in noise levels is expected at the Burnsville Substation due to these upgrades.

Noise Related to Transmission Line Operation

Operational noise levels produced by a 115-kV transmission line are generally less than outdoor background levels and are therefore not usually perceivable. As such, noticeable operational noise impacts are not anticipated as a result of the Project. Further, proper design and construction of the

⁹ This table identifies the classifications potentially relevant to this Project. See Minn. R. 7030.0050 for the complete text of the rule.

¹⁰ United States Federal Highway Administration, 2006. FHWA highway construction noise handbook. No. DOT-VNTSC-FHWA-06-02; FHWA-HEP-06-015.
https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook00.cfm.

transmission line in accordance with industry standards will help to ensure that noise impacts do not exceed applicable limits.

Transmission lines can generate a small amount of sound energy during corona activity where a small electrical discharge caused by the localized electric fields (EF) near energized components and conductors ionizes the surrounding air molecules. Corona is the physical manifestation of energy loss and can transform discharge energy into very small amounts of sound, radio noise, heat, and chemical reactions of the air components. Several factors, including conductor voltage, shape and diameter, and surface irregularities such as scratches, nicks, dust, or water drops can affect a conductor's electrical surface gradient and its corona performance.

Noise emissions from a transmission line occur during certain weather conditions. In foggy, damp, or rainy weather, power lines can create a crackling sound due to the small amount of electricity ionizing the moist air near the wires. During heavy rain, the background noise level of the rain is usually greater than the noise from the transmission line. As a result, people do not normally hear noise from a transmission line during heavy rain.

The industry standard for utilities is calculated based on L₅₀ and L₅ for audible noise emissions. The worst-case scenario is when the transmission line is exposed to heavy rain conditions (i.e., one inch per hour). Anticipated noise levels for heavy rain conditions for a typical 115-kV line based on the results from the Bonneville Power Administration Corona and Field Effects Analysis (version 3)¹¹ are listed in **Table 7.2-4**.

Table 7.2-4. Anticipated Transmission Line Noise Levels with Heavy Rain

L ₅	L ₅₀	Location
17.7 dBA	14.2 dBA	edge of ROW
18.8 dBA	15.3 dBA	directly under line

Impacts and Mitigation

Noise associated with construction of the Project will be temporary in nature. To mitigate noise impacts associated with construction activities, work will generally be limited to daytime hours between 7 a.m. and 9 p.m. weekdays. Occasionally, there may be construction outside of those hours or on a weekend if Great River Energy has to work around customer schedules, line outages, or if the schedule has been significantly impacted due to delays or other factors. Great River Energy will work with applicable stakeholders in the event construction becomes necessary outside of these hours. Heavy equipment will also be equipped, as required by local ordinances, with sound attenuation devices such as mufflers to minimize the daytime noise levels.

Operational noise levels are expected to be well below the state noise limits; therefore, the Project is not anticipated to contribute to an exceedance of noise standards, and no mitigation is proposed.

¹¹ Bonneville Power Administration. Undated. Corona and Field Effects Analysis. <https://www.bpa.gov/about/who-we-are/freedom-of-information-act/frequently-requested-information>.

7.2.4 Socioeconomics & Environmental Justice

The socioeconomic setting of the Project area was evaluated on a regional basis, comparing data for the State of Minnesota, Dakota County, City of Eagan, City of Burnsville, and City of Apple Valley. Data compiled from the U.S. Census Bureau QuickFacts are summarized in **Table 7.2-5**.

Table 7.2-5. Socioeconomic Characteristics within the Project area¹²

Location	2020 Population	Percent White Alone Population	Median Income (2017-2021)	Percent Below Poverty Level	Percent Language Other than English Spoken at Home (2017-2021)
State of Minnesota	5,706,494	82.5	\$77,706	9.6	12.0
Dakota County	439,882	81.5	\$93,892	5.0	13.0
City of Eagan	68,855	75.0	\$98,503	5.8	17.5
City of Burnsville	64,317	68.8	\$79,059	6.9	19.8
City of Apple Valley	56,374	74.0	\$91,936	4.7	16.2

An environmental justice analysis for the Project was completed using the methodology in Minn. Stat. 216B.1691, subd. I(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.”¹³

Census tracts that intersect with the Proposed Alignment and associated 70-foot-wide ROW were analyzed for environmental justice areas consistent with this statute. Census tracts are the best approximation of a geographic area where adverse impacts can occur from the Project. Census tracts are shown in **Figure 7-1**. Dakota County was used as a reference population for the census tracts.

Great River Energy utilized MPCA’s “Understanding Environmental Justice in Minnesota” web-based mapping tool by drawing Project Alignment into the mapping tool to determine whether the

¹² U.S. Census QuickFacts, downloaded September 15, 2023: <https://data.census.gov/>.

¹³ Although this statute does not prescribe requirements for a route permit application, Great River Energy employs this methodology here consistent with the methodology used by DOC-EERA in a recently issued EA. See Docket No. ET2/22-235.

Project intersects any census tracts with environmental justice populations based on the definitions above. It is important to note that MPCA’s web-based tool accounts for a margin of error in determining environmental justice areas of concern.

Based on the data provided in MPCA’s web-based mapping tool, nine census tracts that intersect with the Proposed Alignment and associated ROW are considered environmental justice communities under the definition provided in Minn. Stat. 216B.1691, subd. 1(e). These census tracts are identified in **Table 7.2-6**.

Table 7.2-6. Environmental Justice Communities per Minn. Stat. 216B.1691, subd. 1(e) Criteria¹⁴

Census Tract	City	Percent People of Color	Percent Below 200 Percent of Poverty Level	Percent Limited-English Speaking Population (2017-2021)
Census Tract 607.16	Eagan	39.7 (+/- 14.0)	13.0	11.4
Census Tract 607.29	Eagan	19.2	4.4	4.6
Census Tract 607.31	Eagan	13.3	4.4	1.6
Census Tract 607.33	Eagan	28.1	13.2	5.5
Census Tract 607.35	Eagan	30.7	37.2 (+/- 15.3)	7.4
Census Tract 607.43	Eagan	52.7 (+/- 10.2)	17.8 (+/- 28.2)	11.3
Census Tract 607.50	Eagan	28.6	28.3 (+/- 11.7)	6.7
Census Tract 607.38	Burnsville	36.1 (+/- 13.5)	18.6 (+/- 21.0)	12.6
Census Tract 607.47	Burnsville	41.1 (+/- 12.2)	19.6 (+/- 18.12)	8.3
Census Tract 607.14	Burnsville	32.4 (+/- 8.9)	25.2 (+/- 12.1)	8.5
Census Tract 607.54	Burnsville	40.0 (+/- 11.8)	10.2	4.4
Census Tract 608.06	Apple Valley	31.6 (+/- 11.3)	10.1	2.1
Notes: Margin of error included only when the addition of the margin of error indicated a census tract was considered an environmental justice community per Minn. Stat. 216B.1691, subd. 1(e). Environmental justice communities are indicated in bold type and grey shading.				

The Project does not cross any areas located within “Indian country,” as defined in 18 United States Code 1151. As presented in **Table 7.2-6**, nine census tracts crossed by the Proposed Alignment and associated ROW are considered environmental justice communities under the definition provided in Minn. Stat. 216B.1691, subd. 1(e), which includes the margin of error. Census Tracts 607.16, 607.43, 607.38, 607.47, 607.14, 607.54 and 608.06 exceed the threshold of 40 percent or more of a non-white population. Census Tracts 607.35, 607.43, 607.50, 607.38, 607.47 and 607.14 exceed the threshold of 35 percent or more with an income that is at or below 200 percent of the federal poverty level. Census Tracts 607.43, 607.38, 607.47 and 607.14 exceed the thresholds of both 40 percent or more of a non-white population and 35 percent or more with an income that is at or below 200 percent of the federal poverty level.

In addition, Great River Energy also conducted this environmental justice analysis in accordance with the U.S. Environmental Protection Agency (USEPA) Federal Interagency Working Group on

¹⁴ MPCA, 2023. Understanding environmental justice in Minnesota. Available at: <https://mpca.maps.arcgis.com/apps/MapSeries/index.html?appid=f5bf57c8dac24404b7f8ef1717f57d00>.

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. The USEPA recommends that screening tools, such as EJScreen, be used for a “screening-level” look and a useful first step in understanding or highlighting locations that may require further review. EJScreen was used to evaluate the Proposed Route plus a 0.25-mile buffer. Using EJScreen, the communities in Proposed Route are estimated to have 32 percent people of color and 23 percent low income.

According to Promising Practices, minority populations are those groups that include American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Following the recommendations set forth in Promising Practices, the 50 percent and the meaningfully greater analysis methods was used to identify minority populations. Using this methodology, minority populations are defined where either (a) the aggregate minority population of the block groups in the affected area exceeds 50 percent; or (b) the aggregate minority population in the block group affected is 10 percent higher than the aggregate minority population percentage in the county. The guidance also directs low-income populations to be identified based on the annual statistical poverty thresholds from the U.S. Census Bureau. Using Promising Practices’ low-income threshold criteria method, low-income populations are identified as block groups where the percent of low-income population in the identified block group is equal to or greater than that of the county. Dakota County is the comparable reference community to ensure that all affected environmental justice communities are properly identified.

Table 7.2-7 identifies the minority populations by race and ethnicity and low-income populations within the State of Minnesota, Dakota County, and 18 U.S. Census block groups crossed by the Proposed Alignment and associated ROW. 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 7.2-7. Minority and Low-Income Populations within the Project area (USEPA methodology)

State/County/Census Block Group	% Total Minority ^a	% Below Poverty Level
State of Minnesota	21.7	9.2
Dakota County	23.6	6.1
Census Tract 607.14, Block Group 1	31.1	0.0
Census Tract 607.14, Block Group 2	31.1	16.5
Census Tract 607.14, Block Group 3	36.6	6.3
Census Tract 607.16, Block Group 2	27.4	2.8
Census Tract 607.29, Block Group 1	12.1	3.4
Census Tract 607.29, Block Group 2	19.9	0.0
Census Tract 607.31, Block Group 2	6.9	2.4
Census Tract 607.33, Block Group 1	23.8	11.1
Census Tract 607.35, Block Group 1	43.3	25.5
Census Tract 607.35, Block Group 3	7.5	5.3

State/County/Census Block Group	% Total Minority ^a	% Below Poverty Level
Census Tract 607.35, Block Group 4	34.0	0.0
Census Tract 607.38, Block Group 1	33.8	4.5
Census Tract 607.43, Block Group 1	52.7	2.3
Census Tract 607.47, Block Group 2	38.6	3.2
Census Tract 607.50, Block Group 2	10.9	20.7
Census Tract 607.50, Block Group 3	42.6	5.7
Census Tract 607.54, Block Group 3	39.1	2.7
Census Tract 608.06, Block Group 1	34.1	0.0
^a “Minority” refers to people who reported their ethnicity and race as something other than non-Hispanic White Note: Environmental justice communities are indicated in red, bold type and grey shading.		

As presented in **Table 7.2-7**, 13 block groups crossed by the Proposed Alignment and associated ROW are considered environmental justice communities using the USEPA methodology. Eleven block groups out of 18 block groups crossed by the Proposed Route are considered minority environmental justice communities. Five block groups out of 18 block groups crossed by the Proposed Alignment are considered low-income environmental justice communities.

Impacts and Mitigation

During construction, traffic delays could impact environmental justice communities. Construction operations will be conducted to offer the least possible obstruction and inconvenience to the traveling public. Traffic impacts to environmental justice communities would be less than significant (**Section 7.2.7**). Noise impacts associated with the Project will be temporary in nature and construction activities will generally be limited to daytime hours between 7 a.m. and 9 p.m. weekdays (**Section 7.2.3**). Air quality impacts during construction are also anticipated to be minimal and temporary; no impacts to air quality are anticipated due to the operation of the Project (**Section 7.3.5**). During construction, there may also be short-term positive impacts to the nearby communities. Potential increases in local revenue may occur for businesses, such as hotels, grocery stores, gas stations, and restaurants to support utility personnel and contractors.

Minor visual impacts to environmental justice communities will occur with increased height of the poles and some tree clearing and trimming. These changes are consistent with the current viewshed and less than significant impacts to visual resources are anticipated. 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.

Because impacts to socioeconomics will be generally short-term and beneficial, no mitigation is proposed.

7.2.5 Zoning and Land Use Compatibility

The Project area consists of planned development and residential areas, with pockets of businesses, public facilities, and city parks. Land cover along the Proposed Route is primarily developed and urban (**Figure 7-2**).¹⁵

Zoning information for the Proposed Route is shown in **Figure 7-3**. The Proposed Route traverses the following zoned areas:

- City of Eagan¹⁶ – The Proposed Route primarily crosses areas zoned for Planned Development (PD) and Residential Areas (single family [R-1], small lot single family [R1-S], double [R-2], residential townhouse [R-3], and multiple [R-4]) with pockets of Public Facilities (PF), Parks (P), Neighborhood Business (NB), Agriculture (A), and Community Shopping Center (CSC).
- City of Burnsville¹⁷ – The Proposed Route primarily crosses areas zoned for Residential Areas (single family [R1], two family [R2], and medium density [R3A]) with pockets of Mixed Use (MIX), Neighborhood Business (B2), General Business (B3), Office & Industrial Park (I3), and Conservancy (CD).
- City of Apple Valley¹⁸ – The approximately 770-foot portion of the Proposed Route that occurs in the City of Apple Valley is largely within County and MnDOT road ROWs, and adjacent to residential (single family 11,000 sq. feet [R-3]) zoned areas.

The Proposed Route also crosses the Shoreland District Boundaries of Thomas and East Thomas Lake and Cliff Lake within the City of Eagan. Per the City Zoning Ordinances, essential public services (e.g., electric transmission utilities) are allowable within these zones, including the shoreland district boundaries, with a conditional use permit.^{19,20,21,22}

¹⁵ U.S. Geological Survey Gap Analysis Program. 2016. GAP/LANDFIRE National Terrestrial Ecosystems 2011, Version 3. <http://gapanalysis.usgs.gov/gaplandcover>. Accessed September 20, 2023.

¹⁶ City of Eagan. 2022. Zoning Map of the City of Eagan. <https://cityofeagan.com/maps>. Accessed September 14, 2023.

¹⁷ City of Burnsville. 2023. City of Burnsville Zoning Information. <https://www.burnsvillemn.gov/DocumentCenter/View/22622/ZoningMap>. Accessed September 18, 2023.

¹⁸ City of Apple Valley. 2022. Zoning Map. https://www.ci.apple-valley.mn.us/DocumentCenter/View/377/Zoning_Map?bidId=. Accessed September 18, 2023.

¹⁹ City of Eagan. 2023. Code of Ordinances. https://library.municode.com/mn/eagan/codes/code_of_ordinances. Accessed September 18, 2023.

²⁰ City of Burnsville. Undated. Municipal Code – Title 10 Zoning. https://burnsville.municipalcodeonline.com/book?type=ordinances#name=TITLE_10_ZONING. Accessed September 18, 2023.

²¹ City of Apple Valley. 2022. Code of Ordinances. https://codelibrary.amlegal.com/codes/applevalley/latest/applevalley_mn/0-0-0-17753. Accessed September 18, 2023.

²² Nonetheless, a Commission route permit preempts local zoning approvals. Minn. Stat. § 216E.10, subd. 1.

Impacts and Mitigation

Impacts to land use as a result of the Project are expected to be minimal, and the Project will not change land uses or zoning designations, particularly given that the Project will be located with existing utility and road ROW. Short-term impacts to adjacent residential areas might occur during construction, which will be mitigated through restoration and compensatory payments (Section 6.1).

7.2.6 Cultural Values

Cultural values include those perceived community beliefs or attitudes in a given area, which provide a framework for community unity.

The Cities of Eagan, Burnsville and Apple Valley are the ancestral home to the Mdewankanton band of the Dakota. Specifically, the Black Dog Native American village, named for Chief Black Dog, was located on the shores of the Minnesota River on the northern portions of the present-day Cities of Eagan and Burnsville. This community is believed to have moved to this area from the Mille Lacs area around 1750.²³ In 1851, U.S. President Filmore appointed a commission to negotiate with the Dakota, resulting in the Treaty of Traverse des Sioux, which was ratified in February 1853. This treaty ceded to the U.S. the land west of the Mississippi to the Red River, except for reservations set aside for the Dakota on the upper Minnesota River.²⁴

City of Eagan

The town of Eagan was established in 1860 by primarily European and Canadian farmers. The area was known as the Onion Capital of the U.S. between 1840 and 1930. Today, residents work primarily for major corporations, in the technology and health care industries, and retail and service jobs.

The City of Eagan currently has a population of approximately 70,000 people in an area of 33.5 square miles. The City hosts several community events throughout the year including the historic Holz Farm, Winter Art Sale, Big Rig Rally, Bow Wow-a-Rama, Food Truck Festival, and Halloween Trail Walk. The Minnesota Valley National Wildlife Refuge and Recreation Area is located along the northern City limits. There are several parks, trails, fishing ponds/lakes, and sports fields/centers throughout the City. In 2022, the City of Eagan launched a sustainability initiative which will work to help the community to adapt to the changing climate, in addition to promoting native vegetation, water conservation, management of invasive species, amongst other programs.²⁵

²³ Dakota County Historical Society. Undated. Black Dog Village. <https://www.dakotahistory.org/historical-sites/76-black-dog-village>. Accessed September 18, 2023.

²⁴ Dakota County Historical Society. 1990. The Transformation of a Dakota County Community: Lebanon Township to Apple Valley – An Agrarian Township Becomes a Residential Success. Volume 30 Number 1, December 1990. <https://www.ci.apple-valley.mn.us/DocumentCenter/View/429/OverTheYears?bidId=>. Accessed September 18, 2023.

²⁵ City of Eagan. Undated. About Eagan. <https://cityofeagan.com/about-eagan>. Accessed September 18, 2023.

City of Burnsville

On May 11, 1858, “Byrnesville” was organized as a township, named for its first Irish settlers. It was later incorporated as a village in 1964 and as the City of Burnsville in 1974. Similar to the City of Eagan, this area was primarily farmed in its early days.²⁶

The City of Burnsville is currently home to 64,000 residents and 2,700 businesses. Top attractions within the City of Burnsville include Crystal Beach, Buck Hill Recreation Area, Ames Center, Burnsville Center Mall, Birnamwood Golf Course, Burnsville Ice Center, and the Burnsville Bicentennial Garden, amongst many others. The City hosts more than 1,750 acres of parks supporting both active and natural area uses. The City also hosts a Sustainability Hub, which displays the City’s progress on sustainability initiatives and provides resources to residences and businesses.²⁷

City of Apple Valley

Apple Valley was known as Lebanon Township in the mid-1800s and was believed to have been settled by people from the U.S. east coast. The town’s population remained relatively low (585 people in 1960) until a Planning Commission was established in 1962. Orrin Thomspon began building residential neighborhoods and had an apple tree planted at each home in some of the new developments.²⁸

There are currently more than 50,000 residents located within approximately 17.5 square miles. Apple Valley has over 1,578 acres in parks, recreation areas and preserves, and hosts several annual community events including Freedom Days, Mid-Winter Fest, Fall Clean-up Day, Night to Unite and Music in Kelley Park.^{29,30} The Minnesota Zoo is located within the City of Apple Valley, in addition to Lebanon Hills Regional Park and Valleywood Golf Course.

Impacts and Mitigation

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

²⁶ Dakota County Historical Society. Undated. Highlights from Burnsville History and map of historic sites. Prepared by W.G. Wolston. 12-0606. <https://burnsvillehistory.org/highlights2005/flowzine/>. Accessed September 18, 2023.

²⁷ City of Burnsville. Undated. Sustainability. <https://www.burnsvillemn.gov/842/Sustainability>. Accessed September 18, 2023.

²⁸ City of Apple Valley. Undated. History of Apple Valley. <https://www.ci.apple-valley.mn.us/151/History-of-Apple-Valley>. Accessed September 18, 2023.

²⁹ Metropolitan Council. 2022. Community Profile for Apple Valley. <https://stats.metc.state.mn.us/profile/detail.aspx?c=02393967>. Accessed September 18, 2023.

³⁰ City of Apple Valley. Undated. Annual Events. <https://www.ci.apple-valley.mn.us/286/Annual-Events>. Accessed September 18, 2023.

7.2.7 Public Services and Transportation

The Project is located in developed, residential areas. Private landowners in the Project area primarily utilize services provided by the Cities of Eagan, Burnsville, and Apple Valley, including water, sewage, and waste collection. The residents also have access to other utility services by various providers, including telephone, electricity, natural gas, cable and satellite television, and internet. Additional services include fire, ambulance, police, street maintenance, public transportation, parks and recreation, and public libraries.

There are existing transmission lines within the Project area, including the existing Great River Energy 69-kV system, and Xcel Energy's 115-kV 0836, 345-kV 0989, and 345-kV 0976 that extend east from the Black Dog Electric Generating Facility on the Minnesota River. Northern Natural Gas maintains two transmission pipelines that intersect the Project area, and CenterPoint Energy also maintains distribution pipelines within the Project area (**Figure 5-1**).

Dakota Electric Association has existing overhead distribution lines on portions of the existing 69-kV structures. Where this occurs, it is Great River Energy's understanding that Dakota Electric Association will attach the distribution lines as under-build to the Project's new structures. Other existing utilities, such as gas/oil pipelines and electric distribution lines, and site improvements, such as septic systems and wells, will be identified during survey activities.

The Minneapolis-St. Paul International Airport is located approximately 3.8 miles north of the Proposed Route within Hennepin County. There is also a seaplane base on Crystal Lake located approximately 2.5 miles to the southwest in the City of Apple Valley.

The Proposed Alignment will parallel and/or intersect with several city, county, and state-managed roads and highways as described in **Table 7.2-8** and shown in the maps in **Appendix A**.

Table 7.2-8. Highways or Roads Crossed or Parallel to the Proposed Alignment

Highway / Road Name	Jurisdiction ³¹	Parallel / Intersects	Traffic Volumes (SEQ # / Year) ³²
Pilot Knob Road / County State Aid Highway (CSAH) 31	Dakota County	Parallel	19,755 (40295/2021) 21,143 (40294 / 2021)
Amaryllis Lane	City of Eagan	Intersect	
Sigfrid Street	City of Eagan	Intersect	
Diffley Road / CSAH 30	Dakota County	Intersect	12,326 (40293 / 2022) 19,231 (40302 / 2022)
Berry Ridge Road	City of Eagan	Intersect	
Chatterton Road	City of Eagan	Intersect	
Deerwood Drive	City of Eagan	Parallel	5,379 (35764 / 2022) 3,654 (35765 / 2022)
Deerwood Trail	City of Eagan	Intersect	

³¹ Dakota County. 2023. Dakota County Minnesota Highway Map 2023.

<https://www.co.dakota.mn.us/HomeProperty/MappingServices/Maps/Documents/2023HighwayMap.pdf>. Accessed September 13, 2023.

³² MnDOT. Undated. Traffic Mapping Application.

<https://mndot.maps.arcgis.com/apps/webappviewer/index.html?id=7b3be07daed84e7fa170a91059ce63bb>. Accessed September 13, 2023.

Highway / Road Name	Jurisdiction ³¹	Parallel / Intersects	Traffic Volumes (SEQ # / Year) ³²
Oakbrooke Terrace	City of Eagan	Intersect	
Johnny Cake Ridge Road	City of Eagan	Intersect	3,950 (61518 / 2019)
Skywood Lane	City of Eagan	Intersect	
I-35E	MnDOT	Intersect	83,334 (9854 / 2021) 65,413 (10646 / 2022)
Blackhawk Road	City of Eagan	Parallel / Intersect	6,500 (9908 / 2019) 9,000 (35766 / 2019) 6,944 (35737 / 2022) 6,013 (35736 / 2022)
Taconite Trail	City of Eagan	Intersect	
E Bluestone Drive	City of Eagan	Intersect	
Carnelian Lane	City of Eagan	Intersect	1,250 (62796 / 2019)
Raptor Road	City of Eagan	Intersect	
Talon Trail	City of Eagan	Intersect	
Southpoint Terrace	City of Eagan	Intersect	
Deer Hills Trail	City of Eagan	Intersect	
Beecher Drive	City of Eagan	Intersect	
Cliff Road / Cliff Road E / CSAH 32	Dakota County	Parallel / Intersect	21,421 (40301 / 2022) 23,912 (40304 / 2022) 30,000 (40307 / 2016) 27,243 (40308 / 2022) 20,610 (60604 / 2022) 19,134 (40309 / 2022)
Cliff Lake Road	City of Eagan	Intersect	10,431 (37718 / 2021)
Park Center Drive	City of Eagan	Intersect	
Scott Trail	City of Eagan	Intersect	
Cliff Drive	City of Eagan	Intersect	
Nicols Road	City of Eagan	Intersect	10,900 (35740 / 2019)
Cedar Ave / State Highway 77	MnDOT	Intersect	64,099 (10647 / 2022)
Slaters Road	City of Eagan	Intersect	
Cinnamon Ridge Trail	City of Eagan	Intersect	
Cartier Ave S	City of Burnsville	Intersect	
River Hills Dr	City of Burnsville	Intersect	2,248 (59681 / 2022)
Horizon Drive	City of Burnsville	Intersect	
State Highway 13E	MnDOT	Parallel	19,546 (10656 / 2022)
Horizon Road	City of Burnsville	Parallel	
Highland View Ave S	City of Burnsville	Parallel / Intersect	
CSAH 11	Dakota County	Parallel	9,656 (35426 / 2022) 13,400 (35405 / 2018) 19,331 (35379 / 2022)
Horizon Heights Road	City of Burnsville	Intersect	
121 st St E	City of Burnsville	Intersect	
122 nd St E	City of Burnsville	Intersect	2,855 (75759 / 2022)
123 rd St E	City of Burnsville	Intersect	
125 th St E	City of Burnsville	Intersect	
S Skyline Drive	City of Burnsville	Intersect	
Burnsville Parkway E	City of Burnsville	Intersect	2,597 (35403 / 2022)
Country View Blvd	City of Burnsville	Intersect	
Great Oaks Drive	City of Burnsville	Intersect	

Great River Energy has initiated consultation with the MnDOT, Dakota County, and the Cities of Eagan and Burnsville regarding the Project. These initial consultations are provided in **Appendices B and D**.

Impacts and Mitigation

As discussed in Section 2.3.1, Great River Energy will coordinate with the FAA to complete the Obstruction Evaluation / Airport Airspace Analysis Process. Considering this is replacing an existing transmission line within the same ROW and because of the distances to airports, Great River Energy does not anticipate any impacts to aviation services.

Great River Energy will coordinate Project construction schedules, including any outages, with Dakota Electric Association to avoid and/or minimize disruptions to service in the area. Based on the location of other existing utilities and site improvements that are identified during survey activities, the transmission line will be designed to meet or exceed required clearances and pole locations. No structure locations will be placed on existing utilities, including pipelines. Because the majority of the Proposed Route will follow existing utility and road ROW, no impacts to public services are anticipated and, therefore, no mitigation is proposed. Similarly, because the Project is primarily proposed to be routed in existing utility and road ROW, Great River Energy does not anticipate impacts to site improvements such as wells or septic systems.

Temporary access for construction of the transmission line would 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 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. Great River Energy or its contractors will work with MnDOT through its application process for a Utility Accommodation Permit in MnDOT ROW and comply with all permit conditions. Applicable licenses where the line impacts county and local roads will also be obtained and complied with.

When appropriate, pilot vehicles will accompany the movement of heavy equipment. Traffic control barriers and warning devices will be used when 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. Great River Energy 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.

Given that the Project will primarily follow the existing Great River Energy transmission line ROW and road ROWs, there will be minimal impacts to other utilities. To ensure that any short-term and infrequent traffic impacts are minimized, Great River Energy will coordinate with all affected road authorities and, to the extent practicable, schedule large material/equipment deliveries to avoid periods when traffic volumes are high.

7.3 Public Health and Safety

7.3.1 General Construction Safety

The Project will be designed in compliance with local, state, NESC, and Great River Energy standards regarding clearance to the ground, clearance to crossing utilities, strength of materials, and ROW widths. Construction crews and/or contract crews will comply with local, state, and NESC standards regarding installation of facilities and standard construction practices. Great River Energy's established safety procedures, as well as industry safety procedures, will be followed during and after installation of the transmission line, including clear signage during all construction activities. See **Chapter 6** for detailed discussions on construction practices and safety.

7.3.2 Stray and Induced Voltage

"Stray voltage" is a condition that can occur on the electric service entrances to structures from distribution lines. More precisely, stray voltage is a voltage that exists between the neutral wire of the service entrance and grounded objects in buildings such as barns and milking parlors.

Induced Voltage

When an EF reaches a nearby conductive object, such as a vehicle or a metal fence, it can induce a voltage on the object. The magnitude of this voltage is dependent on many factors, including the object's capacitance, shape, size, orientation and location, resistance with respect to ground, and the weather conditions. If the object is insulated or semi-insulated from the ground and a person touches it, a small current could pass through the person's body to the ground. This might be accompanied by a spark discharge and mild shock, similar to what can occur when a person walks across a carpet and touches an object or person.

The main concern with induced voltage is not the magnitude of the voltage induced, but the current that would flow through a person to the ground should the person touch the object. To ensure the safety of persons in the proximity of high voltage transmission lines, the NESC requires that any discharge be less than five milliAmperes root mean square (mA rms). Great River Energy 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.

Transmission lines (like the Project) do not, by themselves, create stray voltage because they do not connect to businesses and residences. Transmission lines can, however, induce a current on a distribution circuit that is parallel and immediately under the transmission line.

Impacts and Mitigation

If a landowner has stray voltage concerns on their property, Great River Energy suggests they contact their electric service provider to discuss the situation with technical staff, including the possibility of an on-site investigation. Induction and its potential impacts can be mitigated through implementation of appropriate design measures and techniques, such as:

- Cancellation – The arrangement of transmission line conductors and shield wires to lower electric and magnetic field levels;
- Separation – Increasing the distance between the transmission line and other conductors or conductive objects. Electric and magnetic field levels decrease rapidly with distance; and
- Grounding of non-energized conductors or conductive objects.

Great River Energy will design and construct the Project to minimize the potential for induction issues.

7.3.3 Electronic Interference

Under certain conditions, the localized EF near an energized transmission line conductor can produce small electric discharges, ionizing nearby air. This is commonly referred to as the “corona” effect. Most often, corona formation is related to some sort of irregularities on the conductor, such as scratches or nicks, dust buildup, or water droplets. The air ionization caused by corona discharges can result in the formation of audible noise and radio frequency noise.

Corona formation is a function of the conductor radius, surface condition, line geometry, weather condition, and most importantly, the line’s operating voltage. Corona-induced audible noise and radio and television interference are typically not a concern for power lines with operating voltages below 161-kV (like the Project), because the EF intensity is too low to produce significant corona.

Impacts and Mitigation

Because the likelihood of significant corona formation on the Project is minimal, the likelihood of radio and television interference due to corona discharges associated with the Project is also minimal. Great River Energy is unaware of any complaints related to radio or television interference resulting from the operation of any of its existing 115-kV facilities and does not expect radio and television interference to be an issue along the Proposed Route.

7.3.4 Electric and Magnetic Fields

As it pertains to the Project, the term “EMF” refers to the extremely low frequency (ELF) decoupled electric (EF) and magnetic fields (MFs) that are present around any electrical device or conductor and can occur indoors or outdoors. EFs are the result of electric charge, or voltage, on a conductor. The intensity of an EF is related to the magnitude of the voltage on the conductor. MFs are the result of the flow of electricity, or current, traveling through a conductor. The intensity of a magnetic field is related to magnitude of the current flow through the conductor. EF and MF can be found in association with transmission lines, local distribution lines, substation transformers, household electrical wiring, and common household appliances.

Electric Fields

Voltage on a wire produces an EF in the area surrounding the wire. The voltage on the conductors of a transmission line generates an EF extending from the energized conductors. The intensity of

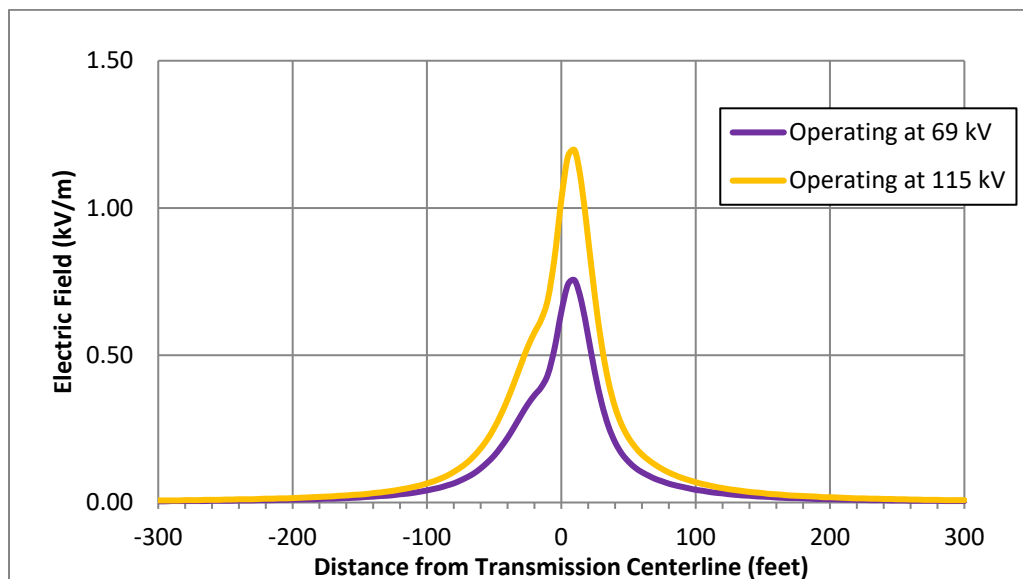
transmission line EFs is measured in kilovolts per meter (kV/m), and the magnitude of the EF rapidly decreases with distance from the transmission line conductors. The presence of trees, buildings, or other solid structures in the path of the field can also significantly reduce the magnitude of the EF. Because the magnitude of the voltage on a transmission line is near-constant (ideally within ± 5 percent of nominal), the magnitude of the EF will be near-constant regardless of the power flowing on the line.

Although there is no state or federal standard for transmission line EF exposures, the EQB developed a standard of a maximum EF limit of 8 kV/m at one meter (3.28 feet) above ground; this standard has been regularly applied by the Commission.³³ Great River Energy has calculated the approximate EF for the Project's transmission configuration and estimates the peak magnitude of EF density to be well below the EQB standard at approximately 1.2 kV/m underneath the conductors, one meter above ground. **Table 7.3-1** summarizes the EFs calculated for the proposed single circuit transmission line. These EF calculations are also shown graphically in **Diagram 7-1**.

**Table 7.3-1. Calculated Electric Fields (kV/m) for Proposed Alignment
(One meter (3.28 feet) above ground)**

Operating Voltage (kV)	Max Operating Voltage (kV)	Distance to Proposed Alignment – Electric Field (feet)										
		-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

Diagram 7-1. 115-kV Single Circuit Line Electric Field Profile



³³ *In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET-2/TL-08-1474, Order Granting Route Permit (September 14, 2010).

Implantable Medical Devices

High intensity EMF can have adverse impacts on the operation of implantable medical devices (IMDs) such as pacemakers and defibrillators. While research has shown that the MFs associated with HVTLs do not reach levels at which they could cause interference with such devices, it is possible that the EFs associated with some HVTLs could reach levels high enough to induce sufficient body currents to cause interference.

Modern “bipolar” cardiac devices are much less susceptible to interactions with EFs. Manufacturers of pacemakers and other IMDs, have indicated that EFs below 6 kV/m are unlikely to cause interactions affecting operation of most of their devices. **Table 7.3-1** and **Diagram 7-1** show that the EFs for the Project are well below levels at which modern bipolar devices are susceptible to interaction with the fields.

The older “unipolar” designs of cardiac devices are more susceptible to interference from EFs. Research from the early 1990s indicates that the earliest evidence of interference with these types of IMDs could occur in EFs ranging from 1.2 to 1.7 kV/m. For older style unipolar designs, the EFs do exceed levels that research from the 1990s has indicated may produce interference. However, research conducted in 2005 concluded that the risk of interference to unipolar cardiac devices from high voltage power lines in everyday life is small. In 2007, Minnesota Power and Xcel Energy conducted studies with Medtronic, Inc. under 115-kV, 230-kV, 345-kV, and 500-kV transmission lines to confirm these 2005 findings. The analysis was based on real life public exposure levels under actual transmission lines in Minnesota and found no adverse interaction with pacemakers or IMDs. The analysis concluded that although interference may be possible in unique situations, device interference as a result of typical public exposure would be rare.³⁴

In the unlikely event that a pacemaker is impacted, the effect is typically a temporary asynchronous pacing (commonly referred to as reversion mode or fixed rate pacing). The pacemaker will return to its normal operation when the person moves away from the source of the interference.

Magnetic Fields

Current passing through any conductor, including a wire, produces a magnetic field in the area around the wire. The current flowing through the conductors of a transmission line generates a magnetic field that, in similar fashion to the EF, extends outward from the energized conductors. The intensity of the magnetic field associated with a transmission line is proportional to the amount of current flowing through the line’s conductors, and the magnitude of the magnetic field rapidly decreases with the distance from the conductors. Unlike EFs, MFs are not significantly affected by the presence of trees, buildings, or other solid structures nearby. The value of the magnetic field density is expressed in the unit of gauss (G) or milligauss (mG).

There are no federal or Minnesota exposure standards for MFs. The EQB and the Commission have recognized Florida (a 150-mG limit) and New York (a 200-mG limit) state standards. Both

³⁴ Minnesota Power Systems Conference Proceedings (University of Minnesota). 2007. *Electromagnetic Compatibility of Active Implantable Medical Devices (AIMD) and Their Interaction with High Voltage Power Lines*, at 23.

state standards are to be considered at the edge of ROW. Studies of the health effects from MFs conclude that the evidence of health risk is weak.³⁵ The general standard is one of prudent avoidance.

MF levels associated with some common electric appliances are provided in **Table 7.3-2**.

Table 7.3-2. Magnetic Fields of Common Electric Appliances (mG)³⁶

Appliance	Distance from Source		
	6 inches	1 foot	2 feet
Hair Dryer	300	1	--
Electric Shaver	100	20	--
Can Opener	600	150	20
Electric Stove	30	8	2
Television	NA	7	2
Portable Heater	100	20	4
Vacuum Cleaner	300	60	10
Copy Machine	90	20	7
Computer	14	5	2

Table 7.3-2 summarizes the MFs calculated for the proposed transmission line configuration with power flow at peak loading and at average loading. The magnetic field calculations are also shown graphically in **Diagram 7-2**. The maximum magnetic field under expected peak demand conditions is 9.85 mG, which is below most of the levels shown in **Table 7.3-3**.

Because the actual power flow on a transmission line could potentially vary throughout the day depending on electric demand, the actual magnetic field level could also vary widely from hour to hour. In any case, the typical magnitude of the magnetic field associated with the proposed transmission line is expected to be well below the calculated intensity at the expected peak loading.

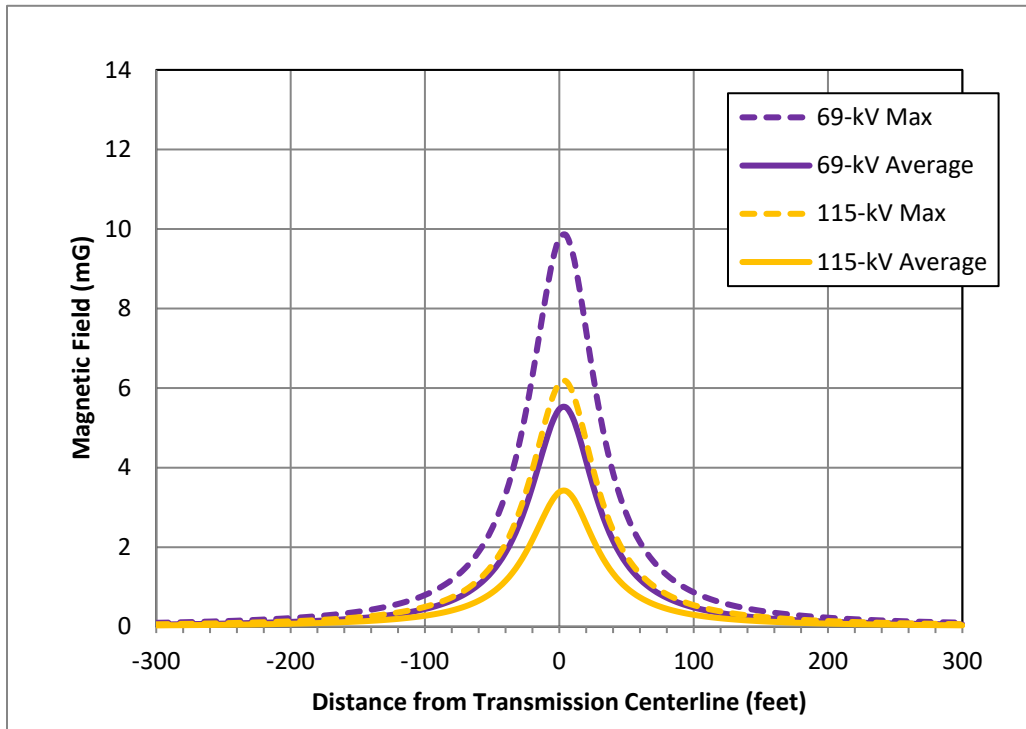
Table 7.3-3. Calculated Magnetic Fields (mG) for Proposed Alignment Designs

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
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

³⁵ Minnesota Department of Health. 1997. *EMF White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options*. 2002; National Research Council. *Possible Health Effects of Exposure to Residential Electric and Magnetic Fields*. www.niehs.nih.gov/health/topics/agents/emf/.

³⁶ USEPA. 1992. *EMF In Your Environment*. Magnetic Field Measurements of Everyday Electrical Devices. Office of Radiation and Indoor Air (6603J) 402-R-92-008. December 1992.

Diagram 7-2. 115-kV Single Circuit Line Magnetic Field Profile



Impacts and Mitigation

Considerable research has been conducted since the 1970s to determine whether exposure to power-frequency, commonly referred to as “extremely-low frequency” or “ELF” (60 hertz), EFs and MFs can cause biological responses and adverse health effects. The multitude of epidemiological and toxicological studies has shown, at most, a weak association (i.e., no statistically significant association) between ELF-MF exposure and health risks and no association between ELF-EF exposure and health risks.

In 1999, the National Institute of Environmental Health Sciences (NIEHS) issued its final report on “Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields” in response to the Energy Policy Act of 1992. In the report, the NIEHS concluded that the scientific evidence linking EMF exposures with health risks is weak and that this finding does not warrant aggressive regulatory concern. However, in light of the weak scientific evidence supporting some association between EMF and health effects and the fact that exposure to electricity is common in

the United States, the NIEHS stated that passive regulatory action, such as providing public education on reducing exposures, is warranted.³⁷ Other studies have come to similar decisions.³⁸

Based on findings like those of the Working Group and NIEHS, the Commission has consistently found that “there is insufficient evidence to demonstrate a causal relationship between EMF exposure and any adverse human health effects.”³⁹ This conclusion was further justified in the Route Permit proceedings for the Brookings Project. In the Brookings Proposed Route Permit proceedings, the Applicants (Great River Energy and Xcel Energy) and one of the intervening parties both provided expert evidence on the potential impacts of ELF-EF and ELF-MF, including the World Health Organization findings (2007). The ALJ in that proceeding evaluated written submissions and a day-and-a-half of testimony from the two expert witnesses. The ALJ concluded: “there is no demonstrated impact on human health and safety that is not adequately addressed by the existing State standards for [EF and MF] exposure.”⁴⁰ The Commission adopted this finding on July 15, 2010.⁴¹

No impacts to public health and safety are anticipated as a result of the Project. The Project will be designed in compliance with local, state, NESC, and Great River Energy standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths. The substations in the region are equipped with protective breakers and relays. The protective equipment is designed to de-energize the transmission line when needed. All substations are protected by barbed-wire-topped fencing. Signage attached to the fence lists the owner, provides a telephone contact number, and warns about electrical hazards within the substation.

Great River Energy will ensure that safety requirements are met during construction and operation of the facilities. Additionally, when crossing roads or railroads during stringing operations, guard structures will be utilized to eliminate traffic delays and provide safeguards for the public. With implementation of these safeguards and protective measures, no additional mitigation is proposed.

³⁷ NIEHS. 1999. NIEHS Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields. Prepared in Response to the 1992 Energy Policy Act (PL 102-486, Section 2118). NIH Publication No. 99-4493. https://www.niehs.nih.gov/health/assets/docs_p_z/report_powerline_electric_mg_predates_508.pdf. Accessed September 19, 2023.

³⁸ Minnesota Department of Health. 2002. *A White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options*; World Health Organization. 2007. *Environmental Health Criteria Volume No. 238 on Extremely Low Frequency Fields*. <https://mn.gov/eera/web/project-file?legacyPath=/opt/documents/EMF%20White%20Paper%20-%20MN%20Workgroup%20Sep%202002.pdf>. Accessed September 19, 2023.

³⁹ See, for example, *In the Matter of the Application for a HVTL Route Permit for the Tower Transmission Line Project*, Docket No. ET-2, E015/TL-06-1624, Findings of Fact, Conclusions of Law and Order Issuing a Route Permit to Minnesota Power and Great River Energy for the Tower Transmission Line Project and Associated Facilities (August 1, 2007).

⁴⁰ *In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET-2/TL-08-1474, ALJ Findings of Fact, Conclusions and Recommendation at Finding 216 (April 22, 2010, and amended April 30, 2010).

⁴¹ *In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET-2/TL-08-1474, Order Granting Route Permit (September 14, 2010).

7.3.5 Air Quality

Criteria Pollutants

The Clean Air Act (42 United States Code 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, nitrogen dioxide (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 (PM_{2.5}). 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. The Project area is listed as unclassifiable/attainment for all criteria pollutants except for lead. A portion of Dakota County located about 1.1 miles northeast of the Project has been designated as nonattainment for lead since 2010 (40 CFR Part 81.324).

Emissions Related to 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 construction.

Table 7.3-4 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. Detailed emission calculations are provided as **Appendix F**.

Table 7.3-4. Construction Emissions of Criteria Pollutants (tons)

Description	NO _x	CO	VOC ^a	SO ₂	PM ₁₀	PM _{2.5}
Off-Road Engine Emissions	17.00	3.65	1.18	0.01	0.60	0.59
Unpaved Roads	-	-	-	-	1.08	0.11
Earthmoving	-	-	-	-	79.54	8.37
TOTAL	17.00	3.65	1.18	0.01	81.22	9.07

^a Volatile organic compounds.

Emissions Related to Operation

During operation, potential air emissions from a transmission line result from corona effects. Ionization of air molecules near the conductor can produce ozone and oxides of nitrogen. Ozone is a reactive form of oxygen molecule that combines readily with other elements and compounds

in the atmosphere, making it relatively short lived. Ozone forms naturally in the lower atmosphere from lightning discharges and from reactions between solar ultraviolet radiation and air pollutants such as hydrocarbons from auto emissions. The natural production rate of ozone is directly proportional to temperature and sunlight, and inversely proportional to humidity. Thus, the conditions that are most likely to cause corona formation on a transmission line – humid, rainy, or foggy conditions – actually inhibit the production of ozone.

Corona-induced ozone and nitrogen oxides (NO_x) are typically not a concern for power lines like the Project with operating voltages below 161-kV because the EF intensity is too low to produce significant corona. Therefore, Great River Energy expects ozone and NO_x concentrations associated with the Project to be negligible, and well below all federal standards (NO₂ – 100 parts per billion (ppb) as one-hour average, 53 ppb as annual average; ozone 70 ppb as 8-hour average).⁴²

Impacts and Mitigation

Temporary and localized air quality impacts caused by construction vehicle emissions and fugitive dust from ROW clearing and construction are expected to occur. 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:

- Reduced speed limits on unpaved roads and water or other non-chloride-containing dust suppression applications as needed;
- 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 right-of-way is wet during construction activities, vehicle tracking of soil from the right-of-way will be minimized by using wooden or plastic matting at access points.

At the completion of construction activities, all construction-related air impacts would cease.

No impacts to air quality are anticipated due to the operation of the Project; therefore, no mitigation is proposed.

⁴² “The Clean Air Act, which was last amended in 1990, requires USEPA to set National Ambient Air Quality Standards (40 CFR part 50) for six principal pollutants ("criteria" air pollutants) which can be harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality standards. **Primary standards** provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. **Secondary standards** provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.” <https://www.epa.gov/criteria-air-pollutants/naaqs-table>.

Greenhouse Gas Emissions

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% reduction in greenhouse gas emissions across all industry sectors.⁴³

Construction of the transmission line and associated facilities will result in temporary minor greenhouse gas emissions from fuel combustion in construction equipment, commuter vehicles, and delivery trucks. **Table 7.3-5** 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. Detailed emission calculations are provided as **Appendix G**. At the completion of construction activities, all construction-related air impacts would cease.

Table 7.3-5. Preliminary Estimate: Greenhouse Gas Emissions from Construction

Description	CO ₂ (Short Tons)	CH ₄ (Short Tons)	N ₂ O (Short Tons)	CO ₂ e (Short Tons)
Off-Road Engine Emissions	774.77	0.03	0.01	777.42
Commuters and On-road Trucks	362.42	0.00	0.00	362.42
TOTAL	1,137.18	0.03	0.01	1,139.84
Notes: CO ₂ – carbon dioxide CH ₄ – methane; 1 short ton CH ₄ = 25 short tons CO ₂ e N ₂ O – nitrous oxide; 1 short ton N ₂ O = 298 short tons CO ₂ e CO ₂ e – 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 .				

Sulfur hexafluoride (SF₆), a greenhouse gas, is used as an insulating material in substation breakers. Under normal operations, the SF₆ remains contained in the breakers and is not released to the atmosphere.

Impacts and Mitigation

EPA's Greenhouse Gas Reporting Tool⁴⁴ shows emissions within Minnesota totaled 38,190,179 metric tons of carbon dioxide equivalent (CO₂e) (42,097,466 tons) in 2021. Accordingly, the preliminary estimate of Project greenhouse gas emissions identified here would be negligible as compared to emissions in Minnesota.

Great River Energy will mitigate vehicle emissions by limiting vehicle idling to only times when necessary.

Great River Energy monitors the SF₆ gas levels in the breakers as part of its routine monitoring of substation equipment. When gas losses are detected, the SF₆ is extracted to a separate tank to allow

⁴³ MPCA and DOC. January 2023. Greenhouse gas emissions in Minnesota 2005-2020.

<https://www.pca.state.mn.us/sites/default/files/lraq-2sy23.pdf>. Accessed September 19, 2023.

⁴⁴ USEPA. Facility Level Information Greenhouse Gas Tool. <https://ghgdata.epa.gov/>. Accessed September 2023.

the breaker to be repaired. Any gas collected from decommissioned breakers is shipped offsite for recycling.

Climate Resiliency

Climate change is the change in global or regional climate patterns over time. 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.⁴⁵ From 1895 to 2023, Dakota County has experienced an increase in temperature of 0.31 degrees Fahrenheit (°F) per decade and a decrease in precipitation of 0.01 inch per decade.⁴⁶

Impacts and Mitigation

Climate change could result in an increased risk of flooding in the Project area, increased temperatures, extreme weather events such as high winds, and excessive rainfall. The Project as proposed will be designed to withstand these changes and will increase reliability in the Project area, as it is an upgrade to a system which presently exists. Great River Energy is actively assessing risks to the reliable operation of its entire transmission system from the potential impacts of climate change and is working on opportunities to mitigate those risks. Over the last three years, Great River Energy has invested over \$67 million dollars in transmission resiliency improvement projects.

7.4 Land-based Economies

7.4.1 Agriculture

Based on the City zoning maps presented in **Section 7.2.5**, there is one small tract within the City of Eagan on the east side of Blackhawk Road north of the I-35E crossing that is zoned as agricultural.

Impacts and Mitigation

The Proposed Alignment through this location would occur within the existing 70-foot-wide ROW; therefore, this agricultural area will not be affected by the Project and no mitigation is proposed.

7.4.2 Forestry

Forested areas are shown in the Detailed Route Maps provided in **Appendix A**. Based on available aerial photographs, Great River Energy will clear or trim approximately 9.5 acres of trees over

⁴⁵ MDNR. 2023. Climate Trends. https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html. Accessed September 2023.

⁴⁶ MDNR. Undated. Minnesota Climate Trends Tool. <https://arcgis.dnr.state.mn.us/ewr/climatetrends>. Accessed September 2023.

approximately 3.2 miles within the 70-foot-wide ROW. Trees are primarily located on private residential properties, county-, MnDOT- and City-owned properties.

Impacts and Mitigation

Because the Project will be located almost entirely within an existing utility ROW and parallel to road ROWs, there will be minimal incremental impacts from the construction and maintenance of the Project. The ROW will need to be cleared and maintained for the safe and reliable operation of the transmission line. Mitigation measures for potential impacts to forest resources would be as follows:

- 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.

7.4.3 Tourism

Local tourist destinations near the Proposed Route include several parks managed by the cities of Eagan and Burnsville, including Thomas Lake / East Thomas Lake Park Area, Highline Trail, Carnelian Park, Meadowland Park, Rahn Park and Athletic Fields, Red Oak, Highland View, Oak Leaf East, Skyline, Chateaulin, and Terrace Oaks West, amongst others in the Project area shown in **Appendix A**. There are also many bike trails occurring within or adjacent to city roads and parks shown in the maps on **Appendix A** that are adjacent to or near the Proposed Route. Ponds and lakes are also shown on the **Appendix A** maps, which may be used for aquatic recreational activities.

The Minnesota Valley National Wildlife Refuge and Recreation Area is located approximately one mile northwest of the Project area. The Refuge was established in 1976 to protect wildlife resources threatened by development and offers community programs, environmental education, and access to nature in an urban area. The Refuge stretches 70 miles along the Minnesota River and comprises 14,000 acres. The USFWS estimates that approximately 140,000 people visit the Refuge annually; there is no charge to access the Refuge.^{47,48}

In addition, the Minnesota Zoo is located about one mile southeast of the Project area. The zoo opened in 1978 and currently occupies approximately 485 acres with more than 4,500 animals and 505 species. Approximately 1.3 million people visit the zoo annually.⁴⁹

⁴⁷ National Park Service. Undated. Minnesota Valley National Wildlife Refuge. <https://www.nps.gov/miss/planyourvisit/minnval.htm#:~:text=Annually%2C%20the%20refuge%20areas,receive%20approximately%20140%2C000%20visitors>. Accessed September 19, 2023.

⁴⁸ USFWS. Undated. Minnesota Valley National Wildlife Refuge: About Us. <https://www.fws.gov/refuge/minnesota-valley/about-us>. Accessed September 19, 2023.

⁴⁹ Minnesota Zoo. 2019. The Minnesota Zoo at a Glance. <https://mnzoo.org/us/minnesota-zoo-glance/>. Accessed September 19, 2023.

Impacts and Mitigation

The Proposed Route avoids many of the areas that would be considered local tourist destinations, and the Project would not preclude tourism activities or appreciably diminish the use or experience at tourist destinations. Minimal tree clearing or trimming may be required, but if it is, it would be within the existing ROW and should not affect wildlife viewing or recreational opportunities.

Great River Energy may need to temporarily close or reroute access to bike trails along the Proposed Alignment during construction activities. Great River Energy will work with the cities of Eagan and Burnsville to ensure public safety, coordinate temporary closures and/or reroutes, and notify the public. As discussed in **Section 7.2.7**, to ensure that any short-term and infrequent traffic impacts are minimized, Great River Energy will coordinate with all affected road authorities and, to the extent practicable, schedule large material/equipment deliveries to avoid periods when traffic volumes are high.

Great River Energy does not anticipate impacts on tourism associated with the Minnesota Valley National Wildlife Refuge and Recreation Area or the Minnesota Zoo due to the Project's distance from these features; therefore, no mitigation is proposed.

7.4.4 Mining

According to both the U.S. Geological Survey and MnDOT gravel pit and prospect gravel pit data, there are potentially former gravel pits in the Project area, principally occurring along I-35E, Cedar Ave / State Highway 77, and CSAH 11. These potential former pits may have been developed and used during the construction of those roads. However, review of current aerial photographs and city zoning maps (**Section 7.2.5**) indicate that these locations are now residential areas, or MnDOT ROW (e.g., clover leaf) and there are no active gravel pits present in the Project area.^{50,51} No other mining activity is present in the vicinity of the Project.

Impacts and Mitigation

As the Project will not result in impacts to active mining activities, no mitigation is proposed.

7.4.5 Recreation

Recreational resources near the Proposed Route, including local parks and recreational areas, bike trails, and lakes, ponds and watercourses are shown **Figure 7-4** and in the **Appendix A** maps.

As discussed in **Sections 7.2.6 and 7.4.3**, there are many parks managed by the cities of Eagan and Burnsville that are located within the Project area and are shown in **Appendix A**. Parks crossed by the Proposed Route include Highline Trail/Thomas Lake Park, and Carnelian Park within the City of Eagan (**page 4 of Appendix A**), and Terrace Oaks West in the City of Burnsville (**pages**

⁵⁰ Horton, J.D. and C.A. San Juan. 2021. Prospect- and Mine-Related Features from U.S. Geological Survey 7.5- and 15-Minute Topographic Quadrangle Maps of the United States (ver. 9.0, January 2023). U.S. Geological Survey data release. <https://mrdata.usgs.gov/usmin/>. Accessed September 19, 2023.

⁵¹ MnDOT. Undated. Aggregate Sources: Viewing with Google Earth. Gravel Pit and Rock Quarry Aggregate Source Information. <https://www.dot.state.mn.us/materials/aggsources.html>. Accessed September 19, 2023.

11-13 of Appendix A). There are bike trails, largely associated with bike lanes within roadways, along the majority of the Proposed Route, in addition to some trails that would intersect the Proposed Route as shown in **Appendix A**. The Proposed Route also overlaps with some small ponds and wetlands also depicted in **Appendix A**.

The Minnesota Valley National Wildlife Refuge and Recreation Area is located approximately one mile to the northwest of the Proposed Route (**Figure 7-4; Section 7.4.3**). The Refuge is managed by the USFWS and has more than 45 miles of trails for hiking, biking, snowshoeing and cross-country skiing. It also has areas open to canoeing, fishing, and hunting.⁵²

As discussed in **Section 7.4.3**, the Minnesota Zoo is located one mile to the southeast of the Proposed Route (**Figure 7-4**). The zoo is open daily and hosts special events throughout the year, including holiday-themed events, educational programs, children’s programs, and music.⁵³

Impacts and Mitigation

Great River Energy’s existing 69-kV system already occurs along the City parks and bike trails described above. The rebuild and upgrade to the 115-kV infrastructure will not preclude recreational activities or appreciably diminish the use or experience at these locations. Minimal additional tree clearing or trimming may be required, but if it is, it would be within the existing ROW and should not affect wildlife viewing or recreational opportunities. Direct impacts to lakes, ponds and watercourses are not anticipated (see **Section 7.6.4**).

As previously discussed in **Section 7.4.3**, Great River Energy may need to temporarily close or reroute access to bike trails and/or access to some parks and/or recreational areas whose access is along the Proposed Alignment during construction activities. Great River Energy will work with the cities of Eagan and Burnsville to ensure public safety, coordinate temporary closures and/or reroutes, and notify the public. As discussed in **Section 7.2.7**, to ensure that any short-term and infrequent traffic impacts are minimized, Great River Energy will coordinate with all affected road authorities and, to the extent practicable, schedule large material/equipment deliveries to avoid periods when traffic volumes are high.

Apart from temporary closures or reroutes, no impacts to local recreational activities, the Minnesota Valley National Wildlife Refuge and Recreation Area or the Minnesota Zoo are expected due to the Project’s distance from these features. Thus, no mitigation is proposed.

7.5 Archaeological and Historic Resources

Merjent, Inc. (Merjent) conducted a cultural resource literature review for features within a one-mile buffer of the Proposed Alignment (the “Study Area”). This literature review and Merjent’s evaluation of the possible effects of the proposed Project on archaeological and historic properties in the Project area was provided to the Minnesota SHPO in a letter dated August 8, 2023; SHPO

⁵² USFWS. Undated. Minnesota Valley National Wildlife Refuge. <https://www.fws.gov/refuge/minnesota-valley>. Accessed September 19, 2023.

⁵³ Minnesota Zoo. Undated. Programs & Events. <https://mnzoo.org/programs-events/>. Accessed September 19, 2023.

response to this letter was received on September 25, 2023 (**Appendix D**⁵⁴). The following summarizes the results of the literature review.

Merjent on behalf of Great River Energy conducted a Phase IA Literature Review based on cultural resources site information (archaeological sites and historic structures) and previous survey files from the SHPO. Merjent Cultural Resource Specialists reviewed archaeological site files on the OSA Portal,⁵⁵ as well as the General Land Office (GLO) maps and available historical aerial photography accessed online through the OSA Portal.

Merjent reviewed nineteenth century GLO maps and notes on file with the Bureau of Land Management to evaluate historic site conditions identify potential cultural features within the Project area.⁵⁶ The GLO map of the Project area illustrated conditions in 1870 as being largely prairie with the Minnesota River and associated floodplains and wetlands, as well as Fort Snelling. No cultural features are present on the GLO map of the Project area. Proximity to water is an indication of high site potential. Aerial photographs from 1940 show the presence of established roads and farmsteads in the area. Subsequent historic and modern aerial photographs show that the landscape of the Project area has been heavily developed, and roads and infrastructure have been expanded extensively since the 1940s.

According to the OSA and SHPO files, within the Study Area, there are no archaeological sites within a half mile of the Proposed Alignment. Two historic cemeteries were identified within a half mile of the Proposed Alignment. The Christ Lutheran Cemetery is located on the north side of Cliff Road / CSAH 32 on the property of the Christ Lutheran Church. Aerial images show a cemetery plot immediately south of the church, bordered by trees on the east, south, and west. This cemetery is 0.21 mile west of the Project Alignment. Several roads, buildings, and a small lake provide a buffer between Project activities and the cemetery.

St. John's Cemetery is a small cemetery bordered on the north and east with a chain-link fence. The Proposed Alignment is located on the west side of Blackhawk Road, and crosses to the east side of Blackhawk Road immediately north of St. John's Cemetery. There is a wide bike lane between the ROW and the cemetery. At this location, the replacement line will generally follow the alignment of the existing line; therefore, a pole may be located immediately northeast of St. John's Cemetery, but not within the cemetery. However, some tree clearing will likely be required within the cemetery boundaries. Given the close proximity to the cemetery, Merjent recommends a qualified archaeologist monitor construction activity at this pole location.

Although not directly applicable to this Project, Appendix B of the Nationwide Programmatic Agreement for Review of Effects on Historic Properties for Certain Undertakings Approved by the Federal Communications Commission (September 2004) was used to determine the proposed

⁵⁴ The maps provided to the SHPO are not included in the correspondence provided in **Appendix D** because they include sensitive cultural resource data protected by the Archaeological Resources Protection Act of 1979 (16 United States Code 470hh, as amended), and National Park Service and Related Programs (54 United States Code 300101, formerly known as the National Historic Preservation Act, 16 United States Code 470-1).

⁵⁵ OSA Portal. 2023. <https://osaportal.gisdata.mn.gov/>. Accessed May 26, 2023.

⁵⁶ Bureau of Land Management General Land Office Records. 2023. <https://glorerecords.blm.gov/>. Accessed August 2023.

area of potential effect (APE) for visual effects for the Project. Under that guidance, the APE is a half mile radius for structures 200 feet or less in overall height. Therefore, structures more than a half mile from the proposed projects will not be subject to visual or indirect effects.

Five historic buildings and structures are located within the Study Area, one of which intersects the Proposed Alignment. All of these resources are currently considered unevaluated for the NRHP. The Proposed Alignment crosses the historic Cedar Ave / State Highway 77 (Trunk Highway 77) at its intersection with Cliff Road / County Highway 32. The work in this area will consist of replacement along the same alignment as the existing line, and the replacement line will not result in an appreciable change to viewshed.

The Eagan Town Hall was formerly located less than a half mile from the existing transmission line, but it has since been moved approximately 0.65 mile north of the Proposed Alignment, outside of the Proposed Route. Because it is no longer at its original location, it is possible that it is now not eligible for inclusion in the NRHP per criteria consideration B (36 CFR 60.4). Two sites have been razed and are no longer extant. Because these sites have been razed, they are no longer eligible for inclusion in the NRHP per criteria consideration B (36 CFR 60.4).

The remaining building is a single dwelling located 250 feet east of the Proposed Alignment where it follows south on CSAH 11. This site does not appear to be visible from the ROW due to a wooded area and modern apartment complex. Due to these physical barriers, construction activities will not impact this site. Additionally, because this is a rebuild Project, there will not be an appreciable change to viewshed and the eligibility of site will not be impacted.

Great River Energy requested feedback on the Project from the 11 federally recognized Tribes with geography within Minnesota and the MIAC in its Project notification letters sent in August 2023. The Shakopee Mdewakanton Sioux Community Tribal Historic Preservation Office (THPO) responded requesting that Great River Energy provide notification to the Minnesota Dakota THPOs and MIAC and conduct a Phase IA Literature Review using the OSA Portal. The Shakopee Mdewakanton Sioux Community THPO requested that should any identified sites be in the path of the Project, that Great River Energy consult with the Tribes to identify an alternative route. Further, the Shakopee Mdewakanton Sioux Community THPO recommended that Great River Energy monitor ground disturbing activities in work areas determined to be sensitive to the Tribes and prepare an Unanticipated Discoveries Plan for the Project. Great River Energy confirmed with the Shakopee Mdewakanton Sioux Community THPO that the Project notification was provided to all 11 Minnesota THPOs and MIAC and provided a copy of the Phase IA Literature Review to the THPO. Further, Great River Energy has prepared an Unanticipated Discoveries Plan for this Project in **Appendix H**. These correspondences are included in **Appendix D**.

Impacts and Mitigation

On September 25, 2023, the SHPO responded to Merjent's evaluation of the possible effects of the proposed Project on archaeological and historic properties in the Project indicating that "based on the information available, the SHPO has determined that there are no properties listed in the National or State Registers of Historic Places and no known or suspected archaeological properties in the area that will be affected by this Project" (**Appendix D**).

Merjent recommended in its letter to the SHPO that a qualified archaeologist monitor the construction activity at the pole location northeast of St. John's Cemetery. If human remains are encountered during construction activities, Great River Energy will follow its Unanticipated Discoveries Plan (**Appendix H**), which includes ceasing all ground disturbing activity, and immediate notification of local law enforcement per Minn. Stat. § 307.08.

7.6 Natural Environment

7.6.1 Topography

The Proposed Route occurs through hilly terrain that is consistent with a morainal landscape. Elevations range from 860 to 1,090 feet with the lowest elevation located toward the northeast portion of the route and the highest elevation located toward the southwest portion of the route. (**Figure 7-5**).

Impacts and Mitigation

Construction of the Project will not alter the topography along the Proposed Alignment; therefore, no mitigation is proposed.

7.6.2 Geology

The St. Paul-Baldwin and Moraines subsection⁵⁷ of the Ecological Classification indicates that Glacial drift is generally less than 100 feet thick, with maximum thickness of about 200 feet. Ordovician and Devonian dolomite (some limestone, sandstone, and shale) is locally exposed, especially in the dissected stream valleys at the eastern edge of the subsection. Precambrian bedrock is exposed along the St. Croix River.

Impacts and Mitigation

Few geological constraints on design, construction, or operation are anticipated in the Project area. Based on typical soil types in Minnesota, it is anticipated that the above ground pole will be buried by augering a hole typically 10 to 20 feet deep and three to five feet in diameter for each pole, which will not impact subsurface geologic features. Concrete foundations may be required for large angles or for longer spans such as interstate highway crossings, and the steel structure will be mounted on top. The foundations are typically five to eight feet in diameter and 15 to 45 feet deep with one foot exposed above the existing ground level (see **Section 6.2.1**). Construction of the Project will not alter the geology along the routes; therefore, no mitigation is proposed.

7.6.3 Soils

The St. Paul-Baldwin and Moraines subsection of the Ecological Classification states that soils in this subsection are primarily Alfisols (soils formed under forested vegetation) with areas of Mollisols (soils formed under prairie vegetation) present on the outwash plains. Parent materials

⁵⁷ MDNR. Undated. Ecological Classification System: Eastern Broadleaf Forest Province – Minnesota & NE Iowa Morainal Section – St. Paul-Baldwin and Moraines Subsection. <https://www.dnr.state.mn.us/ecs/222Md/index.html>. Accessed September 19, 2023.

are mixed on the moraines (mixtures of clay loams, loams, sandy loams, and loamy sands). The outwash plains have sandy parent materials.

U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) STATSGO2 data were reviewed to describe soil resources in the Project area. The STATSGO2 Database⁵⁸ is also referred to as the Digital General Soil Map of the United States and is a broad-based inventory of soils for use in broad planning. Soils are organized by general association units which are derived from more detailed soil survey maps. The general association units were determined by transecting or sampling areas on the detailed maps and then statistically expanding the data to characterize the whole map unit. Each association unit represents a distinctive pattern of soils, relief, and drainage, and is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils. There are two soil association units that intersect the Proposed Route. These soil associations are listed in **Table 7.6-1** and shown in **Figure 7-5**.

Table 7.6-1. Soil Associations in the Project area

Soil Association ⁵⁹	General Description ⁶⁰
Mahtomedi-Kingsley (s3593)	Mahtomedi-Kingsley association unit is characterized as very deep, well drained to excessively drained soils that formed on glacial moraines or outwash plains. These soils are on convex slopes within complex undulating to steep moraines or glacial moraines and outwash plains. Slopes range from 0 to 45 percent.
Waukegan-Wadena-Hawick (s3594)	Waukegan-Wadena-Hawick association unit is characterized as very deep, well drained to excessively drained soils that formed in outwash plains, stream terraces, glacial moraines, or valley trains. Slopes range from 0 to 70 percent.

Impacts and Mitigation

Potential impacts of construction are compaction of the soil associated with construction equipment traffic and exposing the soils to wind and water erosion. Soil compaction within wetlands would be mitigated by installation of construction mats, and as described in **Section 6.2**, the restoration contractor would take measures to alleviate soil compaction where needed. As described in **Section 6.2**, ground disturbance and soil exposure would be primarily limited to the pole locations, which would typically consist of augering a hole 10 to 20 feet deep and three to five feet in diameter for each pole. Larger and deeper holes may be required for large angles or for longer spans such as interstate highway crossings (see **Section 6.2.1**). 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 soil impacts resulting from the Project.

Erosion and sediment control methods and BMPs will be utilized to minimize runoff during line construction. Such BMPs may include but are not limited to the installation of sediment barriers (silt fence, straw bales, bio-logs), filter socks, mulch, upslope diversions, slope breakers. As

⁵⁸ USDA NRCS. Undated. Description of STATSGO2 Database. <https://www.nrcs.usda.gov/resources/data-and-reports/description-of-statsgo2-database>. Accessed September 19, 2023.

⁵⁹ USDA NRCS. 2016. Digital General Soil Map of the U.S. (STATSGO2). October 13, 2016. <https://gisdata.mn.gov/dataset/geos-statsgo2>. Accessed September 19, 2023.

⁶⁰ USDA NRCS. Undated. Official Soil Series Descriptions (OSD). <https://www.nrcs.usda.gov/resources/data-and-reports/official-soil-series-descriptions-osd>. Accessed September 19, 2023.

described in **Section 6.3**, exposed soils will also be revegetated as soon as possible to minimize erosion. Great River Energy will also develop a Vegetation Management Plan for this Project (**Appendix I**).

Project construction is not anticipated to result in the disturbance of more than one acre of soils. As discussed in **Section 2.3.2**, if more than one acre of soil will be disturbed during the construction of the Project, Great River Energy will obtain coverage under the MPCA's NPDES construction stormwater permit and will prepare a SWPPP.

Long-term impacts to soils are not anticipated, and no impact from Project operations are expected. Accordingly, no mitigation is proposed.

7.6.4 Water Resources

Hydrologic features in the Project area and along the Proposed Route are shown in **Figures 7-6 and 7-7**. 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 majority of the Project is within the Minnesota River–Shakopee watershed, in the northeast portion of the Minnesota River Basin. The Burnsville Substation and 0.25 mile of the southern end of the Project are located in the Mississippi River and Lake Pepin watershed, in the northwest portion of the Lower Mississippi River Basin.⁶¹

Groundwater

The MDNR divides Minnesota into six groundwater provinces. The Project is located in the East-central Province (Province 1), which is characterized by buried sand aquifers and relatively extensive surficial sand plains, part of a thick layer of sediment deposited by glaciers overlying the bedrock. It is underlain by sedimentary bedrock with good aquifer properties. (**Figure 7-6**).⁶²

The Minnesota Department of Health (MDH) enforces the federal Safe Drinking Water Act including the National Primary Drinking Water Regulations created under the Act.⁶³ These regulations are legally enforceable standards and treatment techniques that apply to public water systems to protect drinking and source water. As a result, Minnesota adopted the State Wellhead Protection (WHP) Rule 4720.5100-4720.5590 in 1997.⁶⁴ The MDH is responsible for administering the State WHP Program. Under the WHP Program, public water systems are required to develop and implement a plan that protects its drinking water source. Wellhead Protection Areas (WHPA) are approved surface and subsurface area surrounding a public water supply well or well field that supplies a public water system, through which contaminants are likely

⁶¹ MDNR. Undated. Minnesota's watershed basins. <https://www.dnr.state.mn.us/watersheds/map.html>. Accessed September 19, 2023.

⁶² MDNR. 2021. Minnesota groundwater provinces 2021. <https://www.dnr.state.mn.us/groundwater/provinces/index.html>. Accessed September 19, 2023.

⁶³ MDH. Undated. Laws and Rules. <https://www.health.state.mn.us/communities/environment/water/rules/index.html>. Accessed September 22, 2023.

⁶⁴ MDH. Undated. Wellhead Protection. <https://www.health.state.mn.us/communities/environment/water/rules/wellhead.html>. Accessed September 21, 2023.

to move toward and reach the well or well field.⁶⁵ Drinking Water Supply Management Areas (DWSMAs) contain the WHPA but are outlined by clear boundaries, like roads or property lines. The DWSMA is managed in a WHP plan, usually by a city.⁶⁶

The western segment of the Proposed Route intersects the Burnsville WHPA, and the eastern segment of the proposed Route intersects the Eagan South WHPA (**Figure 7-6**). The WHPAs correspond to the Burnsville and Eagan South DWSMAs, respectively. The Burnsville DWSMA Vulnerability ranges from Low – High and the Eagan South DWSMA Vulnerability ranges from Low- Moderate where the DWSMAs intersect the Proposed Route.⁶⁷

The County Well Index (CWI) is a database that contains subsurface information for over 533,000 water wells drilled in Minnesota. CWI is maintained by the Minnesota Geological Survey (MGS) in partnership with the MDH. The data are derived from well contractors' logs of geologic materials encountered during drilling and later interpreted by geologists at the MGS.⁶⁸

The CWI indicates that there are sixteen wells located within the Proposed Route and four wells are within the proposed ROW. The wells are identified in **Table 7.6-2**.

Table 7.6-2. CWI Wells within the Proposed Route

Unique ID	Within ROW	Surface Elevation	Static Water Elevation	Static Water Level (Depth to Water)	Status	Use
205600	N	910	790	120	Sealed	Domestic
216201	Y	900	0	0	Active	Industrial
235613	N	910	0	0	Sealed	Domestic
242811	N	902	0	0	Active	Industrial
341368	Y	919	0	0	Sealed	Environmental Bore Hole
341838	Y	961	0	0	Sealed	Environmental Bore Hole
436929	N	906.3	0	0	Sealed	Dry Hole
436930	N	906.2	899.7	6.5	Sealed	Monitor Well
436931	N	906	0	0	Sealed	Monitor Well
436932	N	906	0	0	Sealed	Monitor Well
440128	N	908	0	0	Sealed	Recovery Well
444135	N	924	0	0	Sealed	Monitor Well
446967	N	907	888	19	Sealed	Recovery Well
646923	Y	908	884	24	Sealed	Monitor Well
681786	N	912	903	9	Sealed	Monitor Well
812883	N	927	802	125	Active	Domestic

⁶⁵ MDH. 2019. Wellhead Protection Areas. <https://gisdata.mn.gov/dataset/water-wellhead-protection-areas>. Accessed September 22, 2023.

⁶⁶ MDH. Undated. Source Water Protection Map Viewer. <https://www.health.state.mn.us/communities/environment/water/swp/mapviewer.html>. Accessed September 22, 2023.

⁶⁷ MDH. Undated. Source Water Protection Web Map Viewer. <https://mdh.maps.arcgis.com/apps/View/index.html?appid=8b0db73d3c95452fb45231900e977be4>. Accessed September 22, 2023.

⁶⁸ MGS. Undated. County Well Index. <https://cse.umn.edu/mgs/cwi>. Accessed September 22, 2023.

Lakes or Ponds

A number of lakes and ponds are in close proximity to the Proposed Route. Many of these are small ponds associated with stormwater management for the extensive urban development within the Project area. The closest waterbodies include East Thomas / Thomas Lakes, Pitts Lake and Alimagnet Lake. East Thomas Lake is designated as public water wetland, and Thomas Lake, Pitts Lake and Alimagnet Lake are designated as public water basins⁶⁹ (see Public Waters section below). East Thomas and Thomas Lakes are located south of the Pilot Knob Substation along Pilot Knob Road (**page 1 of Appendix A**). Pitts Lake is 330 feet north of the Proposed Alignment and located on the northwest corner of Cliff Road / I-35E (**page 7 of Appendix A**). Alimagnet Lake is 870 feet south of the Burnsville Substation and located on the south corner of McAndrews Road E / CSAH 11 (**page 14 of Appendix A**).

The MDNR National Hydrography Dataset⁷⁰ indicates that there is one pond feature crossed by the Proposed Alignment between Blackhawk Road and I-35E where Great River Energy is proposing a realignment of the existing transmission line (**page 6 of Appendix A**). However, based on a review of aerial photographs, this feature does not appear to be permanently inundated and likely should be classified as an emergent wetland (i.e., not a pond) in accordance with the NWI mapping.⁷¹ Further, based on the aerial photographs it does not appear that the Proposed Alignment crosses this feature, but it may partially overlap with the 70-foot-wide ROW. This feature is further discussed in the Wetlands subsection below.

There are a total of 16 ponds located within the Proposed Route, described in **Table 7.6-3** and shown on **Figure 7-7** and **Appendix A**, as noted in the table below.

Table 7.6-3. Lakes/Ponds Crossed by the Proposed Route

Lake/Pond Location (Appendix A page)	NWI Classification	Length Crossed by ROW (feet)	Notes
West side of Pilot Knob Road; east side of Deerwood Trail (page 3 of Appendix A)	Palustrine Aquatic Bed (PABH)	0	
East side of Blackhawk Road; South of Raptor Road (page 5 of Appendix A)	Palustrine Unconsolidated Bed (PUBF)	0	
East of Blackhawk Road; South of Southpoint Terrace (page 5 of Appendix A)	N/A	0	Not mapped by NWI; likely stormwater retention pond associated with the Eagan Firehouse.

⁶⁹ MDNR. 2020. Public Waters (PW) Basin and Watercourse Delineations. June 10, 2020. <https://gisdata.mn.gov/dataset/water-mn-public-waters>. Accessed September 19, 2023.

⁷⁰ MDNR Division of Fish & Wildlife – Fisheries Unit. 2023. DNR Hydrography Dataset. April 13, 2023. <https://gisdata.mn.gov/dataset/water-dnr-hydrography>. Accessed September 19, 2023.

⁷¹ MDNR. 2019. National Wetland Inventory for Minnesota. May 23, 2019. <https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014>. Accessed September 19, 2023.

Lake/Pond Location (Appendix A page)	NWI Classification	Length Crossed by ROW (feet)	Notes
East of Blackhawk Road; North of Deer Hills Trail (page 5 of Appendix A)	PUBH	0	
East side of Blackhawk Road; west of I-35E (page 6 of Appendix A)	Palustrine Emergent (PEM1C)	100	Based on aerial photographs and NWI, this is likely not a pond but an emergent wetland and does not appear to be crossed by the Proposed Alignment (see Table 7.6-4).
North of Cliff Road; West of I-35E (page 7 of Appendix A)	PUBHx	0	Likely stormwater retention pond associated with the Target Cliff Lake Center.
South of Cliff Road; east of Rahn Cliff Road (page 7 of Appendix A)	N/A	0	Area is developed based on aerial photographs; no pond feature visible.
North of Cliff Road; West of Park Center Drive (page 7 of Appendix A)	PUBHx	0	Previously mapped MDNR Lake/Pond feature has been partially developed.
South of Cliff Road; East of Cartier Ave S (south of River Hills Substation) (page 8 of Appendix A)	PUBHx	0	
South of Cliff Road E; East of River Hills Substation (page 8 of Appendix A)	PUBHx	0	
South of Cliff Road E; East of River Hills Drive (page 9 of Appendix A)	PUBHx	0	
West of State Highway 13E; south of Cliff Rd E (page 9 of Appendix A)	PUBHx	0	
West of CSAH 11 / south of State Highway 13E (page 10 of Appendix A)	PUBHx	0	Public water wetland Previously mapped MDNR Lake/Pond feature has been partially developed; aerial imagery indicates feature no longer intersects Proposed Route.
East of CSAH 11; and east of Sheffield Lane within Terrace Oaks West Park (page 13 of Appendix A)	PUBHx	0	Public water wetland
East of CSAH 11; north of I-35E (page 13 of Appendix A)	PUBHx	0	
Southwest corner of Burnsville Substation (page 14 of Appendix A)	PUBHx	0	Public water wetland Located within the Burnsville Substation parcel, but outside of the fenced area.
Sources: MDNR Division of Fish & Wildlife – Fisheries Unit. 2023. DNR Hydrography Dataset. April 13, 2023. https://gisdata.mn.gov/dataset/water-dnr-hydrography. Accessed September 19, 2023. MDNR. 2019. National Wetland Inventory for Minnesota. May 23, 2019. https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014. Accessed September 19, 2023. MDNR. 2020. Public Waters (PW) Basin and Watercourse Delineations. June 10, 2020. https://gisdata.mn.gov/dataset/water-mn-public-waters. Accessed September 19, 2023.			

Rivers and Streams

There are no rivers or streams that intersect the Proposed Route or Proposed Alignment and associated ROW (**Figure 7-7**). The Minnesota River and associated tributaries are the nearest watercourses and are located 0.7 to 1.5 miles to the northwest of the Proposed Alignment.

Public Waters

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.

MDNR Public Waters water basins and watercourses do not intersect the Proposed Alignment or associated ROW; however, three Public Water Wetlands intersect the Proposed Route (**Figure 7-7**) and are identified in **Table 7.6-3**.

Impaired Waters

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 and last updated its 303(d) list in 2022. There are no 2022 impaired waters crossed by the Proposed Route or Proposed Alignment and associated ROW (**Figure 7-7**). The closest impaired waters⁷² are Alimagnet Lake and Carlson Lake. Alimagnet Lake is 870 feet south of the Burnsville Substation (**page 14 of Appendix A**). Carlson Lake is 1,050 feet east of the Pilot Knob Substation (**page 1 of Appendix A**).

Wetlands

Wetlands are important resources for flood abatement, wildlife habitat, and water quality. Wetlands that are hydrologically connected to the nation’s navigable rivers are protected federally under Section 404 of the Clean Water Act. In Minnesota, wetlands are also protected under the Wetland Conservation Act.

The USFWS produced maps of NWI wetlands based on aerial photographs and NRCS soil surveys starting in the 1970s. The NWI data were further updated for the state of Minnesota through a multi-agency effort lead by the MDNR and were published in 2019. Wetlands identified by the Minnesota NWI may be inconsistent with current wetland conditions; however, Minnesota NWI data is the most accurate and readily available database of wetland resources within the Project area and were therefore used to identify potential wetlands occurring within the Proposed Route. This analysis was conducted prior to the U.S. Supreme Court's decision in *Sackett v. Env'tl. Protection Agency*, which was released on May 25, 2023. Analysis of Project impacts to wetlands

⁷² MPCA. 2022. Impaired Waterbodies, Minnesota, 2022. May 4, 2022. <https://gisdata.mn.gov/dataset/env-impaired-water-2022>. Accessed September 23, 2023.

and related regulatory requirements may be updated based on that decision and any related agency guidance.

Table 7.6-4 identifies the 11 wetland features crossed by the Proposed Route⁷³ including 0.15 acres of Palustrine Forested (PFO acres) and 2.05 acres of Palustrine Emergent (PEM) wetlands (**Appendix A**). None of these features are crossed by the centerline of the Proposed Alignment; however, three wetland features are partially crossed by the 70-foot-wide ROW as indicated in **Table 7.6-4**. Freshwater Ponds (Palustrine aquatic bed and unconsolidated bottom wetlands) are included in the Lakes and Ponds section.

Table 7.6-4. Wetlands Crossed by the Proposed Route

Wetland Location	NWI Classification	Length Crossed by ROW (feet)	Notes
East side of Pilot Knob Road; north of Chatterton Road (page 2 of Appendix A)	Palustrine Emergent (PEM1F)	243	
South of Deerwood Dr; east of Oakbrooke Terrace (page 3 of Appendix A)	PEM1C	92	
East side of Blackhawk Road; west of I-35E (page 6 of Appendix A)	PEM1C	100	Also included in Table 7.6-3 . Identified as pond by MDNR; however, based on aerial photographs and NWI mapping, this appears to be an emergent wetland that partially overlaps with the 70-foot-ROW.
South of Cliff Road; west of Galaxie Ave (page 7 of Appendix A)	PEM1A	0	
North of Cliff Road; east of Cedar Ave / State Highway 77 (page 8 of Appendix A)	PEM1C	0	
East of CSAH 11; south of Country View Drive within Terrace Oaks West Park (page 12 of Appendix A)	PEM1A	0	
West of CSAH 11; north of Commonwealth Drive (page 13 of Appendix A)	Palustrine Forested (PFO1A) / PEM1A	0	
West of CSAH 11; north of 134 St E (page 13 of Appendix A)	PEM1C (2 small wetlands)	0	
West of CSAH 11; north of I-35E entry / exit ramps on north side of highway (page 13 of Appendix A)	PEM1C	0	

⁷³ MDNR. 2019. National Wetland Inventory for Minnesota. May 23, 2019. <https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014>. Accessed September 19, 2023.

Wetland Location	NWI Classification	Length Crossed by ROW (feet)	Notes
West of CSAH 11; south of I-35E entry / exit ramps on north side of highway (page 13 of Appendix A)	PEM1A	0	
Southwest corner of Burnsville Substation (page 14 of Appendix A)	PFO1A	0	Located within the Burnsville Substation parcel, but outside of the fenced area.

As further discussed in **Section 7.6.7**, in correspondence dated August 25, 2023, the MDNR indicated that designated calcareous fens⁷⁴ are present within the vicinity of the Project (**Appendix D**). Calcareous fens are a rare and unique type of peat-accumulating wetland with unique vegetation influenced by its calcium-rich (non-acidic) chemistry, low oxygen and relatively cold soil conditions, and upwelling groundwater hydrology.⁷⁵ Fens are protected under Minn. Stat. 103G.223, which provides that calcareous fens may not be filled, drained, or otherwise degraded, wholly or partially, by an activity, unless approved by the MDNR through a management plan. Based on the review of the MDNR's Calcareous Fen geospatial dataset,⁷⁶ there are two groups of designated calcareous fens located approximately 1 mile and 1.5 miles, respectively, from the Proposed Route within the Minnesota Valley National Wildlife Refuge and Recreation Area, located to the northwest of the Project along the Minnesota River. A third fen group is located 3.25 miles southwest of the Burnsville substation within the 150-acre City of Burnsville Kelleher Park. (**Figure 7-7**).

The fen group located approximately one mile from the Proposed Route includes: Black Dog Lake Fen – Sites a (Fen ID #242), b (14373) and c (31929). The fen group located within 1.5 miles of the Proposed Route includes: Black Dog Lake North (16550), and Nicols Meadow Fen Sites a, b and c (243, 20942/20943). The fen group located approximately 3.25 miles southwest of the Burnsville Substation includes: Kelleher Park Fen (41531)⁷⁷. Kelleher Park Fen is mapped with three Source Feature Points. All three points share the same Fen ID.

Impacts and Mitigation

Groundwater

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

⁷⁴ Calcareous fens are protected under Minn. Stat. 103G.223 and Minn. Rules Part 8420.0935.

⁷⁵ MDNR. Undated. Calcareous Fens: Amazing, Rare, Irreplaceable.

https://files.dnr.state.mn.us/natural_resources/water/wetlands/calcareous_fen_fact_sheet.pdf

⁷⁶ MDNR. 2023. Calcareous Fens – Source Feature Points. Available from the Minnesota Geospatial Data Commons: <https://gisdata.mn.gov/dataset/biota-nhis-calcareous-fens>.

⁷⁷ MDNR. 2021. Identification List of Known Calcareous Fens.

http://files.dnr.state.mn.us/eco/wetlands/calcareous_fen_list.pdf

The MDH provided comments on the Project on August 29, 2023, proposing the following mitigation measures to reduce potential impacts to the City of Eagan and City of Burnsville DWSMA and WHPA (**Appendix D**):

- Project staging should be 200 feet from City's wells;
- Follow the Emergency Response Plans for the Cities of Burnsville and Eagan in case of a spill;
- Prepare a contact list of well owners with well located within 200 feet of the transmission line for notification in the event of a spill or release of hazardous substance and provide to the MDH; and
- Locate transmission lines sufficient distance from existing wells to allow safe and legal access for service or sealing with a drill rig or provide accommodation to well owners.

Table 7.6-2 provides the list of currently known wells located within the Proposed Route based on County Well Index. Great River Energy will request well information from landowners along the transmission line once a final route is selected, and will coordinate with landowners regarding well access, as needed. Great River Energy will also coordinate with the cities of Eagan and Burnsville regarding the location of the Cities' wells and obtain copies of their Emergency Response Plans to implement during construction.

Lakes, Rivers, and Streams

There are no lakes or streams crossed by the Proposed Route, Proposed Alignment or associated ROW. Ponds crossed by the Proposed Route are spaced such that construction activities will avoid impacts to those water resources. In addition, Great River Energy will utilize erosion and sediment control BMPs (e.g., silt fencing) to mitigate the potential for sediment to reach any ponds adjacent construction activities.

Public Waters

There are no public waters crossed by the Proposed Alignment or associated ROW; however, as stated above and identified in **Table 7.6-3** there are three public water wetlands intersected by the Proposed Route. Should the final route impact public waters, Great River Energy will coordinate with the MDNR. Great River Energy will utilize sediment and erosion control BMPs (e.g., silt fencing) to mitigate the potential for sediment to reach any Public Waters from adjacent construction activities located in proximity to the Proposed Alignment.

Impaired Waters

There are no impaired waters crossed by the Project; therefore, there will be no impacts to impaired waters. Also, the Project is not anticipated to cause a water to be newly listed in the Project area. There is minimal potential to increase turbidity due to sedimentation from construction activities because of the significant distance to any receiving waters. Great River Energy will utilize erosion

and sediment BMPs (e.g., silt fencing) to mitigate the potential for sediments to reach any impaired waters.

Wetlands

The Proposed Alignment does not cross mapped wetlands; however, the associated 70-foot-wide ROW partially crosses three wetlands (**Table 7.6-4**). No public water wetlands are crossed by the Proposed Alignment or associated ROW. Temporary impacts to wetlands may occur if they need to be crossed during construction of the transmission line. As discussed in **Section 6.2.1**, clearing in wetlands will be conducted within the ground and wetlands are frozen, or mats will be used to minimize impacts to vegetation. Staging or stringing setup areas will not be placed within or adjacent to water resources to the extent practicable.

Great River Energy does not currently anticipate placing poles within wetlands. If a different final alignment is selected, wetland impact avoidance measures that will be implemented during final design and construction of the transmission line 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 cross-sectional area of the structure would be less than 10 square feet.

If unanticipated wetlands are discovered, and where it is not possible to span a wetland, several measures will be utilized to minimize impacts during construction:

- When possible, construction will be scheduled during frozen ground conditions.
- When construction during frozen ground conditions is not possible, construction mats (wooden or composite) will be used to protect wetland vegetation. Additionally, all-terrain construction vehicles may be used, which are designed to minimize impact to soils in damp areas.
- Construction crews will attempt to access wetlands with the least amount of physical impact to the wetlands.
- The structures will be assembled on upland areas before they are brought to the site for installation, when practicable.

As discussed in **Section 6.3**, once construction of the Project is completed, disturbed soil will be restored to previous conditions to the extent possible, and areas will be reseeded with vegetation similar to that which was removed with a seed mixture certified as free of noxious or invasive weeds.

As discussed in **Section 6.5**, Great River Energy will manage the ROW to remove vegetation that interferes with the operation and maintenance of the transmission line. Existing trees will be removed throughout the entire ROW, including forested wetlands. Great River Energy will continue to manage the ROW to remove vegetation that interferes with the operation and maintenance of the transmission line; therefore, these forested wetlands will undergo permanent conversion to a different wetland vegetation community type within the ROW.

As described in **Section 2.3.1**, Great River Energy, in consultation with the USACE, St. Paul District, anticipates seeking coverage under the Utility Regional General Permit once design of the Project is complete. Great River Energy has been assigned a Regulatory File No. (MVP-2023-01068-RLG) and a USACE Project Manager for this Project (**Appendix D**). In the MDNR's August 25, 2023 correspondence, the MDNR inquired on the depth of the pole foundations for further evaluation to ensure that groundwater hydrology potentially connected to the calcareous fens is not impacted. As described in **Section 6.2.1**, the majority of the proposed structures will be directly imbedded steel poles, which will be installed by augering a hole typically 10 to 20 feet deep and three to five feet in diameter for each pole. Concrete foundations may be required for large angles or for longer spans such as interstate highway crossings, and the steel structure will be mounted on top. The foundations are typically five to eight feet in diameter and 15 to 45 feet deep with one foot exposed above the existing ground level.

The Project Route is 1.0 to 3.25 miles from the calcareous fens as shown in **Figure 5-1**. The area between the fens and the Proposed Route has been disturbed over the previous decades and extensive development has occurred, including planned development and residential areas, I-35E and I-35W, State Highways 77 and 13E, in addition to many city roads. There are also existing 115-kV and 345-kV transmission lines extending from the Black Dog Electric Generating Plant located on the Minnesota River between the two calcareous fen groups, and 69-kV lines running east-west north of the Kelleher fen group, and north-south east of the Kelleher fen group. Several pipelines have also been routed through this area (**Section 7.2.7**). In addition, a number of active wells, including domestic and commercial wells, are located between the Project and calcareous fens (**Figure 7-6**). Review of the CWI Domestic Well Log data provided in **Table 7.6-2** indicates that the aquifer in the areas is below 100 feet deep; therefore, pole installation would not affect the aquifer.

Once a final route has been selected, Great River Energy will further coordinate with the MDNR to ensure that ground disturbance activities, such as pole placement, do not disrupt potential groundwater hydrology associated with the calcareous fens.

7.6.5 Flora and Fauna

Flora

Flora can be generally characterized for the Project area using the Ecological Classification System.⁷⁸ The system was developed by the MDNR and U.S. Forest Service for ecological mapping and landscape classification. The top three tiers of the system consist of Province, Section, and Subsection. The Project falls in the Eastern Broadleaf Forest Province, Minnesota & Northeast Iowa Morainal Section, and St. Paul-Baldwin and Moraines subsection.

The Eastern Broadleaf Forest Province⁷⁹ serves “as a transition, or ecotone, between semi-arid portions of the state that were historically prairie and semi-humid mixed conifer-deciduous forests

⁷⁸ MDNR. Undated. Ecological Classification System. <https://www.dnr.state.mn.us/ecs/index.html>. Accessed September 21, 2023.

⁷⁹ MDNR. Undated. Ecological Classification System: Eastern Broadleaf Forest. <https://www.dnr.state.mn.us/ecs/222/index.html>. Accessed September 21, 2023.

to the northeast. The western boundary of the province in Minnesota is sharply defined along much of its length as an abrupt transition from forest and woodland to open grassland.”

The Minnesota and Northeast Iowa Morainal Section⁸⁰ “is a long band of deciduous forest, woodland, and prairie that stretches nearly 350 miles (560km) from Polk County in northwestern Minnesota to the Iowa border.”

The St. Paul-Baldwin and Moraines subsection⁸¹ further details flora of the Project area. Pre-settlement vegetation communities were comprised of oak and aspen savanna with areas of tallgrass prairie and maple-basswood forests. Tallgrass prairie was concentrated on level to gently rolling portions of the landscape. Bur oak savanna developed on rolling moraine ridges at the western edge of the subsection and in dissected ravines at the eastern edge. Maple-basswood forest was restricted to the portions of the landscape with the greatest fire protection, either in steep, dissected ravines or where stream orientation reduced fire frequency or severity. The current vegetation and land use is primarily urban development with small areas of forest in the eastern portion of the subsection.

There are no MDNR Scientific and Natural Areas by or in close proximity to the Proposed Route.⁸² Further, there are no Native Plant Communities⁸³ or Sites of Biodiversity Significance⁸⁴ crossed by the Proposed Route.

Fauna

The Project is located in the MDNR Nongame Wildlife – Central Region.⁸⁵ The Central Region provides habitat for non-game species such as tundra swans during migratory periods, red-headed woodpeckers, raptors, trumpeter swans, mice, turtles, frogs, and snakes.

There are no MDNR WMAs crossed by or in close proximity to the Proposed Route.⁸⁶

The Minnesota Valley National Wildlife Refuge⁸⁷ is located one mile northwest of the Proposed Project Route. The refuge is part of the Minnesota River corridor and was established to preserve

⁸⁰ MDNR. Undated. Ecological Classification System: Eastern Broadleaf Forest: Minnesota and Northeast Iowa Morainal Section. <https://www.dnr.state.mn.us/ecs/222M/index.html>. Accessed September 21, 2023.

⁸¹ MDNR. Undated. Ecological Classification System: Eastern Broadleaf Forest – Minnesota and Northeast Iowa Morainal – St. Paul-Baldwin and Moraines Subsection. <https://www.dnr.state.mn.us/ecs/222Md/index.html>. Accessed September 21, 2023.

⁸² MDNR. Undated. Recreation Compass. <https://www.dnr.state.mn.us/maps/compass/index.html>. Accessed September 21, 2023.

⁸³ MDNR. 2023. MDNR Native Plant Communities. <https://gisdata.mn.gov/dataset/biota-dnr-native-plant-comm>. Accessed November 10, 2023.

⁸⁴ MDNR. 2023. MBS Sites of Biodiversity Significance. <https://gisdata.mn.gov/dataset/biota-mcbs-sites-of-biodiversity>. Accessed November 10, 2023.

⁸⁵ MDNR. Undated. Nongame Wildlife – Central Region. <https://www.dnr.state.mn.us/eco/nongame/central.html>. Accessed September 21, 2023.

⁸⁶ MDNR. Undated. Recreation Compass. <https://www.dnr.state.mn.us/maps/compass/index.html>. Accessed September 19, 2023.

⁸⁷ USFWS. Undated. Minnesota Valley National Refuge. About Us. <https://www.fws.gov/refuge/minnesota-valley/about-us>. Accessed September 21, 2023.

wildlife resources. The refuge provides protected habitat to numerous species and are managed in part for migrating waterfowl. The wetlands and floodplain forests found throughout the refuge are important nesting and feeding areas for ducks, geese, and swans.⁸⁸

Rare and natural flora and fauna are discussed in more detail in **Section 7.6.7**.

Impacts and Mitigation

Minimal impacts to native vegetation are anticipated. The Proposed Route is located in an area of high urban development and will entirely follow existing transmission line and road corridors, which will minimize impacts to previously undisturbed vegetation in that area. As described in **Section 7.4.2**, Great River Energy will clear approximately 9.5 acres of trees within the 70-foot-wide ROW associated with the Proposed Alignment. Clearing will be minimized to the extent practicable. Great River Energy will prepare a Vegetation Management Plan for this Project (**Appendix I**).

There is minimal potential for the displacement of wildlife and loss of habitat from construction of the Project. Wildlife that inhabits the Project area could be temporarily displaced during construction activities. Individuals that use forested habitat within the Project area may be permanently displaced; however, because the Project follows existing utility and road ROWs, tree clearing will be minimized. The distance that animals will be displaced will depend on the species. Additionally, these animals will be typical of those found in urban developed settings, would likely be able to find similar habitat nearby and therefore, should not incur population level effects due to construction.

Raptors, waterfowl, and other bird species may be affected by the construction and placement of the transmission lines. Avian collisions are a possibility after the completion of the transmission lines. Waterfowl are typically more susceptible to transmission line collision, especially if the transmission line is placed between agricultural fields that serve as feeding areas, or between wetlands and open water, which serve as resting areas. Project design and construction will be done in accordance with Avian Power Line Interaction Committee (APLIC) guidelines. Any eagle or other migratory bird nests discovered during survey of the line or in the land acquisition process will be reported to the USFWS and Great River Energy will adhere to guidance provided.

7.6.6 Invasive Species Management

The movement of construction equipment to, from, and between various work sites has the potential to introduce and/or spread invasive species. Invasive and noxious species in Minnesota are regulated by the MDNR⁸⁹ and Minnesota Department of Agriculture (MDA).⁹⁰ Known invasive and noxious species that are regulated and within the Project area include buckthorn,

⁸⁸ USFWS. Undated. Minnesota Valley National Refuge. Species. <https://www.fws.gov/refuge/minnesota-valley/species>. Accessed September 21, 2023.

⁸⁹ MDNR. Undated. Invasive Species in Minnesota. <https://www.dnr.state.mn.us/invasives/index.html>. Accessed September 21, 2023.

⁹⁰ MDA. Undated. Noxious and Invasive Weeds. <https://www.mda.state.mn.us/plants-insects/noxious-invasive-weeds>. Accessed September 21, 2023.

Canada thistle, common tansy, honeysuckle, leafy spurge, plumeless thistle, spotted knapweed, wild parsnip,⁹¹ and curly leaf pondweed.⁹²

Impacts and Mitigation

To minimize the potential for the introduction or spread of invasive species, Great River Energy proposes to implement the following BMPs during Project construction:

- All disturbed areas will be revegetated using weed-free seed mixes. If practicable, native plant species will be used to revegetate disturbed areas. Weed-free straw or weed-free hay will be used for erosion control.
- Herbicidal or manual vegetation removal may be implemented to minimize the spread of invasive species where such removal is consistent with easement conditions or landowner restrictions.
- The ROW may be mowed before noxious weeds or invasive species go to seed.
- Construction vehicles will be cleaned and inspected to remove dirt, mud, plants, and debris from vehicles and equipment prior to arriving at, and leaving from, construction sites.
- The Construction Field Representative will oversee BMP installation and effectiveness.

These BMPs will be incorporated into Great River Energy's forthcoming Vegetation Management Plan for this Project (**Appendix I**).

7.6.7 Rare and Unique Natural Resources

Threatened and Endangered Species

Merjent, on behalf of Great River Energy, submitted a formal Natural Heritage Review Request (2023-00454) on June 14, 2023, through the MDNR's Minnesota Conservation Explorer (MCE), which is included in **Appendix D**. An official response was received on September 20, 2023 and is included in **Appendix D**.

In addition, Great River Energy reviewed the USFWS Information for Planning and Conservation (IPaC) website⁹³ for a list of federally threatened and endangered species, candidate species, and designated critical habitat that may be present within the Project area.

⁹¹ MDNR – Ecological and Water Resources. 2023. Terrestrial Invasive Species Observations. September 18, 2023. <https://gisdata.mn.gov/dataset/env-invasive-terrestrial-obs>. Accessed September 19, 2023.

⁹² MDNR – Ecological and Water Resources. 2023. Aquatic Invasive Species. September 18, 2023. <https://gisdata.mn.gov/dataset/env-invasive-aquatic-obs>. Accessed September 19, 2023.

⁹³ USFWS. Undated. Information for Planning and Conservation (IPaC) Website. <https://ecos.fws.gov/ipac/>. Accessed October 2023.

State-Listed Species

Merjent consulted the MDNR Natural Heritage Inventory System data through License Agreement LA 1066 on March 3, 2023, and three state-protected species⁹⁴ and four special concern species were identified within one mile of the Proposed Route (**Table 7.6-3**). Special concern species are not legally protected.

Table 7.6-3. State Species within the Project area

Common Name	Scientific Name	State Status
Blanding's turtle	<i>Emydoidea blandingii</i>	Threatened
Edible valerian	<i>Valeriana edulis var. ciliata</i>	Threatened
Tuberous Indian-plantain	<i>Arnoglossum plantagineum</i>	Threatened
Small White Lady's-slipper	<i>Cypripedium candidum</i>	Special Concern
Trumpeter Swan	<i>Cygnus buccinator</i>	Special Concern
Bell's Vireo	<i>Vireo bellii</i>	Special Concern
Rattlebox	<i>Crotalaria sagittalis</i>	Special Concern

Great River Energy also submitted a review request through the MDNR's MCE online application review process (<https://mce.dnr.state.mn.us/>). An automated response provided by the MDNR on June 14, 2023, indicated that calcareous fens are present with the vicinity of the Project area and additional review by the Natural Heritage Review Team is needed to evaluate impacts to state-listed species and species of special concern (**Section 7.6.4**). A formal response was received on September 20, 2023, which is provided in **Appendix D**. Great River Energy will further consult with the MDNR on these resources once a final alignment is available.

Blanding's Turtle

Wetland complexes and adjacent sandy uplands are necessary to support viable populations of Blanding's turtles; however, preference is for calm, shallow waters, including ponds and wetlands associated with rivers and streams with rich aquatic vegetation. In Minnesota, this species uses a wide variety of wetland types and riverine habitats.⁹⁵ In central Minnesota, ephemeral wetlands are used in spring and early summer, shrub wetlands and marshes are utilized throughout the summer, and deep, open marshes and pools serve as over-wintering sites. Blanding's turtles emerge from overwintering sites in late March to early April. Small, temporary wetlands are frequently used by Blanding's turtles in spring and early summer, when these habitats provide basking sites and mating opportunities. Nesting can occur up to a mile from the wetland in sparsely vegetated uplands with well-drained, sandy soils.

⁹⁴ Minnesota state species protections are authorized under Minn. Stat. 84.0895 and Minn. Rules Parts 6212.1800-2100.

⁹⁵ MDNR, Division of Ecological and Water Resources. 2022. Rare Species Guide: Blanding's Turtle (*Emys blandingii*) [web application]. <https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARAAD04010>. Accessed September 19, 2023.

As described in **Table 7.6-4**, there are few wetlands within the Proposed Route; however, the wetlands located toward the southwest portion of the Proposed Route within Terrace Oaks West and near the Burnsville Substation may provide suitable habitat for Blanding's turtle.

Edible Valerian

Edible Valerian is a plant that was listed as a threatened species in 1984 primarily due to habitat loss. This species favors moist, sunny, calcareous habitat, including calcareous fens, wet meadows, and moist prairies. Most of these habitats are located along railroad rights-of-way. In southeastern Minnesota, the species may occur on thin, rocky soil, and on cliff ledges associated with dry bluff prairies.⁹⁶

Suitable habitat for the edible valerian is not present within the Proposed Route.

Tuberous Indian-plantain

In Minnesota, tuberous Indian-plantain is a plant that is relegated to small remnant habitats with few individuals that may be incapable of supporting viable populations. Most surviving habitats are remnant prairie strips within railroad rights-of-way. Their habitat is restricted to native, mesic prairies or bluff prairies where soil is dry.⁹⁷

Suitable habitat for the tuberous Indian-plantain is not present within the Proposed Route.

Small White Lady's-slipper

Small white lady's slipper is a plant which is typically found in deep-soil mesic prairies; however, wet prairies, sedge meadows, and calcareous fens can also provide suitable habitat for this species. It is not usually found in habitats with a history of livestock grazing or agricultural production.⁹⁸

Suitable habitat for small white lady's slipper is not present within the Proposed Route.

Trumpeter Swan

Trumpeter swans are widespread and a common breeder throughout prairies and parklands in Minnesota. The last record of a wild breeding population in Minnesota is from approximately 1885

⁹⁶ MDNR, Division of Ecological and Water Resources. 2022. Rare Species Guide: Edible Valerian (*Valeriana ciliata*, *Valeriana edulis* ssp. *ciliata*) [web application]. <https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDVAL03073>. Accessed September 19, 2023.

⁹⁷ MDNR, Division of Ecological and Water Resources. 2022. Rare Species Guide: Tuberous Indian Plantain (*Cacalia plantaginea*, *Cacalia tuberosa*) [web application]. <https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDASTD7060>. Accessed September 19, 2023.

⁹⁸ MDNR, Division of Ecological and Water Resources. 2022. Rare Species Guide: Small White Lady's-slipper (*Cypripedium candidum*) [web application]. <https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMORC0Q050>. Accessed September 19, 2023.

and reintroduction efforts began in 1966. The population has grown and they are now present statewide.⁹⁹

During the breeding season, they prefer small ponds and lakes or larger bodies of water with emergent vegetation. Ideal habitat consists of open water, stable waters, fresh water, marsh vegetation, and low levels of human disturbance.

Suitable habitat for the trumpeter swan is not present within the Proposed Route.

Bell's Vireo

The Bell's vireo is a bird that was listed as a species of special concern in 2013. It requires dense and shrubby thickets and edges bordering on habitats such as grasslands or wetlands. It can be found in more extensive shrublands with the herbaceous shrubland dominated by sedges or grasses.¹⁰⁰

Suitable habitat for Bell's vireo is not present within the Proposed Route.

Rattlebox

The Rattlebox is a plant that was historically found in east and southeast Minnesota, but recent records are only from Washington and Houston counties. It prefers sand prairies and sand savannas with dry, loose, and sandy soil with direct sunlight.¹⁰¹

Suitable habitat for the rattlebox is not present within the Proposed Route.

Federal Species

Based on the official species list provided by the USFWS (**Appendix D**), three 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 Proposed Route (**Table 7.6-4**). No federally designated critical habitat is present within the Proposed Route. Species proposed for listing and candidate species are not legally protected under the ESA.

⁹⁹ MDNR, Division of Ecological and Water Resources. 2022. Rare Species Guide: Trumpeter Swan (*Cygnus buccinator*) [web application]. <https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNJB02030>. Accessed October 17, 2023.

¹⁰⁰ MDNR, Division of Ecological and Water Resources. 2022. Rare Species Guide: Bell's Vireo (*Vireo bellii*) [web application]. <https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABPBW01110>. Accessed September 19, 2023.

¹⁰¹ MDNR, Division of Ecological and Water Resources. 2022. Rare Species Guide: Rattlebox (*Crotalaria sagittalis*) [web application]. <https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDFAB160E0>. Accessed September 19, 2023.

Table 7.6-4. Federal Species within the Project area

Common Name	Scientific Name	Federal Status
Northern long-eared bat	<i>Myotis septentrionalis</i>	Endangered
Rusty patched bumble bee	<i>Bombus affinis</i>	Endangered
Higgins eye (pearlymussel)	<i>Lampsilis higginsii</i>	Endangered
Tricolored bat	<i>Perimyotis subflavus</i>	Proposed Endangered
Monarch butterfly	<i>Danaus plexippus</i>	Candidate

Northern Long-eared Bat

The range of the northern long-eared bat (NLEB) stretches across much of the eastern and midwestern United States. During summer, the bats roost singly or in colonies under bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places such as caves and mines. This species is thought to be opportunistic in selecting roosts, using tree species based on the tree's ability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures such as barns and sheds. In winter, NLEBs use caves and mines as hibernacula.¹⁰²

Based on a field-based habitat assessment for NLEB conducted in September 2023 in accordance with the USFWS Range-wide Indiana bat and Northern Long-eared bat Survey Guidelines,¹⁰³ potentially suitable habitat is present within the Proposed Route.

Rusty Patched Bumble Bee

The rusty patched bumble bee is a medium-sized bumble bee; workers and males are characterized by a rusty-colored patch located centrally on the second abdominal segment. Queens lack the species' eponymous rusty patch and can be further distinguished from workers and males by their large size.

Suitable habitat for the rusty patched bumble bee can be found in grasslands, prairies, marshes, agricultural areas, woodlands, and residential parks and gardens. The species is a generalist forager and utilizes both pollen and nectar from a wide variety of plants. Nests are commonly established underground in abandoned rodent burrows or other cavities; however, the species may also use clumps of grass aboveground. Rusty patched bumble bees may choose sites in sandy, moss-covered soils on northwest slopes, and may be found in interior forest areas; areas with these

¹⁰² USFWS. Undated. FWS Focus: Northern Long-eared Bat (*Myotis septentrionalis*). <https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>. Accessed August 2023.

¹⁰³ USFWS. 2023. Range-Wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines. https://www.fws.gov/sites/default/files/documents/USFWS_Range-wide_IBat_%26_NLEB_Survey_Guidelines_2023.05.10.pdf. USFWS, Region 3, Bloomington, MN. 76 pp. Accessed October 2023.

characteristics near forested edges and open fields may be especially important. They may also use other areas, such as compost piles or mole hills.^{104,105}

The USFWS has identified “high potential zones” around current records (i.e., 2007-present); these areas indicate a high probability of rusty patched bumble bee presence. Within these zones, both suitable and unsuitable habitat may be present.

The Proposed Route is within a high potential zone for rusty-patched bumble bees¹⁰² and based on a field-based habitat assessment conducted in September 2023 in accordance with the Xerces Society’s Rusty Patched Bumble Bee Habitat – Assessment Form and Guide¹⁰⁶ and as recommended by USFWS, suitable habitat for the rusty-patched bumble bee is present within the Proposed Route.

Higgins Eye (Pearlymussel)

The Higgins eye pearlymussel is a freshwater mussel of larger rivers where it is typically found in deep water with moderate currents. The animals bury themselves in sand and gravel river bottoms with just the edge of their partially opened shells exposed; the species feeds by siphoning the water for microorganisms. Since 1980, live Higgins eye pearlymussels have been found in parts of the upper Mississippi River north of Lock and Dam 19 at Keokuk, Iowa, and in three tributaries of the Mississippi River: the St. Croix River between Minnesota and Wisconsin, the Wisconsin River in Wisconsin, and the lower Rock River between Illinois and Iowa.¹⁰⁷

Suitable habitat for the Higgins eye pearlymussel is not present within the Proposed Route.

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

¹⁰⁴ USFWS. Undated. FWS Focus: Rusty Patched Bumble Bee (*Bombus affinis*). <https://www.fws.gov/species/rusty-patched-bumble-bee-bombus-affinis>. Accessed August 2023.

¹⁰⁵ USFWS. 2021. Rusty Patched Bumble Bee (*Bombus affinis*) Endangered Species Act Section 7(a)(2) Voluntary Implementation Guidance Version 3.1. December 2021. [https://www.fws.gov/sites/default/files/documents/Section%207\(a\)\(2\)guidance%20for%20rusty%20patched%20bumble%20bee%20%28Bombus%20affinis%29.pdf](https://www.fws.gov/sites/default/files/documents/Section%207(a)(2)guidance%20for%20rusty%20patched%20bumble%20bee%20%28Bombus%20affinis%29.pdf). Accessed August 2023.

¹⁰⁶ Xerces Society for Invertebrate Conservation. 2017. Rusty Patched Bumble Bee Habitat Assessment Form & Guide. https://xerces.org/sites/default/files/2018-05/17-010_01_HabitatAssessmentFormGuideByXercesForRPBB.pdf. May 2017. Accessed October 2023.

¹⁰⁷ USFWS. Undated. FWS Focus: Higgin’s Eye (*Lampsilis higginsii*). <https://www.fws.gov/species/higgins-eye-lampsilis-higginsii>. Accessed August 2023.

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.¹⁰⁸

On September 13, 2022, the USFWS published a proposed rule listing the tricolored bat as federally endangered under the ESA. A final rule is expected in October 2023.¹⁰⁹

Based on a field-based habitat assessment conducted in September 2023, suitable habitat for the tricolored bat is present within the Proposed Route.

Monarch Butterfly

The monarch butterfly is a large butterfly with an approximate 3- to 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.¹¹⁰

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.¹¹¹ 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.

Suitable habitat for the monarch butterfly is present within the Proposed Route.

Impacts and Mitigation

This Project will occur almost entirely within the existing Great River Energy transmission line ROW and tree clearing activities will be limited (**Section 3.1.2**). Further, ground disturbance activities will be limited to the installation of new poles and removal of the old 69-kV poles. This minimizes impacts to potentially suitable habitat in this area. Great River Energy will continue to

¹⁰⁸ USFWS. Undated. FWS Focus: Tricolored Bat (*Perimyotis subflavus*). <https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus>. Accessed August 2023.

¹⁰⁹ USFWS. 2022. Service proposes to list the tricolored bat as endangered under the Endangered Species Act. Press Release September 13, 2022. <https://www.fws.gov/press-release/2022-09/proposal-list-tricolored-bat-endangered>. Accessed August 2023.

¹¹⁰ USFWS. Undated. FWS Focus: Monarch Butterfly (*Danaus plexippus*). <https://www.fws.gov/species/monarch-butterfly-danaus-plexippus>. Accessed August 2023.

¹¹¹ USFWS. 2020. Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch Butterfly. 85 Federal Register 81813 (December 17, 2020). Document No. 2020-27523. <https://www.fws.gov/species-publication-action/endangered-and-threatened-wildlife-and-plants-12-month-finding-monarch>. Accessed August 2023.

coordinate with the MDNR and USFWS to avoid and further minimize Project impacts on sensitive species.

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:

- BMPs will be used 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.
- 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.

State-listed Species

Blanding's Turtle

Suitable habitat for the Blanding's turtle may be present within the Proposed Route. In accordance with the MDNR's MCE letter (**Appendix D**), Great River Energy will work with MDNR to develop avoidance and conservation measures to minimize impacts to this species.

Edible Valerian

Suitable habitat for edible valerian is not present within the Proposed Route; therefore, impacts are not anticipated, and no mitigation is proposed.

Tuberous Indian-plantain

Suitable habitat for tuberous Indian-plantain is not present within the Proposed Route; therefore, impacts are not anticipated, and no mitigation is proposed.

Small White Lady's-slipper

Suitable habitat for the small white lady's slipper is not present within the Proposed Route; therefore, impacts are not anticipated, and no mitigation is proposed.

Trumpeter Swan

Suitable habitat for trumpeter swan is not present within the Proposed Route. Project design and construction will be done in accordance with APLIC guidelines.

Bell's Vireo

Suitable habitat for Bell's vireo is not present within the Proposed Route; therefore, impacts are not anticipated, and no mitigation is proposed.

Rattlebox

Suitable habitat for the rattlebox is not present within the Proposed Route; therefore, impacts are not anticipated, and no mitigation is proposed.

Federal Species

Northern Long-eared Bat

Suitable habitat for the NLEB is present with the Proposed Route. 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. Great River Energy will enter the project into USFWS's Determination Key (DKey) for the NLEB, to determine potential effects that the Project may have on NLEB. Great River Energy will work with USFWS to develop avoidance and conservation measures to minimize impacts to this species.

Rusty Patched Bumble Bee

Suitable habitat for the rusty-patched bumble bee is present within the Proposed Route. Great River Energy will work with USFWS to develop avoidance and conservation measures to minimize impacts to this species.

Higgins Eye (Pearlymussel)

Suitable habitat for the Higgins eye pearlymussel is not present within the Project area; therefore, impacts are not anticipated, and no mitigation is proposed.

Tricolored Bat

Suitable habitat for the tricolored bat is present with the Proposed Route. 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.¹¹²

¹¹² USFWS. 2021. Species Status Assessment Report for the Tricolored Bat (*Perimyotis subflavus*). Version 1.1. <https://ecos.fws.gov/ServCat/DownloadFile/221212>. Accessed August 2023.

Monarch Butterfly

Suitable habitat for monarchs is 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, Great River Energy will review Project activities for potential impacts to the species and develop appropriate avoidance and conservation measures in coordination with the USFWS. In addition, Great River is actively evaluating its opportunities to participate in the USFWS Candidate Conservation Agreement with Assurances for the monarch butterfly.

7.7 Unavoidable Impacts

Minn. R. 7850.1900, subpart 3(G) requires that an application discuss “human and environmental effects that cannot be avoided if the facility is approved at a specific site or route.” The Project will be designed, constructed, and operated using processes and procedures, as described in this Application, which will avoid, minimize, and mitigate potential impacts. There will nevertheless be nominal impacts that cannot be avoided. The nominal impacts from construction activities will include soil compaction and erosion, short-term traffic delays, short-term disruption of recreational activities, vegetative clearing, visual impacts, habitat loss, and temporary disturbance and displacement of wildlife. The nominal impacts from operations will include the continued maintenance of tall growing vegetation, visual impacts, interference with AM radio signals, and individual wildlife impacts from habitat reduction and avian collisions.

The Project will require only minimal commitments of resources that are irreversible and irretrievable. Irreversible commitments of resources are those that result from the use or destruction of a specific resource that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments are those that result from the loss in value of a resource that cannot be restored after the action. For the Project, those commitments that do exist are primarily related to construction. Construction resources will include aggregate resources, concrete, steel, and hydrocarbon fuel. During construction, vehicles necessary for these activities will be deployed on site and will need to travel to and from the construction area, consuming hydrocarbon fuels. Other resources will be used in pole construction, pole placement, and other construction activities.

7.8 Summary of Potential Environmental Effects

Great River Energy analyzed the potential environmental effects of the proposed Project. Generally, Project effects are anticipated to be temporary and/or minor. The Project will occur almost entirely within the existing Great River Energy transmission line ROW and will parallel existing roads for the entirety of its length. No homeowners will be displaced by the Project. All land impacted during construction will be restored to the extent possible, and landowners will be compensated for any damages due to construction operations or structure and conductor placement. The EFs associated with the new line (1.2 kV/m) will be significantly less than the maximum levels permitted by state regulators (8 kV/m). No stray voltage issues are anticipated. Similarly, Project facilities will comply with applicable noise standards.

Environmental justice communities are crossed by the Proposed Alignment. These communities may temporarily see increased traffic and demand for public services during construction

activities; however, Project benefits include a temporary increase in local business revenue and long-term increased reliability of electrical services.

The routing of the Project minimizes potential tree removal but may require the permanent removal of approximately 9.5 acres of trees within its ROW. There are no wetlands crossed by the Proposed Alignment; therefore, structures are not proposed to be placed in wetlands. If the final alignment crosses wetlands, Great River Energy will work to span wetlands where feasible. Great River Energy does not anticipate impacts to groundwater resources within the Project area and will continue to coordinate with the MDH and cities of Eagan and Burnsville to protect their DWSMAs and WHPAs. Great River Energy will also continue to coordinate with both the USFWS and MDNR regarding potential impacts to federal and state listed species, respectively, including state-designated calcareous fens.

Unavoidable impacts include a minor change in aesthetics associated with taller pole structures relative to the existing structures, temporary disruption of access to recreational activities along the Proposed Alignment (e.g., bike trails) during construction, and the presence of additional traffic during construction on the local roads.

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APPLICATION OF RULE CRITERIA

8 APPLICATION OF RULE CRITERIA

8.1 Route Permit

According to Minn. Stat. § 216E.02, subd. 1, it is the policy of the state of Minnesota to locate HVTLs in an orderly manner that minimizes adverse human and environmental impacts and ensures continuing electric power system reliability and integrity. The Commission has promulgated standards and criteria for issuing Route Permits (Minn. R. 7850.4000). That rule provides that the Commission shall issue Route Permits for HVTLs that are consistent with state goals to conserve resources, minimize environmental impacts and impacts to human settlement, minimize land use conflicts, and ensure the state's electric energy security through efficient, cost-effective transmission infrastructure. The Project addresses these criteria:

- The Project is consistent with state goals to conserve resources because almost the entire Project is proposed to be routed along Great River Energy's existing transmission line ROW and parallel to existing road ROWs, thus avoiding and minimizing potential additional impacts to the extent practicable.
- The Project will minimize environmental impacts because:
 - Almost the entire Project is proposed to be routed along an existing transmission line ROW, which will avoid and minimize potential impacts on vegetation and wildlife.
 - Great River Energy will develop its final alignment based on the permitted route to further avoid and minimize impacts to environmental resources, in compliance with federal, state, and local regulations and in coordination with applicable federal, state, and local agencies.
 - Great River Energy will design the final alignment to avoid placement of structures in wetlands and span as many wetlands as practicable.
 - Great River Energy will coordinate with the MDH and cities of Eagan and Burnsville to avoid impacts to groundwater resources.
 - Great River Energy will coordinate with the USFWS and MDNR to avoid and minimize impacts to federal and state listed resources, respectively, including state-designated calcareous fens.
- Great River Energy will implement construction, restoration, operation, and maintenance procedures, and BMPs to further avoid and minimize impacts to environmental resources. The Project will minimize impacts on human settlement and other land use conflicts because:

- It is proposed to be routed almost entirely within Great River Energy's existing transmission line ROW and parallel to road ROWs, thus avoiding impacts to new landowners and parcels.
- Great River Energy will develop its final alignment based on landowner and stakeholder input to avoid and minimize impacts to residents and business owners along the final route.
- Great River Energy will coordinate with the MnDOT, County, and City Highway/Road departments to minimize impacts to traffic and develop traffic plans during construction.
- Disturbed areas will be restored to their original condition to the maximum extent practicable and Great River Energy will negotiate compensation with landowners for unavoidable impacts.
- The Project is consistent with state goals to ensure electric energy security because it will provide looping to maintain and improve the reliability of the transmission lines that serve the existing Deerwood and River Hills Substations and the electric cooperative members served by those substations, including Dakota Electric Association.

8.2 Conclusion

Great River Energy respectfully requests that the Commission issue a Route Permit for the proposed Project in Dakota County, Minnesota.