

# **GREAT RIVER ENERGY AND LAKE REGION ELECTRIC COOPERATIVE**

APPLICATION TO THE MINNESOTA PUBLIC UTILITIES COMMISSION  
FOR A ROUTE PERMIT AND ENVIRONMENTAL ASSESSMENT FOR THE

## **OTTO TAP 115-kV TRANSMISSION LINE PROJECT IN OTTER TAIL COUNTY, MN**

DOCKET NO.  
ET2/TL-25-269



**November 2025**

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## LIST OF ABBREVIATIONS

AIMP	Agricultural Impact Mitigation Plan
ALJ	administrative law judge
APLIC	Avian Power Line Interaction Committee
alignment	The general path a transmission line will follow
Applicants	Great River Energy and Lake Region Electric Cooperative
Application	Route Permit Application
AQI	Air Quality Index
ARMER	Allied Radio Matrix for Emergency Response
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BNSF	Burlington Northern—Sante Fe Railroad
BMPs	best management practices
BWSR	Minnesota Board of Water and Soil Resources
CFR	Code of Federal Regulations
CH <sub>4</sub>	methane
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2e</sub>	carbon dioxide equivalent
Commission	Minnesota Public Utilities Commission
CWI	County Well Index
dBA	decibel – A weighted
DEED	Minnesota Department of Employment and Economic Development
EA	environmental assessment
EF	electric field
ELF	extremely low frequency
EMF	electromagnetic field
EMS	Emergency Medical Services
EQB	Minnesota Environmental Quality Board
ESA	Endangered Species Act
FAA	Federal Aviation Administration
G	gauss
GLO	General Land Office
GHG	greenhouse gas
HVTL	high voltage transmission line
IPaC	Information for Planning and Consultation
IMDs	implantable medical devices
kV	kilovolt

kV/m	kilovolts per meter
LREC	Lake Region Electric Cooperative
LR-PR	Great River Energy's Perham to Rush Lake 115-kV Transmission Line
mA rms	milliamperes root mean square
MBS	Minnesota Biological Survey
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
MHz	megahertz
MIAC	Minnesota Indian Affairs Council
Minn. R.	Minnesota Rules
Minn. Stat. §	Minnesota Statutes Section
MISO	Midcontinent Independent System Operator
MnDOT	Minnesota Department of Transportation
MP	milepost
mph	miles per hour
MPCA	Minnesota Pollution Control Agency
MRO	Midwest Reliability Organization
N <sub>2</sub> O	nitrous oxide
NAC	Noise Area Classifications
NAAQS	National Ambient Air Quality Standards
NESC	National Electrical Safety Code
NIEHS	National Institute of Environmental Health Sciences
NO	nitrogen oxide
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	oxides of nitrogen
NLCD	National Land Cover Database
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OSA	Office of the State Archaeologist
OSHA	Occupational Safety and Health Administration

ppb	parts per billion
PABH	Palustrine Aquatic Bed, Permanently Flooded
PEM1Ad	Palustrine Emergent, Persistent Temporarily Flooded Partly Drained/Ditched
PEM1Cd	Palustrine Emergent, Persistent Seasonally Flooded Partly Drained/Ditched
PM <sub>2.5</sub>	fine particulate matter equal to or less than 2.5 microns in diameter
PM <sub>10</sub>	particulate matter equal to or less than 10 microns in diameter
Project	Constructing a new 115-kV transmission line and a new Otto Substation
Project Area	The general area within an approximate 1-mile radius of the Project, unless otherwise defined
Proposed Alignment	The path that the transmission line will follow as proposed by Great River Energy
Proposed ROW	The 100-foot-wide area for construction and operation of the transmission line that is centered on the Proposed Alignment as proposed by the Applicants
Proposed Route	The corridor in which Great River Energy proposes to build the approximately 2.9-mile transmission line presented in this Route Permit Application. Great River Energy Requests a route width of 200 feet for most of the Proposed Route, with a wider route width of up to 750 feet at either end of the Project. The Proposed Route contains the Proposed ROW and the Proposed Alignment.
Proposed Route Width	An alternate term for the Proposed Route
PUBH	Palustrine Unconsolidated Bottom, Permanently Flooded
ROI	region of influence
RMS	root mean square
ROW	Right-of-way, or the area required for safe construction and operation of the transmission line. The Applicant's Proposed ROW is 100 feet.
SF <sub>6</sub>	sulfur hexafluoride
SHPO	State Historic Preservation Office
SO <sub>2</sub>	sulfur dioxide
SSURGO	Soil Survey Geographic Database
SWPPP	Stormwater Pollution Prevention Plan
TDAT	Tribal Directory Assessment Tool
THPO	Tribal Historic Preservation Officer
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

### 1 INTRODUCTION

Great River Energy and Lake Region Electric Cooperative (LREC) (together, the Applicants) submit this Route Permit Application (Application) to the Minnesota Public Utilities Commission (Commission) for a Route Permit to build a new 2.9-mile 115-kilovolt (kV) single-circuit high voltage transmission line in Otto and Pine Lake Townships and construct a new Otto Substation (replacing the existing Otto Substation) in Otter Tail County, Minnesota, referred to as the Otto Tap 115-kV Transmission Line Project (Project). An application completeness checklist is provided in **Appendix A**.

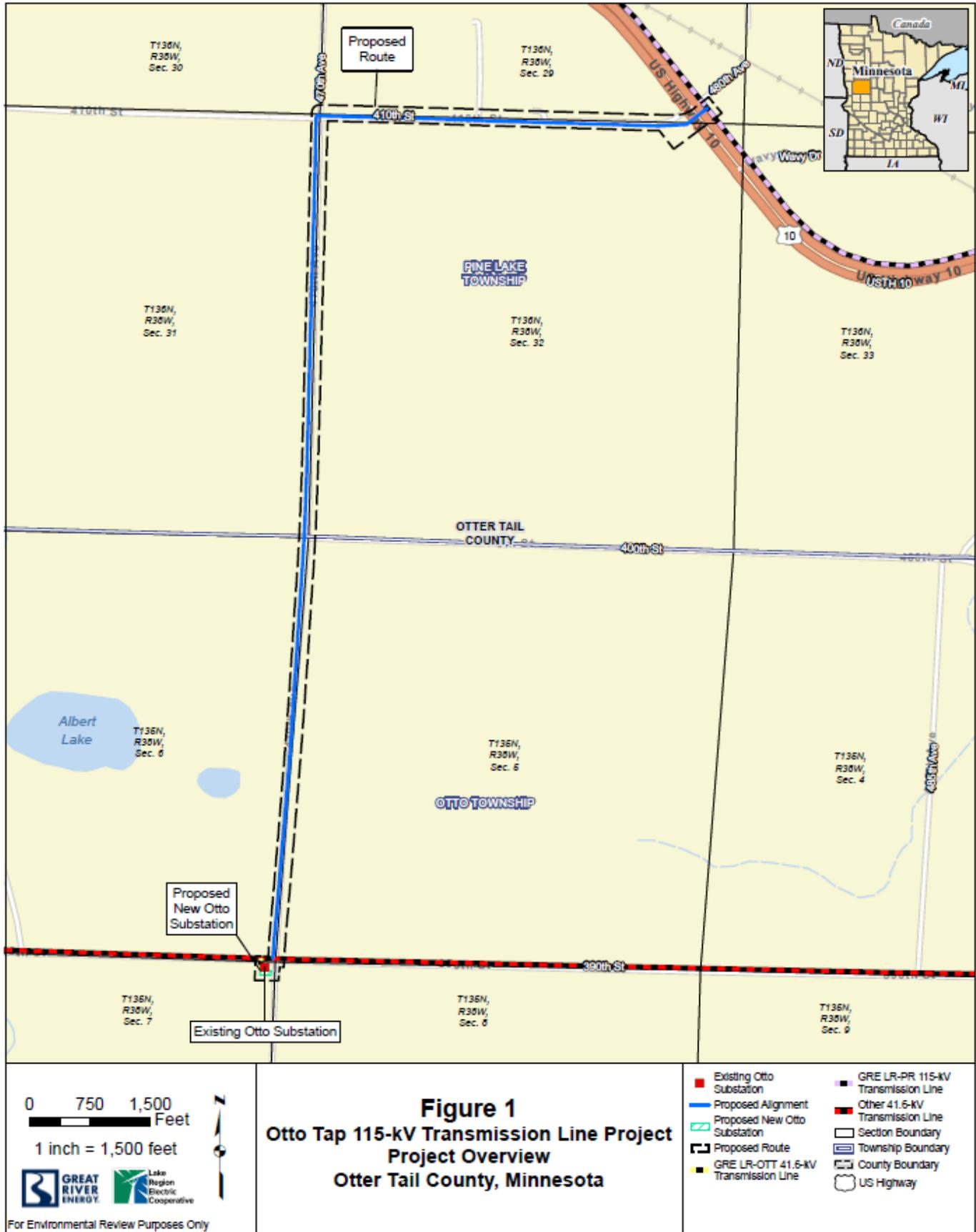
As shown on **Figure 1**, the Project will consist of a tap line from Great River Energy's 115-kV Perham to Rush Lake (LR-PR) transmission line to LREC's existing Otto Substation parcel where a new Otto Substation will be constructed to receive 115-kV service. This Project is needed to enable LREC to continue to provide reliable service by upgrading the Otto Substation with a connection to the 115-kV transmission system. The transmission line will be constructed and owned by Great River Energy. The Otto Substation will be constructed, owned, and operated by LREC.

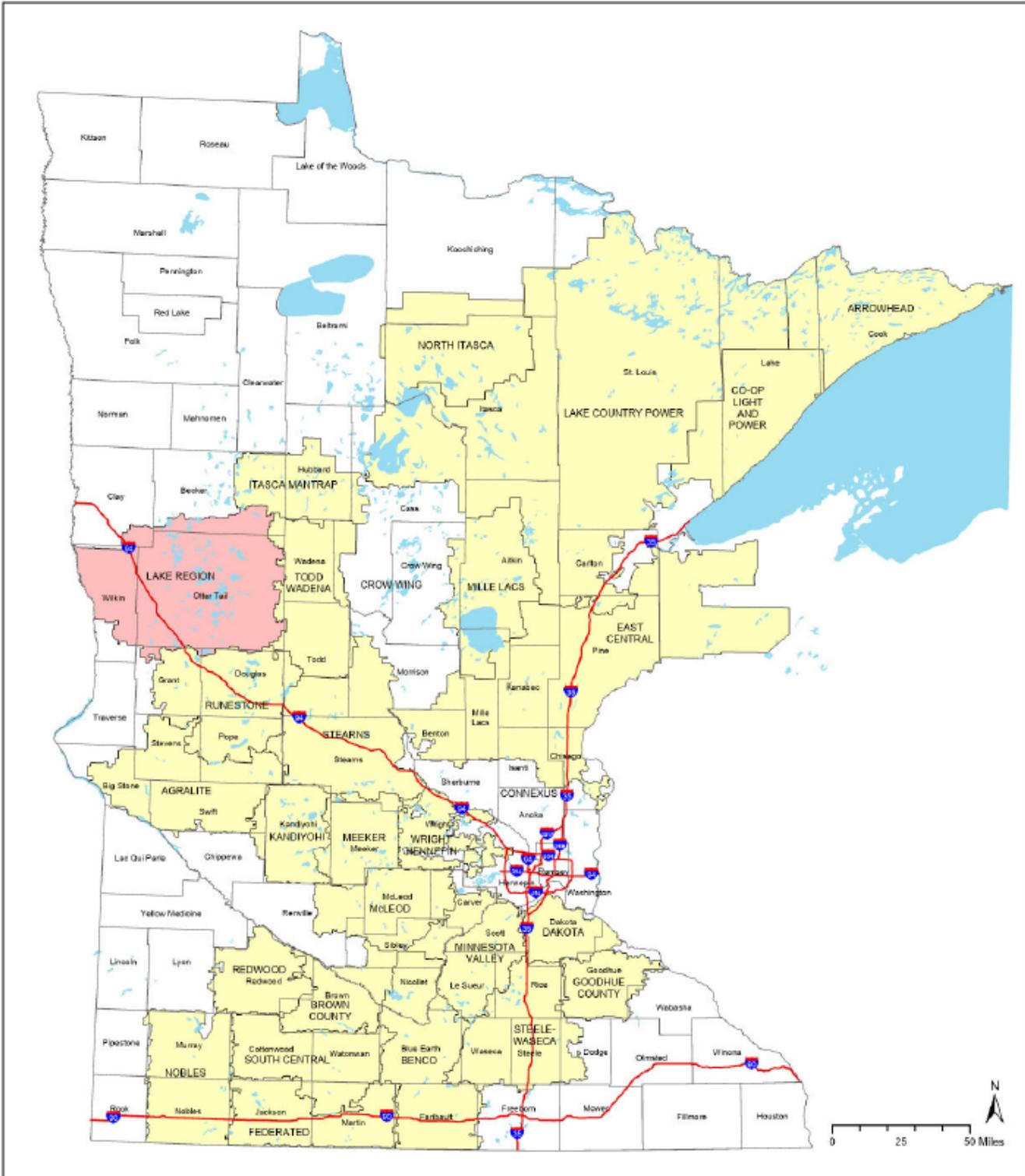
#### 1.1 Great River Energy and Lake Region Electric Cooperative Background

Great River Energy is a not-for-profit wholesale electric power cooperative which provides electricity to approximately 1.7 million people through its member-owner cooperatives and customers. Through its member-owners, Great River Energy serves two-thirds of Minnesota geographically and parts of Wisconsin (**Figure 2**). Great River Energy's electric system is interconnected directly with neighboring suppliers. Great River Energy is a member of the Midwest Reliability Organization (MRO) and the Midcontinent Independent System Operator (MISO).

Great River Energy's mission is to safely provide member-owners with affordable, reliable energy in harmony with a sustainable environment. Great River Energy owns and operates more than 5,100 miles of transmission line (69-kV or higher) and owns more than 100 substations 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.

LREC is the distribution cooperative serving the area in which the Project will be located and is one of Great River Energy's transmission and power customers. LREC is based in Pelican Rapids, Minnesota and provides electric service to a 3,200-square-mile service area which includes portions of seven Minnesota counties: Becker, Clay, Douglas, Grant, Todd, Wadena, and Wilkin (**Figure 2**). LREC does not generate power; rather, LREC distributes energy to homes and businesses supplied and transmitted by Great River Energy to their substations. The Otto Substation provides power to customers primarily in Otter Tail County.





Name	Landbase
Cooperatives	Interstate
Lake Region Electric Cooperative	County Line
	Lakes

GIS Data sources include: MNGEO, MNDNR, MNDOT, and Great River Energy

**Figure 2**  
**Otto Tap 115-kV Transmission Line Project**  
**Great River Energy & Lake Region Electric**  
**Cooperative Service Territories**



## 1.2 Project Ownership

Great River Energy will own and operate the new 2.9-mile 115-kV Otto Tap transmission line between the switch structure on the LR-PR transmission line northeast of U.S. Highway 10 and the new Otto Substation. Great River Energy will own the last structure outside the substation fence line and the conductors going to the first structure located within the substation itself (or, the “high-side” structure). Great River Energy will also own some metering equipment within the new Otto Substation.

LREC presently owns the property on which the existing Otto Substation is located, as well as its components. LREC will replace the existing substation with a new substation to accommodate the new 115-kV components on the same parcel immediately south of the existing 41.6-kV substation. The existing substation will be decommissioned and removed. LREC will own the high-side structure and the conductor span between it and the new 115/12.47-kV stepdown transformer. Beyond the transformer, the remainder of the substation is comprised of low voltage equipment and control systems, which will also be owned by LREC.

## 1.3 Permittees and Project Contacts

Great River Energy and LREC are the permittees for the Project. The contacts for the Project and this Application are:

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Great River Energy  
Project Manager, Transmission Permitting  
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Maple Grove, MN 55369  
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Engineering Supervisor  
1401 South Broadway  
Pelican Rapids, MN 56572  
218-863-9846  
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## 1.4 Project Location

The Project is located within Otto and Pine Lake Townships in Otter Tail County, Minnesota. It is approximately 3 miles southeast of the city of Perham and does not cross city boundaries. Major highways in the area include U.S. Highway 10 to the north and northeast. The Project is in the Township, Ranges, and Sections shown in **Table 1**.

**Table 1 Townships, Ranges, and Sections Crossed by the Project**

Township Name	Township	Range	Sections
Otto	135	38	29, 30, 31, 32
Pine Lake	136	38	5

**1.5 Proposed Project**

Great River Energy proposes to construct a new 2.9-mile 115-kV single-circuit transmission line between its existing 115-kV LR-PR transmission line and the parcel where the existing Otto Substation is located. The new Otto Substation will replace the existing Otto Substation just south of the existing substation within LREC’s existing property. An overview of the Project is shown on **Figure 1. Appendix B** also contains a series of detailed route maps depicting the Proposed Alignment, the 100-foot-wide right-of-way (Proposed ROW), and the 200-foot to 750-footwide Proposed Route for the Project, including the existing Otto Substation and proposed new substation footprint. The Proposed Route contains the Proposed Alignment and Proposed ROW. More information on the Proposed Route, Proposed Alignment, and Proposed ROW are included in Section 3.1.1, Section 3.1.2, and Section 3.1.3, respectively.

<b>What is a Proposed Route, Proposed Alignment, and Proposed Right-of-Way?</b>
<p>A “Proposed Route,” “Proposed Route Width,” or “Route” is a corridor that is requested by Great River Energy in this Application and approved by the Commission in a route permit. As part of the permitting process, the Commission may modify the Route Width. The route permit issued by the Commission is the area in which Great River Energy will generally be authorized to construct its transmission line. It does not represent the area of disturbance for construction and operation of the Project. Great River Energy is requesting a Route Width of 200 feet for most of the Route, with a wider area at the endpoints of the Project.</p> <p>A “Proposed Alignment” is Great River Energy’s initial proposal for where the line would be built and where it turns or crosses from one side of a road to the other. The Proposed Alignment may change due to input from landowners, agencies, and owners of other utilities in the area.</p> <p>A “Proposed Right-of-Way” or “Proposed ROW” is the space around the Proposed Alignment that Great River Energy would maintain and protect from encroachments to ensure the safe and reliable operation of the transmission line. Landowners are compensated for the ROW as part of the easement acquisition process. Great River Energy is proposing a Proposed ROW of 100 feet wide, or 50 feet on either side of the Proposed Alignment.</p>

Great River Energy estimates that the transmission line will cost approximately \$4.4 million. LREC estimates that the Otto Substation will cost approximately \$2.3 million. A detailed breakdown of Project costs is included in Section 3.3.

Construction of the Otto Substation and the transmission line is proposed to commence in fall 2027, and the Project is anticipated to be in service in summer 2028.

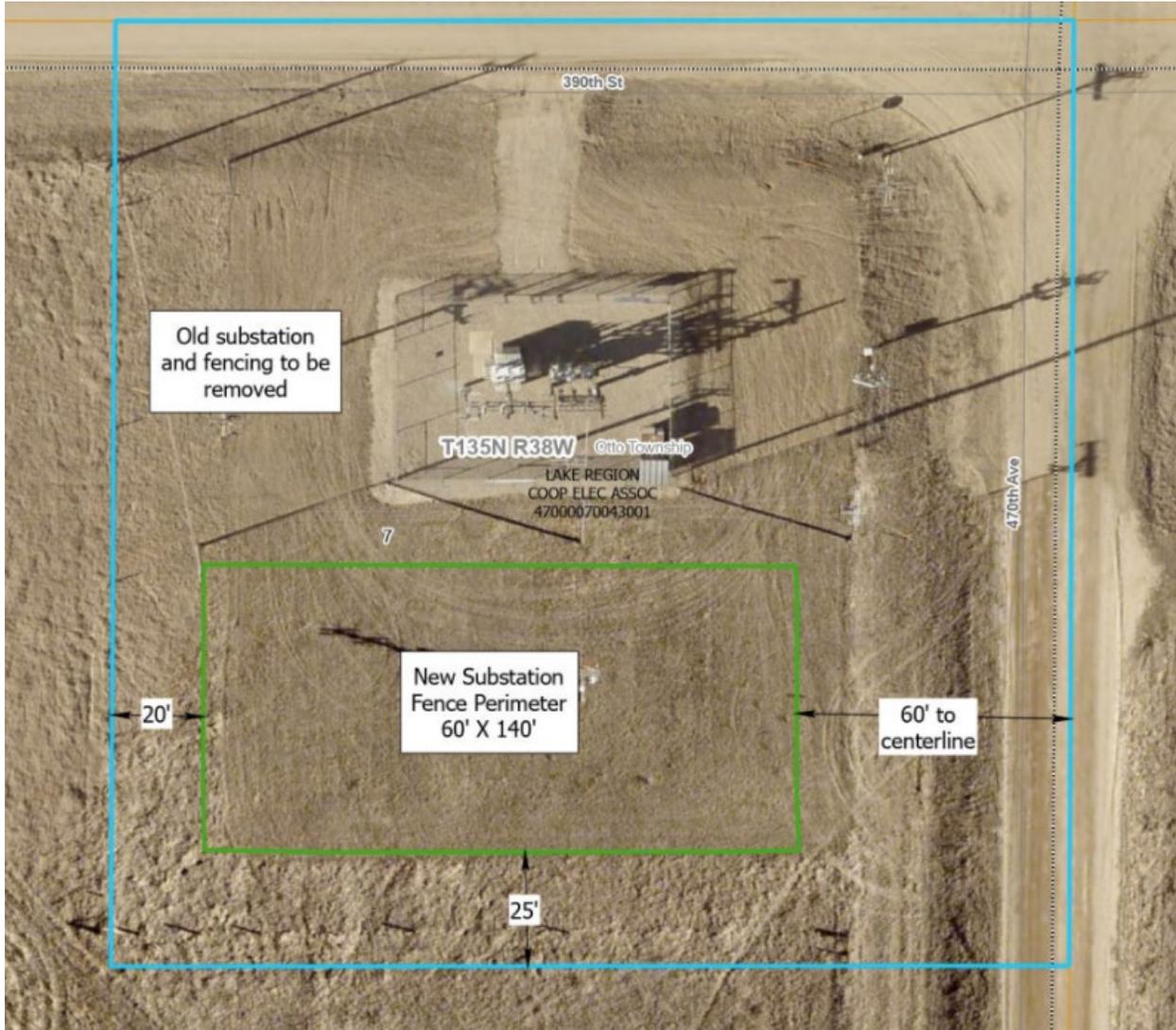
Great River Energy will construct the transmission line primarily with direct-embedded wood or steel structures. Larger laminate poles with guying or steel poles on concrete foundations might be needed for angles. These poles will typically be 70 to 90 feet above ground and placed 350 to 400 feet apart. A new switch will be installed on the existing LR-PR 115-kV line. More information on structure design is included in Section 5.1.1.

Great River Energy would generally obtain a 100-foot-wide easement for construction and operation of the transmission line (typically 50 feet off each side of the transmission line). Where the Project parallels road right-of-way, Great River Energy plans to place structures approximately 2 to 7 feet outside of the road right-of-way, to the extent that there are no other conditions necessitating other placement (e.g., other buried utilities). Great River Energy will typically seek an approximately a 55-foot-wide easement from landowners along roadways. Landowners will be compensated for the easement as part of the easement acquisition process.

LREC has existing overhead distribution lines along portions of the Proposed ROW. Great River Energy currently anticipates that distribution lines within the Proposed ROW will be buried by LREC, except where they cross an existing buried pipeline. In this case, the distribution lines will be constructed on separate distribution structures or as underbuild on the new 115-kV structures to span over the pipeline. Because the distribution lines are not subject to Commission requirements due to their lower voltage, LREC's work related to those distribution lines is not included as part of this Application. More information on distribution lines is included in Section 3.1.9.

LREC intends to replace its existing Otto Substation with a new substation located directly south of the existing Otto Substation on land currently owned by LREC (**Figure 3**). The existing substation infrastructure and the existing fenceline will be removed. The new footprint will be approximately 8,400 square feet (60 feet by 140 feet). This area will be graveled and fenced. High voltage electrical components within the fenceline will include the high-side 115-kV structure (the last structure before the conductors interconnect to the substation equipment), a 115/12.47 kV stepdown transformer, a short segment of 115-kV conductor from the high-side structure and switch gear.

**Figure 3 Otto Substation Site Plan**



### **1.6 Project Need and Purpose**

The Project is needed to improve electrical reliability. By upgrading the Otto Substation with a new connection to the 115-kV transmission system, the Project will enable LREC to continue to provide reliable service to its customers in the region. Further, the existing substation is aging and, due to its condition, needs to be replaced.

### **1.7 Summary of Potential Human and Environmental Impacts**

The Environmental Assessment (EA) included as part of this Application (Chapter 6) analyzes the potential human and environmental impacts of the proposed Project. It also discusses ways to mitigate these impacts. Generally, potential impacts associated with the Project are anticipated to be temporary and minimal.

No homeowners will be displaced by the Project. All land impacted during construction will be restored to the extent practicable, and landowners will be compensated for any crop losses or damage due to construction operations or structure and conductor placement. The electric fields (EFs) associated with the new transmission line (1.55 kilovolts per meter [kV/m]) will be significantly less than the maximum levels permitted by the Commission (8 kV/m). No stray voltage issues are anticipated. Similarly, Project facilities will comply with applicable noise standards. The Proposed Route parallels existing roads and electric distribution lines for 97 percent of its length. The routing of the Project minimizes potential tree removal, but the Project might require the permanent removal of approximately 2.9 acres of trees within the Proposed ROW. There are minimal wetlands within the Proposed ROW; Great River Energy anticipates spanning all wetlands. These and other potential human and environmental impacts, as well as applicable avoidance and minimization measures, are described in more detail in Chapter 6 of this Application. A list of unavoidable impacts related to construction and operation of the Project is presented in Section 6.9.

Great River Energy will develop its final transmission line alignment within the Route permitted by the Commission based on information developed in the record, as well as coordination with landowners and applicable federal, state, and local agencies to further avoid and minimize impacts on human and environmental resources, and in compliance with federal, state, and local regulations.

## **1.8 Preapplication Coordination and Public Involvement**

### **1.8.1 Public Involvement**

Great River Energy has conducted ongoing individual outreach with all 14 of the potentially affected landowners since December 2024. The Commission's permit review process provides opportunities for the public to participate and comment on the Project, in accordance with Minnesota laws and regulations. More information on participating and commenting on Commission proceedings can be found on its website, <https://mn.gov/puc/get-involved/public-comments/>. The docket number for the Project is 25-269. Section 2.3 includes more information on the review process.

Except for road crossings, the Project will be located entirely on private land. New easements will be needed for the 115-kV transmission line from the LR-PR transmission line to the new Otto Substation. Great River Energy representatives will work directly with individual landowners to negotiate the necessary easements. If a negotiated easement with a landowner cannot be reached, Great River Energy can use the eminent domain process to obtain the rights necessary to build and operate the Project. To do so, Great River Energy would file a condemnation action in the district court under the process described in Minnesota Statutes Chapter 117. Within that process, the court appoints impartial commissioners<sup>1</sup> who determine in the first instance the amount of just compensation Great River Energy must pay the landowner for the acquired easement rights. The landowner will be compensated for the easement as determined by court-appointed impartial

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<sup>1</sup> The court-appointed commissioners are not commissioners of the Minnesota Public Utilities Commission.

commissioners through a court process that is initiated by Great River Energy. Land acquisition procedures are discussed in greater detail in Section 5.1.3.

## **1.8.2 Preapplication Coordination**

Minn. Stat. § 216I.05 requires applicants to provide notice to each local unit of government within the Route, Minnesota Tribal governments, and state technical resource agencies. The Applicants have conducted outreach as presented below. The Applicants have incorporated information received during agency consultations into the relevant sections of this Application. Where additional coordination has occurred, it is summarized below with references to the section of this Application which provides additional detail.

In May 2025, Great River Energy sent initial notification letters to federal, state, and local agencies regarding the Project. These letters stated that Great River Energy intended to file a Route Permit application for the Project. Great River Energy also sent notification letters to additional agencies on the Agency Representatives Service List maintained by the Commission in September 2025. Copies of these letters, correspondence received to date, and a table presenting outreach efforts are included in **Appendix C**. Agency responses, where received, are summarized below.

### Federal Agencies

- U.S. Army Corps of Engineers
  - The U.S. Army Corps of Engineers (USACE) responded to the May 2025 notification letter by asking a question about the permitting timeline.
- U.S. Fish and Wildlife Service
  - In April 2025, Great River Energy submitted an Information for Planning and Consultation (IPaC) review through the U.S. Fish and Wildlife Service's (USFWS) online IPaC program. Results of the USFWS automated review are addressed in Section 6.8.5.
  - The USFWS responded to the May 2025 notification letter asking Great River Energy to complete an IPaC review and develop an Official Species List (Section 6.8.5). Additionally, USFWS recommended the installation of bird diverters near Albert Lake (Section 6.8.10).
- U.S. Department of Agriculture, Natural Resources Conservation Service (no response)
- Federal Aviation Administration (FAA)
  - The FAA indicated that the Notice Criteria Tool can inform Great River Energy if it needs to file a formal notice to the FAA in response to the May 2025 notification letter. Great River Energy completed this filing; the results indicated that the Project will not result in hazards to airports (see **Appendix C**). See discussion in Section 6.4.7.

### Minnesota Agencies

- Department of Agriculture
  - Great River Energy corresponded with the Minnesota Department of Agriculture (MDA) about the Project, including the need for an Agricultural Impact Mitigation

Plan (AIMP). Great River Energy will coordinate with MDA on an AIMP for this Project. Mitigation concerning potential induction to center-pivot irrigation systems was added to Section 6.6.1.

- Department of Health (no response)
- Department of Natural Resources
  - The Minnesota Department of Natural Resources (MDNR) provided a response to Great River Energy’s Minnesota Conservation Explorer (MCE) submittal on May 20, 2025 (see Section 6.4.5).
- Department of Transportation
  - Great River Energy met with the Minnesota Department of Transportation (MnDOT) on June 18, 2024. At this meeting MnDOT confirmed that no Early Notification Memo will be needed for the Project because the single perpendicular crossing of MnDOT right-of-way will involve structures outside of MnDOT right-of-way. See discussion in Section 6.4.7.
- Minnesota Indian Affairs Council
  - The Minnesota Indian Affairs Council (MIAC) initially provided comments about the Otto Substation location in January 2025. At that time, MIAC indicated that no known or suspected burial sites would be affected by the Project. MIAC responded to the May 2025 notification letter asking that the request come in a different format. Great River Energy submitted the requested information on June 30, 2025, after submission of the State Historic Preservation Office (SHPO) letter, which was used to inform the updated request to MIAC. See discussion in Section 6.7.
- Office of the State Archaeologist (no response)
- Pollution Control Agency
  - The Pollution Control Agency responded to the May 2025 notification letter indicating they will comment on the project once an application has been filed with the Commission.
- State Historic Preservation Office
  - Great River Energy’s consultant, Merjent, submitted the results of the literature review and Phase IA Cultural Resources Assessment on June 24, 2025. The SHPO responded on August 1, 2025. See discussion in Section 6.7.
- Wetland Conservation Act – Board of Water and Soil Resources (no response)
- Minnesota Office of Pipeline Safety (no response)
- Minnesota Department of Commerce (no response)
- Minnesota Department of Revenue
  - Minnesota Department of Revenue had no concerns in response to the September 2025 notification letter.

#### Local Agencies and Organizations

- East Otter Tail Soil and Water Conservation District (no response)
- Otter Tail County

- Great River Energy corresponded with Otter Tail County about the public water ditch along 470<sup>th</sup> Avenue in response to the May 2025 notification letter. See discussion in Section 6.8.8 and 6.8.9.
- Otter Tail County Board of Commissioners (no response)
- Otter Tail County Historical Society (no response)
- Otto Township (no response)
- Pine Lake Township (no response)
- West Central Initiative (no response)
- Wetland Conservation Act – Otter Tail County (no response)
- Southwest Regional Development Commission (no response)

In May 2025, Great River Energy sent notification letters to Tribal governments. These letters stated that Great River Energy intended to file a Route Permit application for the Project. Great River Energy then sent follow-up notification letters to the Tribal Historic Preservation Officers (THPO) who did not respond to the May 2025 letter in September 2025. Great River Energy also sent notification letters to individuals on the Tribal Government Contacts Service List maintained by the Commission in September 2025. Copies of these letters, correspondence received to date, and a table presenting outreach efforts are included in **Appendix D**. Tribal government responses, where received, are summarized below.

#### Tribal Nations and Organizations

- 1854 Treaty Authority (no response)
- Apache Tribe of Oklahoma (no response)
- Bois Forte Band of Chippewa
  - The Bois Forte Band of Chippewa asked several questions about the Project in response to the May 2025 notification letter, including how the structures will be placed and if an Unanticipated Discovery Plan will be in place for the Project. Great River Energy answered the questions posed by the Bois Forte Band of Chippewa. See discussion in Section 6.7.
- Cheyenne and Arapaho Tribes, Oklahoma (no response)
- Flandreau Santee Sioux Tribe of South Dakota (no response)
- Fond du Lac Band of Lake Superior Chippewa (no response)
- Fort Belknap Indian Community of the Fort Belknap Reservation of Montana (no response)
- Grand Portage Band of Lake Superior Chippewa (no response)
- Lac Vieux Desert Band of Lake Superior Chippewa Indians of Michigan (no response)
- Leech Lake Band of Ojibwe
  - The Leech Lake Band of Ojibwe indicated they do not have record of any historic properties in the Project Area in response to the May 2025 notification letter but noted that this does not mean there are not any cultural resources present. See discussion in Section 6.7.

- Lower Sioux Indian Community (no response)
- Menominee Indian Tribe of Wisconsin (no response)
- Mille Lacs Band of Ojibwe
  - The Mille Lacs Band of Ojibwe acknowledged receipt of the September 2025 notification.
- Prairie Island Indian Community (no response)
- Red Lake Nation (no response)
- Santee Sioux Nation, Nebraska (no response)
- Shakopee Mdewakanton Sioux Community
  - The Shakopee Mdewakanton Sioux Community indicated there are no significant cultural resources remaining in the Proposed Route in response to the May 2025 notification letter, and that a campsite was destroyed by construction of U.S. Highway 10. This information is included in Section 6.7.
  - The Shakopee Mdewakanton Sioux Community THPO offered no additional concerns when notified of the Project in September 2025.
- Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota (no response)
- Spirit Lake Tribe, North Dakota (no response)
- Upper Sioux Community, Minnesota (no response)
- White Earth Band of Minnesota Chippewa (no response)

## 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...” Large energy facility is defined as “any high-voltage transmission line with a capacity of 100 kilovolts or more with more than ten miles of its length in Minnesota.”<sup>2</sup> Because the Project is less than 10 miles in length, a Certificate of Need is not required.

### 2.2 Route Permit

Minn. Stat. § 216I.05, subd. 2, provides that “[a] person is prohibited from constructing a high-voltage transmission line without a Route Permit issued by the commission.” High voltage transmission line (HVTL) is defined by Minn. Stat. § 216I.02, subd. 8, as “a conductor of electric energy and associated facilities that is (1) designed for and capable of operation at a nominal voltage of 100 kilovolts or more, and (2) is greater than 1,500 feet in length.” Because the Project consists of a 115-kV transmission line that is 2.7 miles long, which is greater than 1,500 feet in length, a Route Permit from the Commission is required.

### 2.3 Standard Review Process

Minn. Stat. § 216I.07 provides a Standard Review Process for transmission lines between 100- and 300-kV; the Project is proposed as 115-kV and thus qualifies for the Standard Review Process. An Environmental Impact Statement is not required under the Standard Review Process. Instead, an EA is incorporated into this Application as required by Minn. Stat. § 216I.07, subd. 3.

#### 2.3.1 Application Preparation

Minn. Stat. § 216I.05, subs. 3 and 4, set forth the information that must be included in an application. Under the Standard Review Process, an applicant is not required to propose alternative routes but must discuss other routes that were considered and rejected by the applicant (Minn. Stat. § 216I.05, subd. 3). An alternative route considered and rejected for the Project is discussed in Chapter 4.

As required by Minn. Stat. § 216I.07, subd. 3, the Applicants prepared an EA, which is incorporated into this Application as Chapter 6. The EA contains “information regarding the proposed project's human and environmental impacts, and (2) address[es] mitigating measures for identified impacts. The environmental assessment is the only state environmental review document that must be prepared for the proposed project” (Minn. Stat. § 216I.07, subd. 3).

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<sup>2</sup> Minn. Stat. § 216B.2421, subd. 2(3) (2024).

### **2.3.2 Preapplication Coordination**

Minn. Stat. § 216I.05, subd. 5 requires that an applicant provide notice to each local unit of government within which a route is proposed; Minnesota Tribal governments; and state technical resource agencies. Preapplication coordination was discussed in Section 1.8.2 and records of this coordination are provided in **Appendix C and Appendix D**.

Minn. Stat. § 216I.05, subd. 6, requires that an applicant must provide a draft application to Commission staff for review. The Applicants provided a draft of this Application to the Commission on August 5, 2025. The Commission’s review focuses on the application’s completeness and provided clarifications that might help the Commission’s review of the application. An application completeness checklist is provided in **Appendix A**; the Commission’s September 25, 2025, Draft Application Review Comments letter, and the Applicants’ response, are provided in **Appendix E**.

### **2.3.3 Application Notice**

After an application is filed, the Commission determines whether the application is complete within 10 working days (Minn. Stat. § 216I.05, subd. 7). Upon the Commission’s acceptance of this Application as complete, the Commission will provide notice in accordance with Minn. Stat. § 216I.05, subd. 8. This includes newspaper notice, notice to local governments and Tribes, and notices to landowners. To facilitate this notice, a list of the names of each owner whose property is within or adjacent to the Proposed Route, along with relevant contacts including Tribal governments and regional and local government units, is included in **Appendices C, D, and F**.

In addition, an electronic version of the Application will be available on eDockets in docket number 25-269.

### **2.3.4 Public Meeting**

The Standard Review Process requires the Commission to schedule at least one public meeting near the proposed Project's location. The Applicants and the Commission will have representatives available at the public meeting(s). The purpose of the meeting is to provide information about the Project and permitting process, present key issues, and answer questions. Additionally, the Commission will gather information concerning the necessity of an EA addendum under Minn. Stat. § 216I.07, subd. 3.

### **2.3.5 Draft Route Permit**

Once the scoping meeting has been held and after the public comment period closes, the Commission will prepare a draft Route Permit for the Project. The draft Route Permit will “identify the person or persons who are the permittee, describe the proposed project, and include proposed permit conditions” (Minn. Stat. § 216I.05, subd. 10). The Commission can change the draft permit in any respect before final issuance or may deny the permit (Minn. Stat. § 216I.05, subd. 10). Receiving a draft Route Permit does not mean the Applicants can construct the Project.

### **2.3.6 EA Addendum**

Minn. Stat. § 216I.07, subd. 3 (b), states that “if after the public meeting the [C]ommission identifies other . . . routes or potential impacts for review, the [C]ommission must prepare an

addendum to the [EA] that evaluates (1) the human and environmental impacts of the alternative... route, and (2) any additional mitigating measures related to the identified impacts consistent with the scoping decision.” Should an EA addendum be necessary, the Commission will issue a scoping decision that identifies the topics to be studied in the addendum (Minn. Stat. § 216I.05, subd. 10(2)) and Commission staff will prepare it.

### 2.3.7 Public Hearing

After the Commission issues a draft Route Permit and, if necessary, an EA addendum, a public hearing and associated comment period will be held to again solicit public input and to create an administrative record. The Commission will select a person to preside over the hearing, which, in practice, is usually an administrative law judge (ALJ) from the Court of Administrative Hearings. The Commission will establish the procedures to be followed at the hearing. The Applicants will be present at the hearing. Commission staff will be available to answer questions. *See* Minn. Stat. § 216I.07, subd. 4.

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 decide as to the route for the Project, using the criteria set forth in Minn. Stat. 216I.05, subd. 11.

### 2.3.8 Timing

A Route Permit under the Standard Review Process shall be issued 6 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. § 216I.07, subd. 4. The permitting timeline for the Standard Review Process is shorter than the timeline required for the Major Review Process provided in Minn. Stat. § 216I.06.

## 2.4 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 route that is permitted by the Commission and the conditions encountered during construction. A list of the local, state, and federal permits that could be required for the Project is provided in **Table 2**. Each of these requirements and their applicability to the Project are discussed below and in the relevant section of the Application. **Appendix C** contains a record of correspondence with regulatory agencies to date.

**Table 2 Summary of Permits, Licenses, Approvals, and Consultations**

Permit	Jurisdiction	Anticipated
<b>Federal</b>		
Section 404 Clean Water Act Permit (Utility	U.S. Army Corps of Engineers	Possible
Section 10 Rivers and Harbors Act	U.S. Army Corps of Engineers	No
Endangered Species Act / Migratory Bird Treaty Act Consultation	U.S. Fish and Wildlife Service	Yes

Permit	Jurisdiction	Anticipated
Part 7460 Airport Obstruction Evaluation	Federal Aviation Administration	Yes
<b>State</b>		
Route Permit	Public Utilities Commission	Yes
State Endangered Species Consultation	Department of Natural Resources	Yes
Utility Crossing License	Department of Natural Resources	No
Water Appropriation General Permit – Temporary Construction Dewatering	Department of Natural Resources	Possible
National Historic Preservation Act Consultation Minnesota Field Archaeology Act Minnesota Historic Sites Act Minnesota Private Cemeteries Act	State Historic Preservation Office Tribal Historic Preservation Officers	Yes
National Pollutant Discharge Elimination System Construction Stormwater General Permit	Pollution Control Agency	No
Section 401 Clean Water Act Water Quality Certification (via the Section 404 Clean Water Act Permit – Utility Regional General Permit)	Pollution Control Agency	Possible
Wetland Conservation Act	Board of Water and Soil Resources – Local Government Unit Coordination	Yes
Miscellaneous Work Permit for Trunk Highways	Department of Transportation	Yes
Oversize and/or Overweight Permit	Department of Transportation	Possible
Utility Permit	Department of Transportation	Yes
<b>Local</b>		
Oversize/Overweight Moving Permit	Otter Tail County	Possible
Utility Permit	Otter Tail County	No
Approach Application	Otter Tail County	No
Right-of-Way Permit	Otter Tail County	No
Local Road Permit	Pine Lake and Otto Townships	Possible
Wetland Conservation Act	Otter Tail County	Yes
<b>Other</b>		
Crossing Permits/Agreements	Utilities	Possible

## 2.4.1 Federal Approvals

### Section 404 Permit Clean Water Act Permit

A Section 404 permit is required from the USACE, St. Paul District if there are discharges of dredged or fill material into waters of the United States, as defined by the Clean Water Act. Currently, Great River Energy does not anticipate the transmission line will impact waters of the United States. If wetlands are impacted by the final alignment, impacts are anticipated to be eligible for coverage under the Minnesota Utility Regional General Permit. Should this occur, 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 6.8.8 discusses the potential impacts to wetlands associated with the Proposed Route.

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

In accordance with the Endangered Species Act (ESA), the Applicants will assess whether activities associated with construction and operation of the Project could affect any federally listed threatened, endangered, or proposed threatened and endangered species, designated critical habitat, or proposed critical habitat. The Applicants have conducted an early review of the Project using USFWS tools (see **Appendix C**) and will again review these tools for changes once a route has been selected and design of the transmission line is complete. Section 6.8.5 discusses potential impacts to federally listed threatened and endangered species associated with the Proposed Route.

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (BGEPA). 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 will require marking transmission line shield wires or to use alternate structures to reduce the likelihood of avian collisions once the design of the transmission line is complete.

#### 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 FAA. Great River Energy used the FAA's online application webpage (FAA, 2025a) to file Form 7460-1. The results indicated that the Project will not result in hazards to airports (see **Appendix C**). Section 6.4.7 discusses potential impacts to airports.

### **2.4.2 State of Minnesota Approvals**

#### State Endangered Species and Sensitive Resource 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 has consulted with the MDNR Natural Heritage and Nongame Research Program, which collects, manages, and interprets information about nongame species, through the MCE system. The MCE also provides information on other sensitive resources in the Project vicinity. The response to Great River Energy's MCE review request is included in **Appendix C**. As reviews under the MCE system are valid for 1 year from submittal, the Applicants will conduct an updated MCE review once a route has been selected, prior to construction of the Project.

Great River Energy also provided a separate notification letter to MDNR as part of its May 2025 outreach. No response to this letter has been received to date (see record of outreach in **Appendix C**). Great River Energy will work with the MDNR to identify any areas that will require marking transmission line shield wires or use of alternate structures to reduce the likelihood of avian collisions once the transmission line design process is complete.

## Historic, Archaeological, and Tribal Cultural Resources

The Applicants have assessed whether the Project might have the potential to cause effects to a 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 SHPO, and the 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 all human burials, human remains, or human burial grounds, including precontact American Indian burial mounds, found on or in all public or private lands and waters in Minnesota.

Great River Energy submitted a literature review of archaeological and historic properties in the Project vicinity to the Minnesota SHPO in a letter dated June 24, 2025; SHPO responded on August 1, 2025 (see **Appendix C**). Further, Great River Energy requested feedback on the Project from the 11 federally recognized Minnesota Tribal Governments identified in Minn. Stat. §10.65, subd. 2, as well as MIAC, and used the Tribal Directory Assessment Tool (TDAT) to determine Tribes outside of Minnesota with current and ancestral interest to the Project area. Further details regarding outreach are provided in Section 6.7, 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 in Section 6.8.9.

## National Pollutant Discharge Elimination System Construction Stormwater General Permit

Coverage under the Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit is required for stormwater discharges associated with construction activities disturbing one or more acres. One requirement of permit coverage is to develop and implement a stormwater pollution prevention plan (SWPPP), which includes Best Management Practices (BMPs) to minimize discharge of pollutants from the construction site. Great River Energy and LREC expect that coverage under this permit will not be required for the transmission line and new Otto Substation, as construction will not disturb more than 1 acre of soil.

### 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 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 waives its review of the project. As discussed above, should Section 404 coverage be required, the Project is likely to qualify for coverage under the Minnesota Utility Regional General Permit; the MPCA has already issued a Section 401 Certification associated with this permit and no additional review or permit would be required should the Project meet applicable conditions.

### Wetland Conservation Act

The Minnesota Board of Water and Soil Resources (BWSR) coordinates the state Wetland Conservation Act. Otter Tail County administers the Wetland Conservation Act for the entirety of the Proposed Route. Should wetlands be impacted along the permitted alignment, 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 allow utility exemptions for installation, maintenance, repair, or replacement of transmission 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 0.5 acre of wetlands. Alternatively, the transmission line may also qualify for a federal approvals exemption for utilities under Minn. R. 8420.0420, Subp. 4, which waives the requirement for a replacement plan for impacts authorized under Section 404 of the Clean Water Act if minimum state standards are met.

Further discussion on potential impacts to wetlands associated with the Proposed Route are provided in Section 6.8.8.

### Utility Accommodation Permit

A Utility Accommodation Permit is required by MnDOT for the use and occupancy of highway right-of-way by public and private utility facilities. After the Route Permit is issued, Great River Energy will apply for this permit as applicable.

### Miscellaneous Work Permit for Trunk Highways

A Miscellaneous Work Permit is required by MnDOT for placement of temporary obstructions on the highway right-of-way (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/Overweight permit is required by MnDOT when a vehicle is transporting an oversize or overweight load on Minnesota roadways. If any transport load qualifies as oversize or overweight, the transportation contractor will apply for the appropriate permit.

### **2.4.3 Local Approvals**

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

#### County Road Permits

The Project does not use or cross county road right-of-way. The new Otto Substation will use the driveway of the existing substation and will not need a new access point. Therefore, Right-of-Way Permits, Utility Permits, and Approach Applications are not anticipated. An Oversize/Overweight Moving Permit is required for moving oversized structures longer than 60 feet on county roads. Although unlikely, if haul routes are planned along county roads, the transportation contractor will apply for this permit once the transmission line design is complete and will acquire it prior to applicable construction activities. Applicable approvals related to township roads will be obtained and complied with if applicable.

### 3 PROPOSED PROJECT

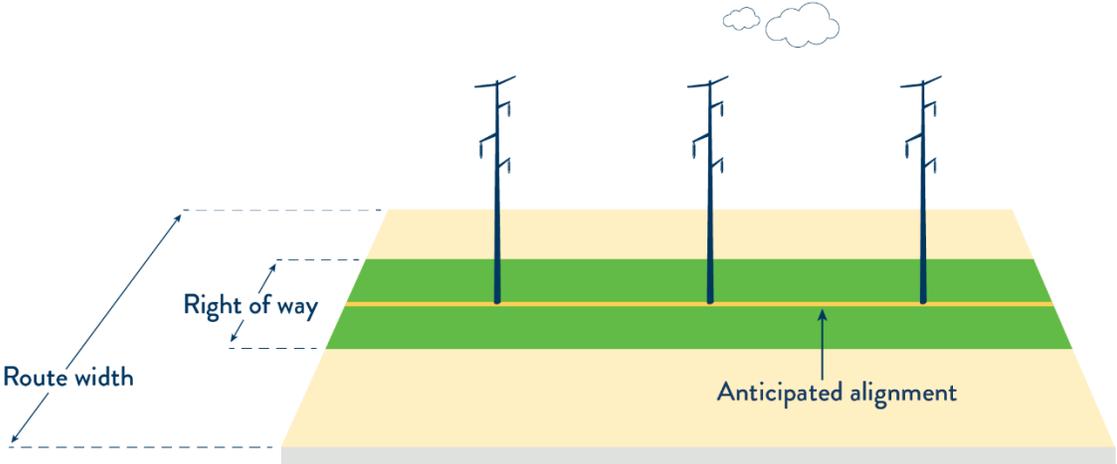
Great River Energy proposes to build a new 2.9-mile 115-kV single-circuit transmission line between its existing 115-kV LR-PR transmission line and the proposed Otto Substation in Otter Tail County, Minnesota. The proposed Otto Substation will replace the existing Otto Substation just south of the existing substation within LREC’s existing property. Once the new Otto Substation is operational, the existing substation equipment will be removed. This Project is needed to enable LREC to continue to provide reliable service in Otter Tail County by upgrading the Otto Substation and connecting it to the 115-kV transmission system.

An overview of the Project is shown on **Figure 1**. The Otto Substation is shown on **Figure 3**. **Appendix B** contains a series of larger scale aerial photo maps depicting the Proposed Route (a 200-foot to 750-foot-wide corridor within which the Project would be located), Proposed Alignment, the 100-foot-wide Proposed ROW for construction and operation of the Project.

#### 3.1 Transmission Line

When the Commission issues a route permit, it designates a transmission line route width. This may be different than the route that an applicant proposes in its application. If the permittee wishes to construct the transmission line outside of the route width designated in the permit, it must request to amend the permit. The permit also identifies an anticipated alignment and right-of-way (**Figure 4**).

**Figure 4**  
**Arrangement of the Route Width, Right-of-Way, and Alignment**



### 3.1.1 Proposed Route Width

Minn. Stat. §216I.02, subd. 15, defines a “route” as the location of a HVTL between two end points. Under this definition a route may have a variable width of up to 1.25 miles. Commission route permits define the route width for each project. The route width is typically wider than the right-of-way needed to construct and operate a project to provide flexibility to address human and environmental concerns, landowner concerns, and physical constraints (e.g., other utilities) that arise during the permitting process and after a route permit has been issued but is not so wide that it is impossible to determine where the transmission line would be constructed. This makes predicting potential impacts possible. The route width, in combination with the anticipated alignment, is intended to balance flexibility and predictability in the Commission’s route permit.

Within this Application, Great River Energy is generally requesting a 200-foot-wide Proposed Route centered on existing road centerlines; Great River Energy is also requesting varied widths for two portions of the Proposed Route to account for existing infrastructure, mitigate potential engineering challenges, and facilitate potential realignments to connect to the Otto Substation:

1. Approximately 750 feet by 260 feet where the Proposed Route crosses U.S. Highway 10 at 410<sup>th</sup> Street (**Appendix B, Page 1**).
2. Approximately 300 feet by 300 feet to encompass transmission line alignment options into the new Otto Substation that includes the entire 1-acre parcel (**Appendix B, Page 8**).

### 3.1.2 Proposed Alignment

As described in Section 1.5, the Proposed Alignment refers to the location of the poles and conductors within the Proposed ROW as proposed by the Applicant. It is not the final alignment. The Proposed Alignment is used for review purposes only – the transmission line might ultimately be constructed elsewhere within the permitted route width.

As part of this permitting process, the Commission will authorize a route for the Project that identifies a route width and anticipated alignment. This Application includes a Proposed Alignment; the anticipated alignment approved by the Commission may differ from the Proposed Alignment based on input received from landowners, agencies, and other stakeholders during the permitting process. The transmission line must be constructed generally along the anticipated alignment unless modified in accordance with the Route Permit. Modifications can be necessary because of feedback from landowners, design or engineering constraints, and unforeseen conditions.

The Proposed Alignment begins at Great River Energy’s existing LR-PR line on the east side of U.S. Highway 10 near structure LR-PR-72. The Proposed Alignment will travel southwest to cross U.S. Highway 10 and then follow the south side of 410th Street westerly for approximately nine-tenths of a mile, where it will cross 470th Avenue. The Proposed Alignment turns south and follows the west side of 470th Avenue for approximately 2 miles to the Otto Substation, crossing 390th Street just north of the substation.

Approximately 2.9 miles, or 97 percent, of the Project will be collocated<sup>3</sup> with existing road and utility right-of-way. Where the Project does not collocate with existing right-of-way, it is within existing road right-of-way (the U.S. Highway 10 crossing). Collocation is as follows: 0.8 mile with 410th Street and a LREC distribution line; 2.0 miles with 470th Avenue and a LREC distribution line. Ultimately, Great River Energy plans to place the Proposed Alignment approximately 2 to 7 feet outside of existing road right-of-way.

### 3.1.3 Proposed Right-of-Way

The Proposed ROW is the area required for safe operation of the transmission line. It must be within the route approved by the Commission and is the area from which the permittee may obtain agreement from landowners (typically in the form of an easement) to construct and operate the transmission line. The Proposed ROW is the Applicant's proposal for the physical land area that will be maintained by Great River Energy to construct, operate, and maintain the transmission line. The Proposed ROW is within the Proposed Route Width.

Great River Energy will require a new 100-foot-wide easement for construction and maintenance of the transmission line. Great River Energy representatives will work directly with individual landowners to acquire the necessary easements and other land rights for the construction, operation, and maintenance of the Project once the final route and alignment are determined (see Section 5.1.3).

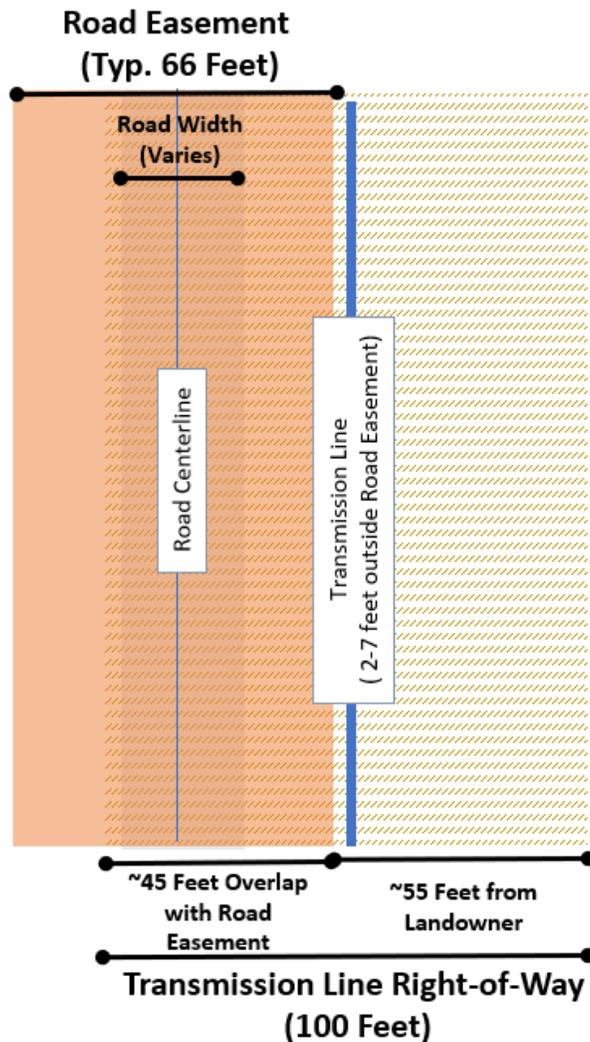
Where the Project parallels road right-of-way, Great River Energy plans to place poles approximately 2 to 7 feet outside of the road right-of-way, to the extent that there are no other conditions necessitating other placement (e.g., other buried utilities). Great River Energy will typically seek a 55-foot-wide easement from landowners along roadways. The remaining 45 feet will be shared with road right-of-way. This general arrangement is depicted on **Figure 5**.

Survey and title work completed after issuance of a route permit ultimately define the size (i.e., width) and location of existing road right-of-way, the necessary placement of transmission line poles outside of the road right-of-way, the areas of overlap, and the easement that must be obtained from the private landowner. The aerial maps in **Appendix B** show where the Project parallels existing roads and road right-of-way, with the name of the road labeled for clarity, and additional description is provided in Section 3.1.2.

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<sup>3</sup> Collocation is any roadway or utility located within 50 feet either side of the Proposed Alignment.

**Figure 5 Arrangement of Road Easement Relative to Transmission Line Right-of-Way**



### 3.1.4 Temporary Easements

The Applicants may acquire additional temporary land use rights for equipment laydown and transmission line stringing areas. Location, use, restoration, and landowner compensation for these areas will be negotiated with respective landowners through a temporary lease or easement. The locations of temporary easements are not typically specified in Commission route permits.

### 3.1.5 Transmission Line

A new three-way switch structure will be constructed at the LR-PR transmission line. Access to the switch structure is anticipated to occur from 480<sup>th</sup> Avenue. The Project will primarily use direct-buried single-pole wood or steel structures. Larger laminate poles with guying or steel poles on concrete foundations may be needed for angles. Typical pole heights will range from 70 to 90 feet above ground and the distance or “span” between poles will generally range from 350 to 400 feet. Final design, which will occur after the Commission issues a route permit, will determine the

final span distances, as well as the need for specialty poles (e.g., laminate poles or steel poles on foundations). Photos of potential Project structures are shown in Section 5.1.1.

### 3.1.6 Transmission Line Clearance Requirements

National Electrical Safety Code (NESC) sets minimum clearance requirements between conductors and structures. NESC clearance requirements are summarized in **Table 3**. For a 115-kV transmission line such as 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. In addition, Great River Energy typically requires the blowout to remain within the right-of-way under a more extreme wind condition of 94 mph. The amount of blowout is dependent on several factors including the span length and conductor type. On a typical 115-kV transmission line with a 300-foot span, blowout is approximately 5 feet with 48 mph winds and approximately 8 feet with 94 mph winds.<sup>4</sup> The final line design evaluates blowout based on actual span distances and the type of conductor being used.

**Table 3 NESC Clearance Requirements for 115-kV Transmission**

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

### 3.1.7 Safety Equipment and Plans

In addition to the clearance requirements discussed in the previous section, the transmission line will interconnect to Great River Energy’s existing LR-PR 115-kV transmission line, where protective relaying will open the transmission line in the event of a damaged section of the transmission line. A manually operated switch will be used to sectionalize any damaged line sections to facilitate repairs and restore service.

The safety risks to workers and the public during construction and operation include potential injuries from falls, equipment and vehicle use, unauthorized access, and electrical hazards. To mitigate these risks, Great River Energy will implement several safety measures. In accordance with 29 CFR 1926.1408, work zones will be clearly marked with defined boundaries to ensure equipment stays at least 15 feet away from 115-kV transmission lines, preventing contact. Transmission lines will be deenergized using switches, lockout/tagout procedures, and applying grounding equipment, as outlined in 29 CFR 1910.269(m), to prevent accidental re-energization. Workers will be protected from falls by using appropriate fall protection equipment in compliance with 29 CFR 1926.1423. Great River Energy, its field representative, and Great River Energy’s contractors will employ a variety of safety measures to prevent public contact with downed lines. Great River Energy and LREC will secure and mark work areas to prevent unauthorized access

<sup>4</sup> NESC also has standards regarding vegetation management which necessitates typically greater clearance distances. See Section 5.1.6 for more discussion on vegetation management.

within the substation and construction zones. The address of the work site and the nearest hospital will be communicated during morning job briefings to facilitate prompt response in case of medical emergencies.

Vegetation management, which is described in Section 5.1.6, is also necessary to maintain safe clearances from the transmission lines.

### **3.1.8 Outages**

At times, outages are necessary to construct a transmission line. 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 transmission grid reliability requirements. Coordination is accomplished through well-defined outage scheduling procedures that use web-based tools, allow for study affirmation and ultimate approval of the submitted outage. Once approved, detailed switching orders are developed and shared with all parties involved using well-defined processes to ensure the 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 LREC.

### **3.1.9 Distribution Lines**

Great River Energy does not own, operate, or install low voltage distribution lines. Great River Energy sometimes allows distribution utilities such as LREC to attach distribution lines to its high voltage transmission line structures, below the high voltage lines. This is commonly called “underbuild” or “underbuilt.” A depiction of distribution underbuild is included on **Figure 6**, below. Note that the Project will have “single-phase distribution underbuild” which results in two distribution conductors underneath the transmission conductors instead of four as depicted on **Figure 6**.

Alternatively, Great River Energy may request that the distribution lines be buried. Great River Energy anticipates that distribution lines currently within the Proposed ROW will be buried by LREC, except where they cross an existing buried pipeline. In this case, the distribution lines will be constructed on separate distribution structures or as underbuild on the new 115-kV structures at the pipeline crossing. This separate overhead distribution or underbuilt distribution will typically only be done for one span length and then transition back to being buried. Changes to electric distribution lines under 100-kV do not require a permit from the Commission.

**Figure 6 Photos of 115-kV Structures with 3-Phase Distribution Underbuild**



### **3.1.10 Reliability**

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

### **3.1.11 Service Life**

The service life of a transmission line and substation is approximately 40 years, although based on experience, it is quite possible that the service life of these facilities will exceed 40 years.

### **3.1.12 Design Considerations to Accommodate Future Needs**

Minn. Stat. §216I.05, Subd. 11 (b)(10) requires the Commission to consider future needs for large energy infrastructure facilities in the project area. The Project is designed to operate at 115-kV to serve increased electrical demand into the future and help to ensure electric reliability in Otter Tail County. The Project is not designed for future expansion, for example, a second circuit on the transmission line or an expanded substation footprint to accommodate an additional transformer.

The Applicants are not currently aware of any additional large energy infrastructure facilities that may be needed in the same general area as the Project.

### 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 new Otto Substation will convert the 115-kV electric energy carried by the transmission line to 12.47-kV for use on LREC’s distribution system.

#### 3.2.1 Substation Design Considerations

The existing Otto Substation footprint is approximately 0.1 acre. LREC intends to locate the new Otto Substation 115-kV infrastructure directly south of the existing substation (see **Figure 3**). The new footprint will be approximately 60 feet by 140 feet (8,400 square feet or approximately 0.02 acre). This new area will be graveled and fenced. Distribution level components within the fenceline will include a 115/12.47-kV transformer, switch gear, 8-foot by 8-foot electrical equipment enclosure, and bus work. The “high-side” 115-kV structure (the last structure before the conductors interconnect to substation equipment) will be located within the substation footprint. Once the new Otto Substation is operational, the existing substation equipment will be removed along with the fencing. Portions of the existing substation footprint, parcel access and parking area may be repurposed for vehicle access and parking areas for the new substation. LREC will use the same driveway access and will not need to construct a new access point. Areas of the parcel that are not repurposed will be revegetated.

### 3.3 Estimated Costs

Estimated costs for the Project are approximately \$6.7 million. Transmission line costs and tasks are divided into six phases as summarized in **Table 4**. Transmission line costs will be about \$4.4 million. The new Otto Substation will cost approximately \$2.3 million, which includes costs to decommission and remove the existing substation components. Costs may vary depending upon, among other things, the cost of material and labor. Applicants currently anticipate that costs may vary ± 30 percent.

**Table 4 Estimated Project Costs**

Project	Planning and State Permitting	Land Acquisition/ Permits	Design	Procurement	Construction	Close Out	Total
Transmission Line	\$715,228	\$381,354	\$420,840	\$1,102,195	\$1,619,013	\$178,965	<b>\$4,417,595</b>
Substation	\$2,323,625						<b>\$2,323,625</b>
<b>Total</b>							<b>\$6,741,220</b>

All capital costs for the transmission line infrastructure will be borne by Great River Energy. Costs related to the new Otto Substation will primarily be borne by LREC.

The estimated annual cost of right-of-way maintenance, operation, and general maintenance of all Great River Energy’s transmission lines (69-kV to 500-kV) in Minnesota is approximately \$4,000,000 or about \$2,000 per mile. Actual transmission line specific maintenance costs will depend on the environmental setting, the amount of vegetation management necessary, storm damage occurrences, structure types, age of the line, and other factors. The maintenance and operation of the new Otto Substation is expected to cost approximately \$10,000 per year.

### 3.4 Project Schedule

The Applicants anticipate starting construction on the transmission line and the new Otto Substation in fall 2027 and energizing the Project in summer 2028. **Table 5** summarizes the Project’s permitting schedule consistent with the milestones and timeframes set forth in Minn. Stat. Ch. 216I.

**Table 5 Anticipated Permitting Schedule**

Milestone	Timeframe
Route permit application filed	November 2025
Scoping meeting	December 2025
Public hearing	February 2026
Commission meeting	May 2026
Written order issued	June 2026

### 3.5 Work Force Required

The Applicants anticipate that 15 to 27 daily contract workers (10 to 20 for the transmission line and 5 to 7 for the Otto Substation) will be employed for the Project. Great River Energy and LREC will also have a construction supervisor onsite throughout the construction and restoration phases of transmission line and Otto Substation modifications. Great River Energy typically hires contractors who pay their employees at or better than prevailing wages.

No new permanent jobs will result from construction and operation of the Project. Maintenance and operation activities will be conducted by existing Great River Energy and LREC staff.

### 3.6 Construction and Restoration Practices

The Applicants intend to employ their standard practices to construct and restore the Project. These standard practices have been established and incorporate BMPs to meet internal, state, and federal requirements, balance construction costs, and minimize impacts on landowners and the environment. Construction practices to be followed are described in more detail in Sections 5.1.4 and 5.2.3.

### 3.7 Operation and Maintenance Practices

Great River Energy and LREC will periodically perform inspections, maintain equipment, and repair damage to the transmission line and new Otto Substation. The Applicants will perform regular maintenance and inspections over the life of the facilities 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 easement and areas where obstructions or terrain require access outside of the easement, 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 damage incurred to their property because of the maintenance work.

Great River Energy's Transmission Construction and Maintenance Department will conduct vegetation surveys and remove vegetation that will interfere with the safe operation of the transmission line (Section 6.8.7). A 3- to 7-year vegetation maintenance cycle is desirable. Maintenance practices include a combination of mechanical and hand clearing, along with targeted application of herbicides where allowed.

### 4 ALTERNATIVE ROUTES CONSIDERED AND REJECTED

#### 4.1 Alternative Requirement

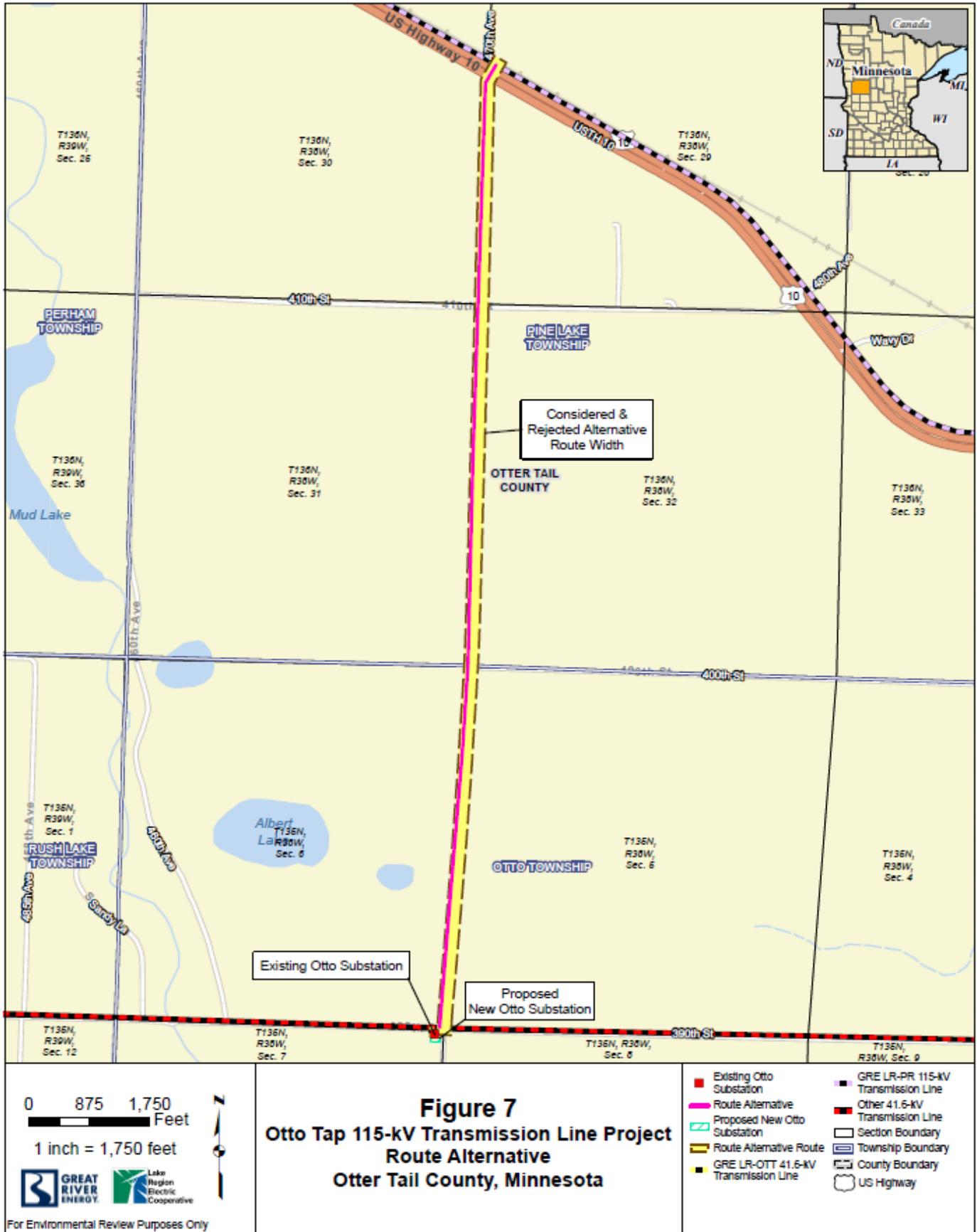
Minn. Stat. § 216I.05, subd. 3(b)(14), requires an applicant to identify any alternative routes that were considered and rejected for the Project.

Great River Energy seeks to design projects that maximize collation while minimizing length and land use conflicts. Great River Energy considered an alternative route that would connect to Great River Energy's existing LR-PR transmission line in a different location. This route alternative was ultimately rejected in favor of the Proposed Route. Great River Energy did not consider any other existing rights-of-way as alternatives, because the Proposed Alignment is collocated with existing rights-of-way for 2.9 miles, or 97 percent, of its length. Other rights-of-way are further from the Project and would have resulted in longer alignments.

#### 4.2 Route Alternatives Considered but Rejected

Great River Energy considered one route alternative that originated at the LR-PR 115-kV transmission line at a different location. This rejected route alternative is shown on **Figure 7**. The rejected route alternative would interconnect to Great River Energy's LR-PR near the intersection of U.S. Highway 10 and 470<sup>th</sup> Avenue. A new three-way switch structure would be constructed south of the Burlington Northern—Sante Fe (BNSF) railroad right-of-way near structure LR-PR-34. The rejected route alternative would cross U.S. Highway 10 and follow the Proposed Route along 470<sup>th</sup> Avenue south for approximately 2.7 miles, crossing 410<sup>th</sup> Street and 390<sup>th</sup> Street to the Otto Substation.

On the north side of U.S. Highway 10, there is a relatively narrow clearance between a new switch structure, the BNSF rail line, U.S. Highway 10, which could reduce reliability of the transmission line due to the potential for train derailment or vehicle strikes. The BNSF railroad is not adjacent to the LR-PR line in the area of 410<sup>th</sup> Street and U.S. Highway 10, where the Proposed Route begins. Potential environmental and human impacts are comparable between the rejected route alternative and the Proposed Route.



#### 4.2.1 Human and Environmental Impact Considerations

Great River Energy reviewed publicly available environmental datasets to complete a high-level comparative analysis of the Proposed Alignment (the path that the transmission line will follow as proposed by Great River Energy) and the rejected route alternative (or, a conceptual path that this alternative would follow, as defined and studied by Great River Energy). A summary of the results is presented in **Table 6**.

**Table 6 Comparison of Proposed Alignment and Alternative**

Resource / Characteristic	Proposed Alignment	Rejected Route Alternative	Source
Length (miles)	2.97	2.71	Measured in GIS
<b>Collocation<sup>a</sup> with Utilities and Roads</b>			
Electric Transmission / Distribution Lines (miles)	2.85	2.56	Measured in GIS
Roads (miles)	2.87	2.65	
Percent Collocated	97%	98%	
<b>Land Use Features and Aesthetics</b>			
Residences within 100 feet of the Proposed Alignment	0	1	Digitized from aerial photographs (2021)
Residences within 200 feet of the Proposed Alignment	3	2	Digitized from aerial photographs (2021)
No. of parcels crossed by the Proposed Alignment	9	10	<a href="https://www.mngeo.state.mn.us/choose/land_own_property.html">https://www.mngeo.state.mn.us/choose/land_own_property.html</a> (February 2024)
<b>Environmental Resources</b>			
Feet of wetlands crossed	325 feet	230 feet	NWI
Prime farmland	0.0	0.0	SSURGO Soils Data
<sup>a</sup> Collocation is defined as any utility or road located within 50 feet either side of the Proposed Alignment. Measurements were made visually understanding the intention of the alternative and Great River Energy's anticipated goal of aligning any alternative approximately 5 feet outside of road right-of-way.			

**Table 7 Wetland Types Crossed by the Proposed Alignment and Alternative**

Wetland Type	Proposed Alignment	Rejected Route Alternative
	Feet Crossed	
Freshwater Emergent Wetland	174	0
Freshwater Pond	152	230
<b>Total</b>	<b>325</b>	<b>230</b>
Source: National Wetland Inventory for Minnesota (Minnesota Geospatial Commons, 2025e).		

**Table 8 Land Cover Types Crossed by the Proposed Alignment and Alternative**

Land Cover Type	Proposed Project	Rejected Route Alternative
	Miles Crossed	
Developed, Open Space	1.33	1.51
Developed, Low Intensity	0.18	0.13
Developed, Medium Intensity	0.00	0.04
<i>Developed Land Cover Type Subtotal</i>	<i>1.51</i>	<i>1.68</i>
Pasture/Hay	0.17	0.11
Cultivated Crops	0.97	0.79
<i>Agricultural Land Cover Type Subtotal</i>	<i>1.14</i>	<i>0.90</i>
Deciduous Forest	0.00	0.06
Woody Wetlands	0.04	0.00
Emergent Herbaceous Wetlands	0.29	0.04
<i>Natural Land Cover Type Subtotal</i>	<i>0.33</i>	<i>0.10</i>
<b>Total</b>	<b>2.98</b>	<b>2.68</b>
Source: U.S. Geological Survey (USGS, 2025)		

### 4.3 Conclusions

The Proposed Alignment is slightly longer than the rejected route alternative. The Proposed Alignment crosses an additional 95 feet of emergent wetlands, which will be spanned. However, the Proposed Alignment compares favorably with the rejected route alternative when considering human and environmental impacts. The Proposed Alignment does not come within 100 feet of a residence. The Proposed Alignment avoids concerns with proximity of the switch structure relative to the BNSF railroad. Finally, the switch on the north side of U.S. Highway 10 associated with the Proposed Alignment would be 20 feet further away from the highway along the Proposed Alignment, which reduces the likelihood of a vehicle collision that could cause injury/death in an accident or a power outage. For these reasons, Great River Energy rejected the route alternative. Ultimately, Great River Energy is requesting a Route Permit for the Proposed Route because, as compared to the considered and rejected route alternative, Great River Energy believes the Proposed Alignment and the associated Proposed Route best balances the Commission’s routing criteria.

# ENGINEERING, OPERATIONAL DESIGN, CONSTRUCTION, AND RIGHT-OF-WAY ACQUISITION

## 5 ENGINEERING, OPERATIONAL DESIGN, CONSTRUCTION AND RIGHT-OF-WAY ACQUISITION

Design and construction of transmission lines occur through multiple stages including identification of existing right-of-way; transmission line design; right-of-way acquisition; construction; restoration; and operation and maintenance. Each stage is discussed in further detail in the sections that follow.

### 5.1 Transmission Line

#### 5.1.1 Structure Design

Great River Energy anticipates constructing the transmission line primarily with direct-embedded single-pole wood or steel monopoles, 70 to 90 feet above ground and placed 350 to 400 feet apart. Steel structures on concrete foundations will be required at the highway crossing and specialty structures (e.g., steel on foundation, or direct-embedded with guying) may be required in some locations. The average diameter of the direct-embedded steel structures at ground level would be approximately 22 inches. Typical dimensions are provided in **Table 9**. Photos of typical structures are provided on **Figure 8**.

**Table 9 Typical 115-kV Structure Dimensions**

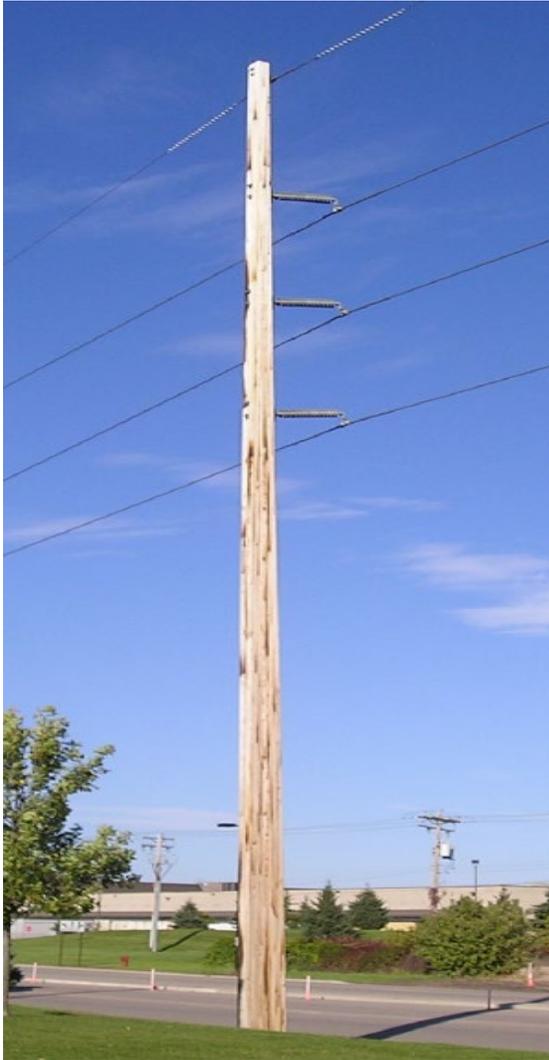
Structure Type	Material	Approximate Height Above Ground (feet)	Structure Base Diameter (inches)	Span Between Distances (feet)
Monopole with braced post	Wood, steel, or ductile iron	60 - 90	18 - 36	300 - 400
H-Frame	Wood, steel, or ductile iron	60 - 90	18 - 36	350 - 800
Three-pole	Wood, steel, or ductile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

Steel structures on concrete foundations or laminate poles with guying may be needed for angled structures; the size of these structures is dependent on the tension on the line, and/or the angle of deflection the structure 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.

**Figure 8: Photos of 115-kV Transmission Structures**



**Figure 8 (cont'd): Photos of 115-kV Transmission Structures**



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 HVTLs. The horizontal configuration allows the transmission line to be as low as possible at the crossing point, while still maintaining the required clearances set by the 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 would be directionally bored underground between the two structures adjacent to the H-frame structure. Great River Energy does not anticipate the Proposed Route will require H-frame or 3-pole structures because the Project does not need to cross any existing utility lines, and there are no FAA concerns.

A deadend structure is used to change direction or wire tension on a transmission line and at most highway crossings. 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 specific locations of deadend structures will be determined after a Route Permit is issued and detailed engineering design is initiated.

### **5.1.2 Conductors**

The single circuit structures will have three phase wires and one shield wire. It is anticipated that the phase wires will be 477 thousand circular millimeter aluminum-conductor steel reinforced (477 ACSR) or a conductor with similar capacity. The shield wire will be 0.555 optical ground wire.

### **5.1.3 Right-of-Way Acquisition Procedures**

Great River Energy representatives will work directly with individual landowners to acquire the necessary easements and other land rights for the construction, operation, and maintenance of the Project. Great River Energy will typically obtain a total easement of approximately 100 feet (typically, approximately 50 feet of each side of the transmission line) for the 115-kV transmission line system. Great River Energy's easement can overlap with road and other rights-of-way through permits or other agreements, which can reduce the amount of easement areas acquired from landowners. Where a transmission line of this size parallels roads, structures are typically installed 2 to 7 feet outside of road right-of-way, resulting in approximately 55 feet of right-of-way being needed from landowners outside of road right-of-way. **Figure 5** presents a conceptual arrangement of the 100-foot-wide Proposed ROW and transmission line alignment relative to road right-of-way.

During formal land rights acquisition, Great River Energy will provide the landowners with the transmission easement document and offer of compensation, as well as information on the Project schedule, construction practices, vegetation removal, and construction damages settlement procedures. 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 also respond to any comments or questions landowners may have, including those with respect to the transmission line construction practices or operations of the Project. Great River Energy will continue to engage with landowners throughout the permitting process to answer any questions they may have regarding the easement acquisition process or the Project.

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

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 (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.

Great River Energy commences a condemnation action by filing a petition with the district court for the county in which the land is located. Great River Energy then serves all persons with an interest in the lands that are the subject of the action with the petition and other documents, including a notice of hearing. The district court conducts a hearing on Great River Energy's petition, and a landowner may object to the petition. If the court approves Great River Energy's condemnation petition, then the Court appoints an impartial panel of valuation commissioners.

The 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 impact that the easement(s) have on the property. The commissioners then issue an award setting the amount of compensation that Great River Energy must pay for the rights acquired. 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 will pay 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.

#### **5.1.4 Final Design and Construction Procedures**

Prior to construction, Great River Energy will need to complete preliminary survey work and may need to acquire soil data in locations where special structures (e.g., deadend or turning structures) will be used. Great River Energy will give notice to and will work with landowners to access survey work, including locations where Great River Energy will conduct soil borings to determine soil suitability.<sup>5</sup>

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 right-of-way;
- Right-of-way clearing and preparation;
- grading / filling, as needed;
- installation of foundations;
- installation of poles and related equipment;
- conductor stringing; and
- installation of any required aerial markers.

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

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<sup>5</sup> Survey work and geological studies do not fall within the scope of "construction" under Minn. Stat. § 216I. *See* Minn. Stat. § 216I.02, subd. 4 ("Construction does not include changes needed to temporarily use sites or routes for nonutility purposes, or uses in securing survey or geological data, including necessary borings to ascertain foundation conditions.").

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 construction will involve survey staking of the transmission line structure locations and edges of the right-of-way. Following staking, the right-of-way will be cleared of trees and other woody vegetation to ensure safe and reliable access during construction, restoration, operations, and maintenance. Great River Energy will implement wire / border zone vegetation management practices as described in Section 5.1.6.

All materials resulting from clearing operations will either be chipped or shredded on site and spread on the right-of-way, stacked in the right-of-way for use by the property owner, or removed and disposed of as otherwise agreed to with the property owner during easement negotiations or in accordance with agency requirements. Clearing in wetlands will be conducted when the ground and wetlands are frozen, or construction mats will be used to minimize impacts to vegetation.

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, Great River Energy will identify existing underground utilities using the Gopher State One Call process.

If temporary removal or relocation of fences is necessary, installation of temporary or permanent fencing or gates will be coordinated with the landowner. Depending on the timing of construction, Great River Energy may work with the property owner for early harvest of crops, by paying compensation for any actual crop losses. During the construction process, it may be necessary for the property owner to remove or relocate equipment and livestock from the right-of-way. Compensation related to these activities will be discussed with the landowner during easement negotiations.

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, minimal grading of the immediate terrain will be necessary.

Great River Energy will employ standard construction and mitigation practices as well as industry specific BMPs. BMPs address right-of-way clearing, erecting transmission line structures, and stringing transmission lines. BMPs are project specific, and are based on the proposed schedules for activities, prohibitions, maintenance guidelines, inspection procedures, required permits, 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 the construction of the transmission line are expected to adhere to these BMP requirements.

Most of the proposed structures will be installed directly in the ground by augering a hole that is typically 10 to 20 feet deep and 36 to 60 inches in diameter. Any excess soil from the excavation will be spread and leveled near the structure or removed from the site if requested by the property

owner or regulatory agency. 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 the 70-to-95-foot above ground poles will be buried approximately 13 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.

Most of the proposed structures will be steel poles, which may be directly embedded or set on a concrete foundation. The concrete foundations will be approximately 5 to 7 feet in diameter and generally are exposed 1 foot above the existing ground level. Concrete trucks will be used to bring the concrete in from a local concrete batch plant.

After a number of structures have been erected, Great River Energy will begin to install the shield wire and conductors by establishing stringing setup areas within the right-of-way or temporary construction workspace as negotiated with the landowner. These stringing setup areas will be located at deadend structures and will occupy approximately 15,000 square feet (about one-third acre) for linear segments of the line and approximately 30,000 square feet (about two-thirds acre) for angled segment of the line. Conductor stringing operations require brief access to each structure to secure the conductor wire and shield wire once the final sag is established. 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.

### **5.1.5 Restoration Procedures**

The Applicants have developed a draft Vegetation Management Plan for this Project (**Appendix G**) that will be reviewed by the state interagency Vegetation Management Plan Working Group. The Vegetation Management Plan describes the objectives and plans for restoring or replacing any vegetation damaged during the construction process. Great River Energy will implement this plan after construction is completed.

Following construction, disturbed areas will be restored to their original condition to the maximum extent practicable, or as negotiated with the landowner. Post-construction restoration activities will include removing and disposing of debris, removing all temporary facilities (including staging and laydown areas), installing appropriate erosion and sediment 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 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, as negotiated with landowners. Great River Energy will monitor the right-of-way to ensure restoration occurs as planned.

Some temporary construction workspace may be needed for the Project. Once construction is complete, Great River Energy will remove and properly dispose of all material and debris, and repair any damage and perform restoration, as necessary. It is anticipated that minimal temporary

construction workspace on property immediately adjacent to the right-of-way and on private property will be needed, with the exception of limited equipment access and pulling areas.

Great River Energy will contact landowners after construction is complete to determine if they are satisfied with clean-up measures and if any other damage might have occurred. In some cases, an outside contractor may be hired to restore the damaged property as near as possible to its original condition.

### **5.1.6 Operation and Maintenance**

Great River Energy will access its easement 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.

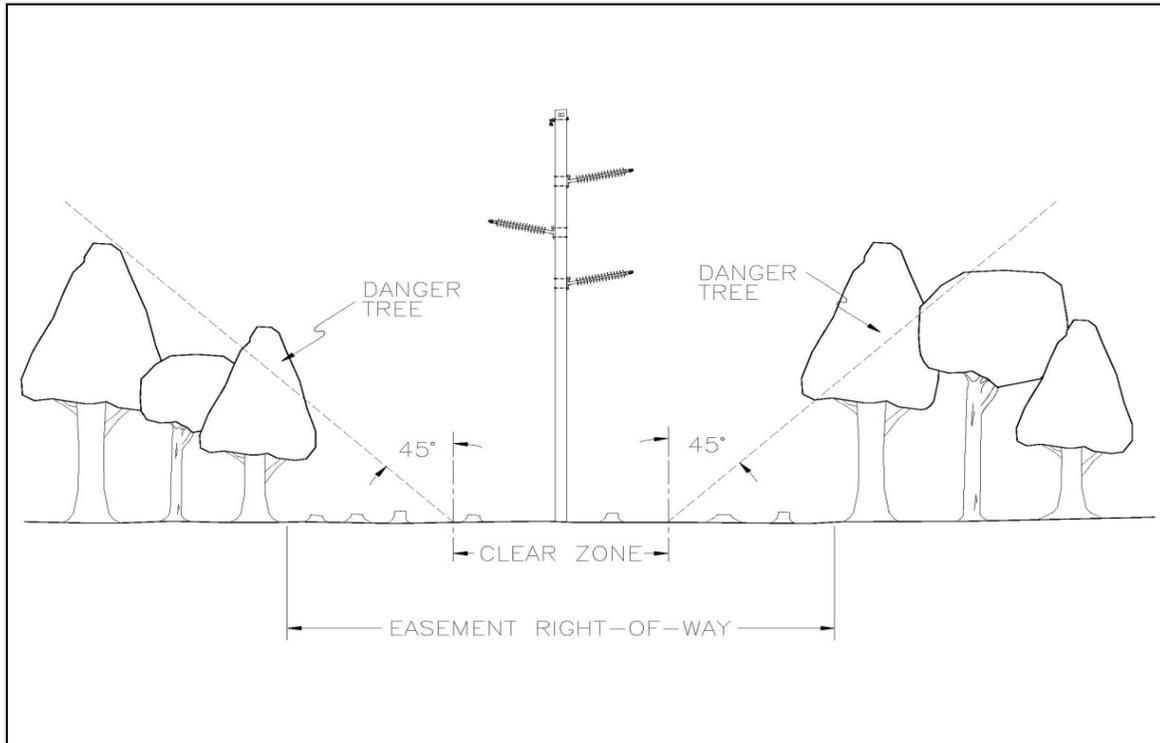
Great River Energy inspects the condition of its transmission lines and structures on an adaptive schedule. There is typically a post-construction review approximately 1 year after construction. After that, Great River Energy generally inspects its 115-kV transmission lines every 2 years. Inspections will be limited to the right-of-way and to areas where off-right-of-way access is required due to right-of-way 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 with reasonable compensation for any damage to the property.

The right-of-way will be managed to remove vegetation that interferes with the operation and maintenance of the transmission line. Right-of-way clearing practices will include a combination of mechanical and hand clearing, along with herbicide application (where allowed), to remove or control vegetation growth. Shrubs that will not interfere with the safe operation of the transmission line or accessing and traversing the right-of-way will be allowed to reestablish in the right-of-way.

Great River Energy will use an integrated vegetation management approach that incorporates a wire / border zone practice for right-of-way clearing and maintenance. As a general practice, 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 shrubs and tree species that will not pose a threat to the transmission facility or impede construction or maintenance may remain in outer limits of the easement area (i.e., the border zone) as agreed to during easement negotiations. The area below the outer conductors plus 10 to 15 feet (that is, 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. A 3- to 7-year cycle of vegetation maintenance is desirable.

The NESC states that “vegetation that may damage ungrounded supply conductors should be pruned or removed.” This includes 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 transmission line. Great River Energy’s easements typically specify that these “danger trees” may be removed or trimmed to eliminate the hazard as shown on **Figure 9**. Danger trees generally are those that are dead, diseased, weak, or leaning towards the energized conductors. Depending on the risks posed by a danger tree, tree trimming may be possible to minimize tree removal based on negotiations with individual landowners.

**Figure 9 Standard Tree Removal Practices during Transmission Line Operations**



## **5.2 Otto Substation**

### **5.2.1 Design and Land Requirements**

The new Otto Substation will replace the existing Otto Substation just south of the existing substation within LREC's existing property. The new Otto Substation will be approximately 0.2 acre. Additional design information is discussed in Section 3.2.1 and shown on **Figure 3**.

### **5.2.2 Land Acquisition Procedures**

LREC owns the property where the new Otto Substation will be located; therefore, no additional land acquisition activities will be required.

### **5.2.3 Construction Procedures**

Site preparation would include stripping topsoil, and if necessary, hauling in structural fill to build up the subgrade for the Otto Substation pad.

Construction within the new Otto Substation will consist of drilling pier foundations ranging in size from 3 to 5 feet in diameter and 8 to 15 feet deep. The foundations will be installed to support transmission line deadend structures, static masts, and bus and equipment support structures. Secondary oil containment for the transformer and reactor will use a geomembrane liner system. A ground grid will be installed 18 inches below the subgrade surface throughout the Otto Substation pad and extend 4 feet outside the Otto Substation security wall. Conduit for control and communication cables and grounding conductor will be installed prior to the placement of the final layer of crushed rock surfacing.

#### **5.2.4 Restoration Procedures**

Portions of the existing substation footprint, parcel access and parking area may be repurposed for vehicle access and parking areas for the new substation. LREC will use the same driveway access and will not need to construct a new access point.

Areas of the parcel that are not repurposed and temporary construction workspaces that are disturbed during construction of the Otto Substation, and that are located outside of the final Otto Substation footprint will be restored to their original condition to the maximum extent practicable. Post-construction restoration 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 occurs, the construction crew or a restoration contractor will use various methods to alleviate the compaction. LREC will implement the Vegetation Management Plan during restoration activities.

#### **5.2.5 Operation and Maintenance**

LREC will regularly inspect and maintain the new Otto Substation to ensure its continued integrity. The estimated annual cost of Otto Substation maintenance and operation is \$10,000.

## ENVIRONMENTAL ASSESSMENT

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### 6 ENVIRONMENTAL ASSESSMENT

Minn. Stat. 216I.07, subd. 3(a) requires that projects identified in Minn. Stat. 216I.07, subd. 2 prepare and submit an EA with the application. The Project meets the definition of a HVTL with a capacity between 100- and 300-kV as listed in Minn. Stat. 216I.07, subd. 2; therefore, an EA is required in this Application. The EA provided in this section contains information regarding the Project's human and environmental impacts and addresses mitigating measures for identified impacts.

The mitigation measures discussed throughout this EA include language typically included in route permits issued by the Commission. This text is meant to be illustrative of typical conditions but may not be consistent with any route permit issued by the Commission for this Project. Ultimately, the conditions within the Commission's route permit specific to this Project will be developed through the record in this proceeding.

#### 6.1 Methodology and Definitions

Commission guidance recommends that applicants describe the methodology for characterizing potential impacts. This EA uses descriptions based on recent environmental documents prepared by the Minnesota Department of Commerce.

A potential impact is the anticipated change to an existing condition caused either directly or indirectly by the construction and operation of a proposed project. Potential impacts can be positive or negative and short or long term. Impacts vary in duration and size, by resource, and across locations. In certain circumstances, potential impacts can accumulate incrementally meaning that impacts from the project would be in addition to on-the-ground impacts already occurring.

To provide appropriate context, the following terms and concepts are used to describe and analyze potential impacts:

**Duration.** Impacts vary in length of time. Short-term impacts are generally associated with construction but might extend into the early operation phase. Long-term impacts are associated with operation. Permanent impacts extend beyond decommissioning and reclamation.

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

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

**Location** Impacts are location dependent. For example, common resources in one location might be uncommon in another.

Impact intensity levels are described using a qualitative scale, which is explained below. These terms are not intended as value judgments, but rather a means to ensure mutual understanding among readers.

**Negligible** impacts do not alter an existing resource condition or function and are generally not noticeable to an average observer. These impacts generally affect common resources over the short term.

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

**Moderate** impacts alter an existing resource condition or function and are generally noticeable to the average observer. Impacts might be spread out over a large area making them difficult to observe but can be estimated by modeling. Moderate impacts can either affect common resources over the long term or permanently, or they can affect uncommon resources over the short or long term.

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

Also discussed are opportunities to mitigate potential impacts. Mitigation means:

- Avoiding impacts altogether by not undertaking a certain project or parts of a project;
- Minimizing impacts by limiting the degree of magnitude of a project;
- Rectifying impacts by repairing, rehabilitating, re-creating, or restoring the affected environment;
- Reducing or eliminating impacts over time by preservation and maintenance operations during the life of the project;
- Compensating for impacts by replacing or providing substitute resources or environments; or
- Reducing or avoiding impacts by implementing pollution prevention measures (or BMPs).

Some impacts can be avoided or minimized; some might be unavoidable but can be minimized; others might be unavoidable and unable to be minimized but can be corrected. The level at which an impact can be mitigated might change the impact intensity level. Where applicable, this Application also discusses permit conditions included in the current version of the Commission's standard draft route permit. The actual permit conditions applied to this Project will be the result of the record developed in this proceeding.

## 6.2 Regions of Influence

Potential impacts on human and environmental resources are analyzed within specific geographic areas called regions of influence (ROI). The ROI is the geographic area where the Project might exert some influence and is used as the basis for assessing potential impacts. ROIs vary by resource. As necessary, potential impacts and mitigation measures beyond the identified ROI are discussed to provide appropriate context. Also, direct impacts within the ROI might cause indirect impacts outside the ROI.

Chapter 6 uses the following ROIs:

- Proposed ROW (50 feet on either side of the Proposed Alignment, plus the footprint of the new Otto Substation);
- Proposed Route (200 feet from approximate road centerline with exceptions near substation locations);
- Local Vicinity (1,600 feet);
- Project Area (1 mile); and
- Otter Tail County.

The ROIs are based on a distance from both sides of the Proposed Alignment developed by Great River Energy. **Table 10** summarizes the ROIs used by resource element.

## 6.3 Environmental Setting

The Project lies in the Eastern Broadleaf Forest Province, Minnesota & Northeast Iowa Morainal Section, and Hardwood Hills subsection, according to the MDNR Ecological Classification System. The MDNR describes the Hardwood Hills subsection as:

*Steep slopes, high hills, and lakes formed in glacial end moraines and outwash plains characterize this subsection. Presettlement vegetation included maple-basswood forests interspersed with oak savannas, tallgrass prairies, and oak forests. Much of this region is currently farmed. Where lakes are present, tourism is common (MDNR, 2025a).*

The environmental setting of the Project Area includes several hydrologic features, such as wetlands, ditches, streams, and lakes. Rush Lake, approximately 1.5 miles south, is the largest lake in the area at 5,275 acres. Albert Lake is about 0.3 mile west of the Proposed Route and is 30 acres. The Otter Tail River State Water Trail is west of Albert Lake. The closest entry point is on Rush Lake. The Proposed Route crosses both forested and emergent wetlands but does not cross streams or lakes.

Regarding human settlement, “humans have been in the Otter Tail River region for many years. Skeletal remains found near the Pelican River—a tributary of the Otter Tail—are estimated to be over 7,500 years old (MDNR, 2025b).”

**Table 10 Regions of Influence**

Resource Type	Element	Region of Influence
Human Settlement	Displacement	Proposed ROW
	Electrical Interference, Land Use and Zoning	Proposed Route
	Aesthetics, Noise, Property Values, Recreation	Local Vicinity
	Cultural Values, Environmental Justice, Public Services	Project Area
	Socioeconomics	Otter Tail County
Public Health and Safety	Electric and Magnetic Fields (including Stray Voltage), Implantable Medical Devices, Worker, and Public Safety	Proposed ROW
	Emergency Services	Otter Tail County
Land-based Economies	Agriculture, Forestry, Mining	Proposed Route
	Tourism	Local Vicinity
Archaeological and Historic Resources		Project Area
Natural Environment	Geology and Topography, Soils, Vegetation	Proposed ROW
	Public and Designated Lands, Surface Water and Wetlands, Groundwater, Wildlife (except birds), Wildlife Habitat	Proposed Route
	Wildlife (birds)	Local Vicinity
	Greenhouse Gas, Rare and Unique Resources	Project Area
	Air Quality, Climate Change and Resilience	Otter Tail County

Land use within the Project Area is primarily center-pivot irrigation crop land with some trees between center-pivots. Rural residences exist as do several feed lots. The closest towns to the Project Area include Perham, about 3 miles northwest, and New York Mills, about 6 miles to the east and south. There are transmission and distribution lines within the Project Area. The Proposed Route follows unpaved township roads and existing distribution lines for most of its length. U.S. Highway 10 and the BNSF railroad border the Project Area to the north and northeast.

The landscape and characteristics of the Project Area are further described in the following subsections. The characteristics of the Project Area are typical of the surrounding area and do not preclude the development of this Project.

## **6.4 Human Settlement**

### **6.4.1 Aesthetics**

An evaluation of aesthetics is typically focused on visual impacts. Aesthetic impacts are subjective, as how an individual perceives changes to the landscape from a proposed infrastructure project can vary greatly.

Viewsheds contain both natural and built features and the sensitivity of a viewer will impact their expectations associated with a particular view. Viewers with high sensitivity are often engaged in recreational activities; traveling for pleasure; or experiencing a viewshed from a recreational area or their home. Low viewer sensitivity is often associated with people passing through an area or

working. Exposure refers to the number of views, frequency and duration of views, and the view location, among other variables. Other factors, such as time of day, can affect the aesthetic impact on a viewshed.

The landscape in the local vicinity is fragmented with a mix of center-pivot agricultural land, rural residences, open space, gravel townships roads, industrial facilities (feedlots), and utility infrastructure. The proposed transmission line follows existing roads and distribution lines for its entire length except where it crosses U.S. Highway 10.

The Project will primarily use direct-buried single-pole wood or steel structures. Larger laminate poles with guying or steel poles on concrete foundations might be needed for angles. Steel poles with concrete foundations will be used to cross U.S. Highway 10. Typical pole heights will range from 70 to 90 feet above ground and spans between poles will generally range from 350 feet to 400 feet.

Where the Project follows existing distribution line right-of-way, the Applicants anticipate LREC will bury the distribution lines, except where they cross an existing buried pipeline. In this case, the distribution lines will be constructed on separate distribution structures or as underbuild on the new 115-kV structures at the pipeline crossing for one span length and then transition back to being buried. This location is shown in **Appendix B, Page 3**. Design standards for a 115-kV line require taller structures than for distribution lines, but there will be fewer of them because the taller structure heights allow for longer spans between structures.

The new Otto Substation will replace the existing Otto Substation just south of the existing location within LREC's existing property. Although the structures and Otto Substation will be new, and they will vary in size and scope as compared to what is presently on site, they will not be materially different than the existing features.

#### 6.4.1.1 Potential Impacts

The ROI for aesthetics is the Local Vicinity. The proposed transmission line and Otto Substation will be visible along the Proposed Route like other distribution and transmission lines in the Local Vicinity, as well as the existing Otto Substation. The Project follows existing distribution lines for its entire length along 410<sup>th</sup> Street and 470<sup>th</sup> Avenue.

Impacts associated with construction and operation of the Project will be long term, localized, of a small size, and a unique resource. Potential impacts will be minimal. The transmission line will not considerably alter the existing resource condition or landscape function. Construction of the new Otto Substation will result in minimal, incremental impacts that are not expected to be noticeable to the average observer.

Visual impacts are subjective and will depend on the perceptions of the observers traveling through or living within the Local Vicinity. The presence of transmission and distribution lines are a common occurrence in rural residential areas and are compatible with rural residential aesthetics. The viewshed will remain similar to existing conditions. Although distribution lines currently exist in the viewshed, the visual contrast added by the taller transmission structures and lines might be perceived as a visual disruption for some individuals.

Limited tree clearing along the existing distribution right-of-way will occur. However, because the Proposed ROW follows existing distribution right-of-way, any tree clearing that does occur will incrementally increase the size of the existing right-of-way. No new greenfield right-of-way will be cleared.

The new Otto Substation footprint and fence will be further south to accommodate the new 115/12.47-kV transformer and associated equipment. The nearest residence is approximately 700 feet from the expected center of the Otto Substation property to the northeast. Based on aerial imagery, a metal barn is located within the line of site of the residence to the substation. The old substation footprint will be revegetated except for areas on the existing gravel pad used for the access road or parking.

#### 6.4.1.2 Mitigation Measures

The primary strategies for minimizing aesthetic impacts are prudent routing — placing the transmission line away from residences and following existing infrastructure right-of-way. Great River Energy will work with landowners to identify concerns related to Project aesthetics. The Proposed Alignment follows existing infrastructure for approximately 97 percent of its length.

In addition to these standard mitigation measures, Great River Energy will work with landowners to identify concerns related to Project aesthetics and compensate landowners for removal of trees and vegetation based on easement agreements.

Further, prior route permits issued by the Commission related to aesthetics state that:

- The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, right-of-way, and other areas with the potential for visual disturbance.
- The Permittee shall use care to preserve the natural landscape, minimize tree removal, and prevent any unnecessary destruction of the natural surroundings in the vicinity of the Transmission Facility during construction and maintenance.
- The Permittee shall work with landowners to locate the HVTL to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads.
- The Permittee shall place structures at a distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highways, or trail crossings.
- The Permittee shall remove and properly dispose of all construction waste and scrap from the right-of-way and all premises on which construction activities were conducted upon completion of each task. The Permittee shall remove and properly dispose of all personal litter, including bottles, cans, and paper from construction activities daily.

#### 6.4.2 **Cultural Values**

Cultural values include those perceived community beliefs or attitudes that define what is collectively important to the group. Cultural values provide a framework for community unity.

The Project Area has been home to various people and cultures. During European contact, the Ojibwe occupied the Project Area. The 1855 Land Cession Treaty with the Ojibwe ceded and conveyed to the United States the “right, title, and interest in, and to,” the lands claimed by the “Mississippi, Pillager, and Lake Winnibigoshish bands of Chippewa Indians” in the Territory of Minnesota (OKState Library, 2025). The Treaty of 1855 did not cede land use that the Ojibwe had retained in the 1837 Land Cession Treaties with the Ojibwe and Dakota (MIAC, 2025).

There are no Tribal owned reservations or trust lands in the Project Area (MnDOT, 2025a). Tribes with historical and cultural interest, or ancestral ties to Otter Tail County include (Office of Environment and Energy, 2025):

- Apache Tribe of Oklahoma
- Cheyenne and Arapaho Tribes, Oklahoma
- Flandreau Santee Sioux Tribe of South Dakota
- Fort Belknap Indian Community of the Fort Belknap Reservation of Montana
- Lac Vieux Desert Band of Lake Superior Chippewa Indians of Michigan
- Leech Lake Band of the Minnesota Chippewa Tribe
- Lower Sioux Indian Community in the State of Minnesota
- Menominee Indian Tribe of Wisconsin
- Minnesota Chippewa Tribe
- Prairie Island Indian Community in the State of Minnesota
- Santee Sioux Nation, Nebraska
- Sisseton-Wahpeton Oyate of the Lake Traverse Reservation, South Dakota
- Spirit Lake Tribe, North Dakota
- Upper Sioux Community, Minnesota
- White Earth Band of Minnesota Chippewa

According to the Otter Tail County Long-range Strategic Plan (Otter Tail County, 2020) the city of Fergus Falls represents about 25 percent of the county’s population. Otter Tail County’s population is expected to remain stable with an overall decrease in population of less than one percent by 2050. Decreases in population are expected to be greater in rural areas.

The Long-Range Strategic Plan established a vision for the county and highlights goals and objectives in several broad categories: Resiliency, Economy, Land Use, Public Infrastructure, Natural Resources, and Parks and Trails. Overall, the plan seeks to balance transportation, health, recreation, and economic development objectives.

Cultural values are informed by the work and recreational pursuits of residents, as well as geographic features. The nearest cities to the Project are Perham and New York Mills. Within the county, there are multiple parks, trails, and open spaces. Glendalough and Maplewood State Parks and Phelps Mill County Park provide opportunities for outdoor education and recreation. Trails traverse the county, including water trails, equestrian trails, cross country ski trails, snowmobile trails, all-terrain vehicle trails. Otter Tail County is home to many lakes and water recreation is an

important part of the County’s culture. The Project Area is primarily agricultural and rural residential. The East Otter Tail Fairgrounds is located in Perham. Otter Tail County stresses its “lower cost of living, caring communities, beautiful environment, strong schools, and diverse attractions and activities” when describing the county (Otter Tail Lakes Country Association, 2025).

European heritage in the Project Area, as reported by residents, is primarily German, Irish, Norwegian, and Swedish (U.S. Census Bureau, 2023).

#### 6.4.2.1 Potential Impacts

The ROI for Cultural Values is the Project Area. Construction of the Project is not expected to conflict with work, leisure, or cultural pursuits in the Project Area. The Project will support Otter Tail County, both now and into the future, by increasing electrical reliability. Given that existing electric transmission and distribution lines already exist in the Project Area and that the Project will use existing distribution line right-of-way and construct a new substation immediately adjacent to an existing substation that will be removed, the Project is not expected to interfere with the sense of place in the Project Area. Construction and operation of the Project is not anticipated to impact or alter the work and leisure pursuits of residents in the project area in such a way as to impact the underlying culture of the area.

#### 6.4.2.2 Mitigation Measures

The Proposed Route is along existing road and distribution line right-of-way, which minimize the aesthetic changes to the landscape that influence the sense of place.

The Applicants do not propose additional mitigative measures specific to cultural values.

### 6.4.3 **Displacement**

The NESC’s and Great River Energy’s standards require certain clearances between transmission line structures and buildings or structures within the right-of-way for the safe operation of the proposed transmission line (**Table 3**). Great River Energy strives to avoid displacing residences or other structures during its routing process.

**Table 11** summarizes the buildings within 200 feet of the Proposed Alignment. There are no residences, outbuildings, or structures associated with businesses within 100 feet of the Project. The structure nearest to the transmission line is a residence located 149 feet from the Proposed Alignment, on the opposite side of 470<sup>th</sup> Avenue near MP 2.7 (**Appendix B, Page 7**). The closest residence to the center of the new Otto Substation is approximately 700 feet to the northeast across 470<sup>th</sup> Avenue (**Appendix B, Page 8**).

#### 6.4.3.1 Potential Impacts

The ROI for Displacement is the Proposed ROW. No residences or business structures will be displaced by the Project. The new Otto Substation will be located on land already owned by LREC. The Project will be designed in compliance with local, state, NESC, and Great River Energy and LREC standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and right-of-way widths.

**Table 11 Building Distances from Proposed Alignment**

<b>Building Type</b>	<b>0-50 feet</b>	<b>50-100 feet</b>	<b>100-150 feet</b>	<b>150-200 feet</b>	<b>Total</b>
Residence	0	0	1	2	3
Outbuilding	0	0	3	5	8
Business Structures	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>11</b>

**6.4.3.2 Mitigation Measures**

The Project routing and substation location avoid displacement of residences, buildings, and businesses; therefore, no mitigation is proposed.

**6.4.4 Environmental Justice**

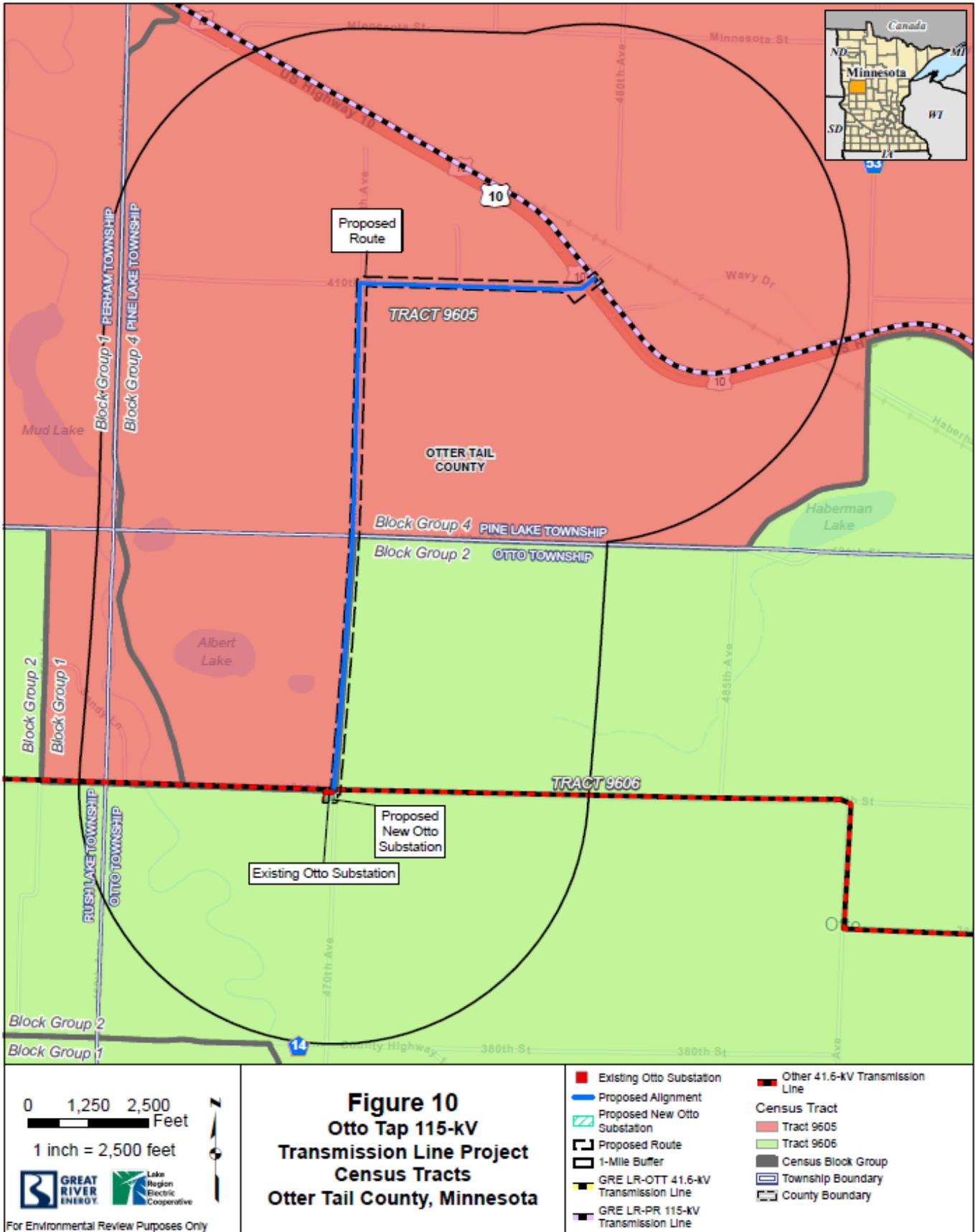
The Commission defines an environmental justice area – consistent with Minn. Stat. § 216B.1691, subd. 1(e), as an area that meets one or more of the following criteria:

- (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.<sup>6</sup>

Although the statute quoted above applies to the establishment of Minnesota’s renewable energy objectives, the Applicants nonetheless apply that definition for the analysis in this Application for consistency with other Commission proceedings. Census tracts that intersect with the Proposed Route were analyzed for environmental justice areas. Census tracts are the best approximation of a geographic area where adverse impacts can occur from the Project. Census tracts are shown on **Figure 10**. Otter Tail County and Minnesota were used as reference populations.

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<sup>6</sup> Minn. Stat. § 216B.1691, subd. 1(e).



The Project does not cross federally recognized Tribal Areas. Error! Not a valid bookmark self-reference. identifies minority populations by race and ethnicity, low-income populations, and populations with a language other than English spoken at home for census tracts crossed by the Project Route as well as Otter Tail County and Minnesota. The most recent U.S. Census Bureau American Community Survey 5-Year Estimate Data (2023) were used when possible.

**Table 12 Environmental Justice Data**

County/ Census Tract	Population	Percent Total Minority <sup>a</sup>	All Individuals with Income Below 200 Percent of Poverty Level	Language Other Than English Spoken at Home
<b>Minnesota</b>	5,706,494	23.3%	21.6%	26.0%
<b>Otter Tail County</b>	60,081	9.1%	25.8%	4.3%
Census Tract 9605	5,765	13.8%	34.1%	10.1%
Census Tract 9606	4,578	7.4%	24.8%	3.6%
<sup>a</sup> “Minority” refers to people who reported their ethnicity and race as something other than non-Hispanic White.				
Source: 2023 American Community Survey 5-Year Estimates (Tables: DP02 Selected Social Characteristics in the United States; DP05 Demographic and Housing Estimates; S1701 Poverty Status in the Past 12 Months) (U.S. Census Bureau, 2023); 2020 Decennial Census (Table P1 Total Population) (U.S. Census Bureau, 2020).				

As shown by the MPCA Understanding Environmental Justice in Minnesota web viewer (MPCA, 2025a) and as presented in **The Project** does not cross federally recognized Tribal Areas. Error! Not a valid bookmark self-reference. identifies minority populations by race and ethnicity, low-income populations, and populations with a language other than English spoken at home for census tracts crossed by the Project Route as well as Otter Tail County and Minnesota. The most recent U.S. Census Bureau American Community Survey 5-Year Estimate Data (2023) were used when possible.

Table 12, no census tracts within the Project Area are considered environmental justice communities under the definition provided in Minn. Stat. § 216B.1691, subd. 1(e).

The Applicants reviewed the MPCA What’s in My Neighborhood database. This database shows potentially contaminated sites and an inventory of businesses that have applied for environmental permits and registrations from the agency. Just because a site is listed in the database does not necessarily imply a threat to the environment. Five sites are within the Project Area: three feedlots, one hazardous waste site, and a demolition debris site.

According to the MPCA MNRISKS model, Census Tract 9605 Block Group 4 and Census Tract 9606 Block Group 2 have air scores of 0.05 and 0.06, respectively (MPCA, 2025b). This means the air scores in the Project Area are in the lowest 10 percent of air scores in Minnesota and the air quality is better than 90 percent of the state. Additionally, air scores are below health benchmarks. A health benchmark is “...an amount of air pollution that is unlikely to result in health effects in sensitive populations after a lifetime of exposure (MPCA, 2025b).”

#### 6.4.4.1 Potential Impacts

The ROI for Environmental Justice is the Project Area. There are no statutorily defined environmental justice communities impacted by the Project.

#### 6.4.4.2 Mitigation Measures

The Project does not occur within environmental justice communities; therefore, no mitigation is proposed.

### **6.4.5 Land Use and Zoning**

Except for across and along road right-of-way, the Project will be located entirely on private land. LREC owns the land where the new Otto Substation will be located. Land use is primarily agricultural row crops, with farmsteads and other residences located along roadways. Land cover is shown on **Figure 11**. Land cover types crossed by the Proposed Alignment are a mix of low intensity developed (0.2 mile), developed open space (1.3 miles), pasture and cultivated crops (1.1 mile), woody wetlands (less than 0.1 mile), and emergent wetlands (0.3 mile). This is consistent with land cover types within the Local Vicinity, which is primarily pasture and cultivated crops (1,011 acres). Other land cover types include developed open space (93 acres), wetlands (84 acres), and forested lands (73 acres).

As discussed in Section 6.4.2, Otter Tail County finalized a long-range strategic plan in 2020, which established a vision for the county and highlights goals and objectives. Overall, the plan “establishes a long-term vision for managing growth and development decisions (Otter Tail County, 2020).”

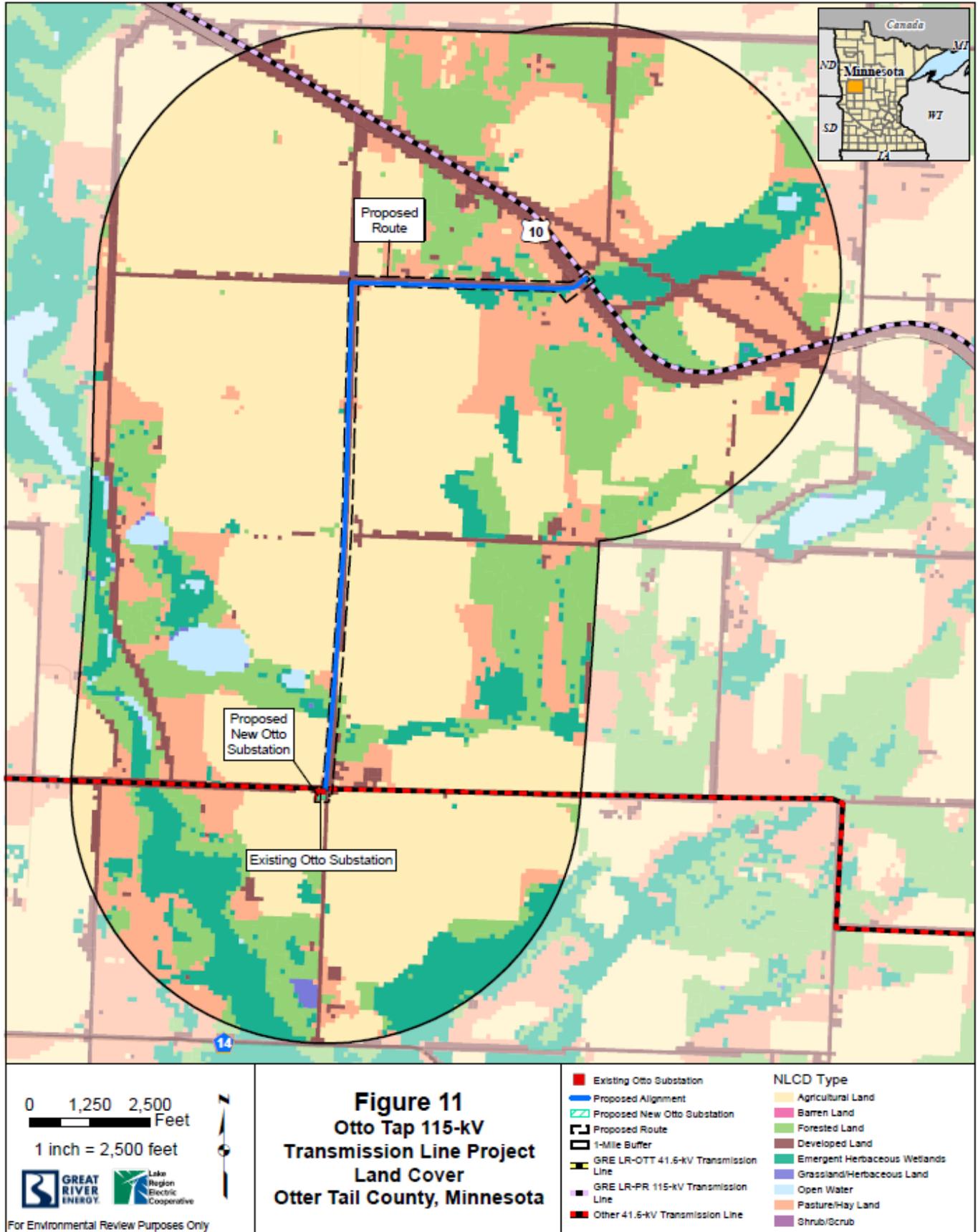
Otter Tail County does not have county-wide zoning. The county has, however, implemented the Otter Tail County Shoreland District. The purpose of the Shoreland District is to “provide for the wise subdivision, use and orderly development of shorelands of public waters in an effort to prevent pollution and preserve and enhance the quality of surface waters, conserve the economic and natural environmental values of shorelands, and provide the wise use of waters and related land resources of Otter Tail County (Otter Tail County, 1971).” Shorelands are defined as the area within 1,000 feet of the ordinary high water level of a lake, pond, or flowage and 300 feet from a river or stream.

#### 6.4.5.1 Potential Impacts

The ROI for Land Use, including Public Lands, and Zoning is the Proposed Route. Potential impacts are expected to be long term but negligible. The Project is not expected to alter current and future land use. Short-term agricultural impacts might occur during construction, which will be mitigated through restoration and compensatory payments.

The new transmission line structures will be along the outside edge of where existing agricultural fields are seeded and are not expected to interfere with existing or future agricultural practices. The new Otto Substation will be located on land already owned by LREC. The Project is not located in a Shoreland District (Otter Tail County, 2025a) and Otter Tail County does not have a county-wide zoning ordinance; therefore, the Project will not impact current zoning.

The Proposed Route does not cross public lands. Consistent with Minn. R. 7850.4300, the Project avoids prohibited routes, including state or national wilderness areas; state or national parks; and state scientific and natural areas.



#### 6.4.5.2 Mitigation Measures

The Project will result in negligible impacts to land use, and the Project will not impact current zoning. Short-term agricultural impacts during construction will be mitigated by Great River Energy through restoration and compensatory payments. The Applicants do not propose additional mitigative measures specific to land use and zoning.

#### 6.4.6 Noise

Human hearing is not equally sensitive to all frequencies of sound. Thus, 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 Guide to Noise Control in Minnesota, published by the MPCA, indicates that a noise level change of one dBA is not noticeable (MPCA, 2015). A three-dBA change is considered the “threshold of perception” or the lowest change in sound level that is generally perceptible to human hearing. A five-dBA change in noise level is a noticeable change. 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 (four times as loud). **Table 13** shows noise levels associated with common, everyday sources.

**Table 13 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	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 (MPCA, 2015).	

Established daytime and nighttime noise standards by Noise Area Classifications (NACs) are provided in **Table 14**. These standards, outlined in Minn. R. 7030.0040, are expressed as limiting levels of dBA within a 1-hour period; L<sub>50</sub> is the dBA not to be exceeded over 50 percent of the time (30 minutes) within an hour, while L<sub>10</sub> is not to be exceeded over 10 percent of the time (6 minutes) within the hour.

**Table 14 MPCA Noise Limits by Noise Area Classification (dBA)**

Applicable Noise Area Classification	Description	Daytime		Nighttime	
		L <sub>50</sub>	L <sub>10</sub>	L <sub>50</sub>	L <sub>10</sub>
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

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

NACs are based on the land use activities at the location of the receiver. Noise standards are applicable to that land use activity. NACs are listed in the MPCA noise regulations to distinguish the categories. Residential areas, churches, educational and health services, and similar 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, which includes agricultural land.

As presented in **Table 14**, the most stringent applicable MPCA noise standard for a NAC 1 property is the L<sub>50</sub> daytime and nighttime standards equivalent to 60 dBA and 50 dBA, respectively. Households, including farmhouses, are classified as NAC 1 under Minn. R. 7030.0050. Agricultural land is classified as NAC 3. The NAC 3 daytime and nighttime standard is 75 dBA for both time periods.

6.4.6.1 Potential Impacts

The ROI for Noise is the Local Vicinity. Potential impacts from construction and operation of the transmission line and substation are anticipated to be of a small size, short and long term, and not impact unique resources. Potential impacts will be negligible to minimal.

The primary noise receptors within the local vicinity are residences and farmsteads. Residences are assigned to NAC 1. **Table 15** presents the distance of noise-sensitive receptors, or residences, from the Proposed Alignment. Residences are shown on the maps in **Appendix B**. The residence nearest to the transmission line is located 149 feet from the Proposed Alignment, on the opposite side of 470<sup>th</sup> Avenue near MP 2.7 (**Appendix B, Page 7**). The closest residence to the center of the new Otto Substation is approximately 700 feet to the northeast across 470<sup>th</sup> Avenue (**Appendix B, Page 8**). Based on aerial imagery, a metal barn is located within the line of site of the residence to the substation as well as trees.

**Table 15 Noise-sensitive Receptors from Transmission Line**

Feet	0 to 50	50 to 100	100 to 200	200 to 400	400 to 800	800 to 1,600
Residences	0	0	3	6	4	5

Construction

Construction noise is 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 areas for the transmission line and substation. Occasionally, there might be construction outside these hours or on a weekend if Great River Energy or LREC must

work around customer schedules, line outages, or if the schedule has been significantly impacted due to delays or other factors. Construction activities will be performed with standard heavy equipment such as backhoes, cranes, boom trucks, and assorted small vehicles.

Crews will work from pole location to pole location when constructing the transmission line. Crews will return to a location during the separate phases of construction: clearing and grading, material delivery, auguring foundations holes, setting structures, and stringing conductors. As such, crews will be present at any given location for a few days but will not be present along the entire right-of-way at any given period.

Approximately five to seven workers will be present at the new Otto Substation during construction. Heavy equipment use is only expected during grading, pouring foundations, and setting equipment. This work is expected to occur over several weeks. Following this work, equipment will be delivered to the site, installed, and old equipment will be taken down and removed.

Upon completion of construction activities, noise associated with construction equipment will cease. Noise associated with construction of the Project will be short term and minimal.

### Operation

During operation, transmission lines can generate a small amount of sound energy from the corona effect—a small electrical discharge caused by the localized EF near energized components and conductors that ionize the surrounding air molecules. Corona noise from a transmission line occurs under foggy, damp, or rainy weather conditions and can create a crackling sound. During heavy rain, the background noise level of the rain is usually greater than the noise from the transmission line. The Center for Hearing and Communication indicates that rainfall is commonly measured at 50 dBA (Center for Hearing and Communication, 2025). 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 L<sub>5</sub> and L<sub>50</sub> for audible noise emissions. The worst-case scenario is when the transmission line is exposed to heavy rain conditions defined as 1 inch per hour. Anticipated noise levels for heavy rain conditions for a typical 115-kV line based on modeled results from PLSS-CADD and the Bonneville Power Administration Corona and Field Effects Program, Version 3.1, are listed in **Table 16**.

**Table 16 Anticipated Transmission Line Noise Levels in Heavy Rain**

L <sub>5</sub>	L <sub>50</sub>	Location
25.0 dBA	21.5 dBA	right-of-way edge
28.7 dBA	25.2 dBA	directly under line

As shown in **Table 16**, operational noise levels produced by a 115-kV transmission line are not usually perceivable and will be within MPCA noise limits.

During operation, the primary noise source from the Otto Substation will be the transformer. The transformer will have a noise level design specification of 75 dBA or less with the cooling fans running, which is within the NAC 3 noise standard for industrial-type land use activities. Noise

levels will attenuate to the 50 dBA NAC 1 limit for residential-type land use activities within approximately 55 feet of the transformer. Point source noise drops six dBA every time distance doubles (MPCA, 2015). For example, a 50 dBA sound at 50 feet is perceived as a 44 dBA sound at 100 feet. Noise levels from the Otto Substation will reach 50 dBA before the LREC property boundary and will be below 30 dBA at the nearest residence, well below NAC 1 noise standards. This does not consider other environmental mitigating factors between the substation and the residence, such as vegetation or buildings, which can reduce perceived noise levels. As such, appreciable operational noise impacts are not anticipated because of the new Otto Substation.

#### 6.4.6.2 Mitigation Measures

Great River Energy will require its employees and contractors to equip heavy equipment with sound attenuation devices such as mufflers to minimize the daytime noise levels. To mitigate noise impacts, work will generally be limited to daytime hours between 7 a.m. and 9 p.m. on weekdays. Great River Energy and LREC will work with landowners in the event construction becomes necessary outside of these hours. Once operational, the Project is not anticipated to contribute to an exceedance of noise standards.

Commission route permits require permittees to comply with MPCA noise standards and to limit construction and maintenance activities to daytime working hours to the extent practicable.

#### 6.4.7 **Public Services and Transportation**

The Project is in a principally agricultural and rural residential area. Private landowners in the Project Area have their own private wells and individual septic systems. Residents access other utility services from various providers, including waste collection, natural gas/propane, television, and telephone.

##### Communications

Local internet is provided by Park Region, Arvig, Spectrum/Charter Communications, and Century Link (Otter Tail County, 2025b). Satellite internet is available from companies such as Starlink, and mobile telephone companies also provide internet service. Local telephone service is provided by East Otter Tail Telephone Company (Minnesota Department of Commerce, 2025). A variety of mobile telephone companies provide service in the area.

##### Transportation

Roads in the Project Area include U.S. Highway 10 and township roads. As part of the route development process, Great River Energy evaluated opportunities to parallel existing road right-of-way, and the Proposed ROW is collocated with road right-of-way for approximately 97 percent of its length. The Proposed ROW will parallel or intersect with the roads listed in **Table 17**. The specific width of road rights-of-way vary (from approximately 66 feet for township roads and 150 feet or more for state highways) and are determined during survey and title work conducted prior to construction. The Project's alignment along existing road rights-of-way is shown on the Maps in **Appendix B**.

**Table 17 Highways or Roads Crossed by the Proposed ROW**

Mileposts	Highway / Road Name	Jurisdiction	Parallel / Intersect	Traffic Volumes (SEQ#/AADT/ Year) <sup>a</sup>
0.0 - 0.1	U.S. Highway 10	State of Minnesota	Intersect	4008/8,668/2021
0.1 - 0.9	410 <sup>th</sup> Street	Pine Lake Township	Parallel	Not available
0.9 – 2.9	470 <sup>th</sup> Avenue	Otto/Pine Lake Townships	Parallel	Not Available
2.9 - 3.0	390 <sup>th</sup> Street	Otto Township	Intersect	Not Available

<sup>a</sup> MnDOT, 2025b

Perham Municipal Airport is approximately 5.5 miles northwest of the Project in the city of Perham. According to the Perham Municipal Airport Master Plan, “Perham is a general aviation airport, meaning it accommodates aviation activities other than scheduled commercial air service (City of Perham, 2021).” There are estimated to be 24 aircraft based at the airport and a total of 7,169 take-offs and landings are forecasted in 2028. Wadena Municipal Airport is about 16.5 miles southeast.

Utilities

Several existing overhead transmission and distribution lines are in the Project Area. Great River Energy maintains the existing LR-PR 115-kV transmission line that parallels the north side of U.S. Highway 10 at this location. LREC provides electrical service in the Project Area. Existing LREC distribution lines follow 410th Street and 470th Avenue. The Proposed ROW follows these existing easements. The OTP169 41.6-kV distribution follows the north side of 390<sup>th</sup> Street at the Otto Substation.

A 24-inch natural gas pipeline operated by Viking Gas Transmission Company crosses the Proposed ROW between MPs 1.3 and 1.4 on 470<sup>th</sup> Avenue. BNSF operates a railway northeast of the Project. U.S. Highway 10 generally parallels this railway but deviates from the railway near the Project. (**Appendix B, Page 1**).

6.4.7.1 Potential Impacts

The ROI for Public Services and Transportation is the Project Area. During construction, short-term, intermittent impacts will occur. These impacts will be minimal. Operational impacts are anticipated to be negligible. The transmission line and new Otto Substation are not expected to alter the existing condition or function of existing public services or transportation networks. Potential impacts will be temporary, of a small size, and not affect unique resources.

Communication

The Project is not expected to interfere with local communications. See Section 6.5.1 for a discussion about electronic interference.

Transportation

Title 14 CFR Part 77 requires that anyone building a structure near an airport report their intentions to the FAA. Great River Energy filed Form 7640-1 on the FAA’s online application webpage (FAA, 2025b). No impacts are expected (see **Appendix C**).

Great River Energy will primarily travel down the right-of-way during construction of the transmission line. However, access to the right-of-way will be required from nearby roadways. Temporary and infrequent traffic impacts associated with equipment and 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 right-of-way to ensure pulling lines, conductors and shield wire have sufficient clearance over roads. Great River Energy will comply with licenses and permits regarding road crossings.

There will be a short-term closure of U.S. Highway 10 when stringing conductors. Great River Energy or its contractors would work with the MnDOT through its application process for a Utility Accommodation Permit in MnDOT right-of-way and comply with all permit conditions. Any closure and temporary detour are expected to be short (minutes to hours). Access along township roads is not expected to change during construction of the Project. Operation of the Project is not expected to impact U.S. Highway 10 and local roads.

### Utilities

There may be some minimal disruption of electrical service to LREC's customers. Because the Project is proposed to be routed along existing distribution lines and road rights-of-way, Great River Energy does not anticipate impacts to site improvements such as wells or septic systems. LREC will not bury distribution lines near the existing natural gas line and instead will construct the distribution lines overhead in this location.

#### 6.4.7.2 Mitigation Measures

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 traffic. Construction operations will be conducted in a manner that causes the least possible obstruction and inconvenience to the traveling public. The Applicants and their 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 the likelihood of dangerous situations along local roadways.

To ensure that any short-term and infrequent traffic impacts are minimized, the Applicants will coordinate with all affected road authorities. To the extent practicable, Great River Energy and LREC will schedule large material and equipment deliveries to avoid periods when traffic volumes are high.

Great River Energy will coordinate Project construction schedules, including any outages, with LREC to minimize electrical service disruptions to LREC's customers. Existing utilities and site improvements, such as septic systems and wells, will be identified during survey activities. Based on the location of these features, the transmission line will be designed to meet or exceed required clearances and pole locations. No structure locations will be placed on existing utilities. The Applicants will work with Viking Gas Transmission Company to ensure appropriate steps are taken to ensure the safety of the natural gas pipeline.

Commission issued route permits typically include standard conditions that directly mitigate impacts on public services, public utilities and transportation, including:

- During construction, the Permittee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services or public utilities occur these shall be temporary, and the Permittee shall restore service promptly. Where any impact on utilities has the potential to occur the Permittee shall work with both landowners and local entities to determine the most appropriate mitigation measures if not already considered as part of the route permit.
- The Permittee shall cooperate with county and city road authorities to develop appropriate signage and traffic management during construction.
- The Permittee shall advise the appropriate governing bodies having jurisdiction over all state, county, city, or township roads that will be used during the construction phase of the Transmission Facility. Where practical, existing roadways shall be used for all activities associated with construction of the Transmission Facility. Oversize or overweight loads associated with the Transmission Facility shall not be hauled across public roads without required permits and approvals.

#### **6.4.8 Recreation**

Recreational opportunities in Otter Tail County include fishing, boating, water sports, swimming, biking, hiking, hunting, cross country skiing, and snowmobiling among other activities. There are no state lands within the Local Vicinity including state parks, state forests, state trails, wildlife management areas, aquatic management areas, or scientific and natural areas. The Proposed Route does not cross designated state or national wilderness areas, nor does it cross national parks. No federal or county parks, or federal forests or refuges are within the Local Vicinity. The Project does not cross listed snowmobile trails. Recreational activities likely occur on private lands within the Local Vicinity.

The Otter Tail River State Water Trail is about 0.5 mile west of the transmission line at its closest point to the Project west of Albert Lake. The closest entry point is on Rush Lake over 2.5 miles southeast of the Project. Albert Lake is just outside the Local Vicinity. This classified natural environment lake does not have a public water access. The closest snowmobile trail is located 1 mile south of the Otto Substation. Construction and operation of the transmission line would not interfere with any “off trail” riding done along 410<sup>th</sup> Street and 470<sup>th</sup> Avenue in road ditches.

##### **6.4.8.1 Potential Impacts**

Impacts on recreational activities can occur if the transmission line or substation interferes with recreational activities. Alternatively, a transmission line might increase recreational opportunities, for example, right-of-way clearing could increase opportunities for wildlife viewing.

The ROI for Recreation is the Local Vicinity. Potential impacts on public recreational opportunities are not expected to occur. Potential impacts on private recreational activities will be long-term, of a small size, and not affect unique resources.

Impacts associated with construction and operation of the transmission line and the new Otto Substation will result in negligible impacts. These incremental impacts are not expected to be noticeable to the average recreationalist participating in recreational activities within the Local Vicinity. Public road right-of-way can be used for snowmobile or ATV travel, but the Project does not cross any established trails. Noise impacts during construction of the Project will be intermittent. Operational noise will be below ambient noise levels. The Proposed Alignment follows existing county roads and distribution lines, minimizing visual disturbances to recreational users. Any required tree clearing will be incremental along existing distribution line right-of-way. The Proposed Route avoids areas that are considered tourist destinations and avoids public lands. The new Otto Substation will be constructed on private land owned by LREC.

#### 6.4.8.2 Mitigation Measures

The Proposed Alignment avoids established recreational resources. Impacts to recreation are not anticipated; therefore, no mitigation is proposed.

### 6.4.9 Socioeconomics

The Project is in a rural area of Otter Tail County, immediately south of U.S. Highway 10 between the cities of Perham and New York Mills. It is generally located away from population centers.

#### Population and Economic Profile

**Table 18** provides information about total population, percent minority population, median household income, and percent of persons in poverty. The median household income is about \$17,000 higher across Minnesota than in Otter Tail County, although fewer people live in poverty in Otter Tail County than Minnesota as a whole. Minority groups in Otter Tail County make up a smaller percentage of the total population than Minnesota.

**Table 18 Population and Economic Profile**

Location	2020 Census Population	Percent Minority Population	Median Household Income	Persons in Poverty
Minnesota	5,706,494	23.3%	\$87,556	9.3%
Otter Tail County	60,081	9.1%	\$70,912	8.9%
<p><sup>a</sup> “Minority” refers to people who reported their ethnicity and race as something other than non-Hispanic White.            Source: 2023 American Community Survey 5-Year Estimates (Tables: DP05 Demographic and Housing Estimates; S1701 Poverty Status in the Past 12 Months; S1901 Income in the Past 12 Months); 2020 Decennial Census (Table P1 Total Population) (U.S. Census Bureau, 2023)</p>				

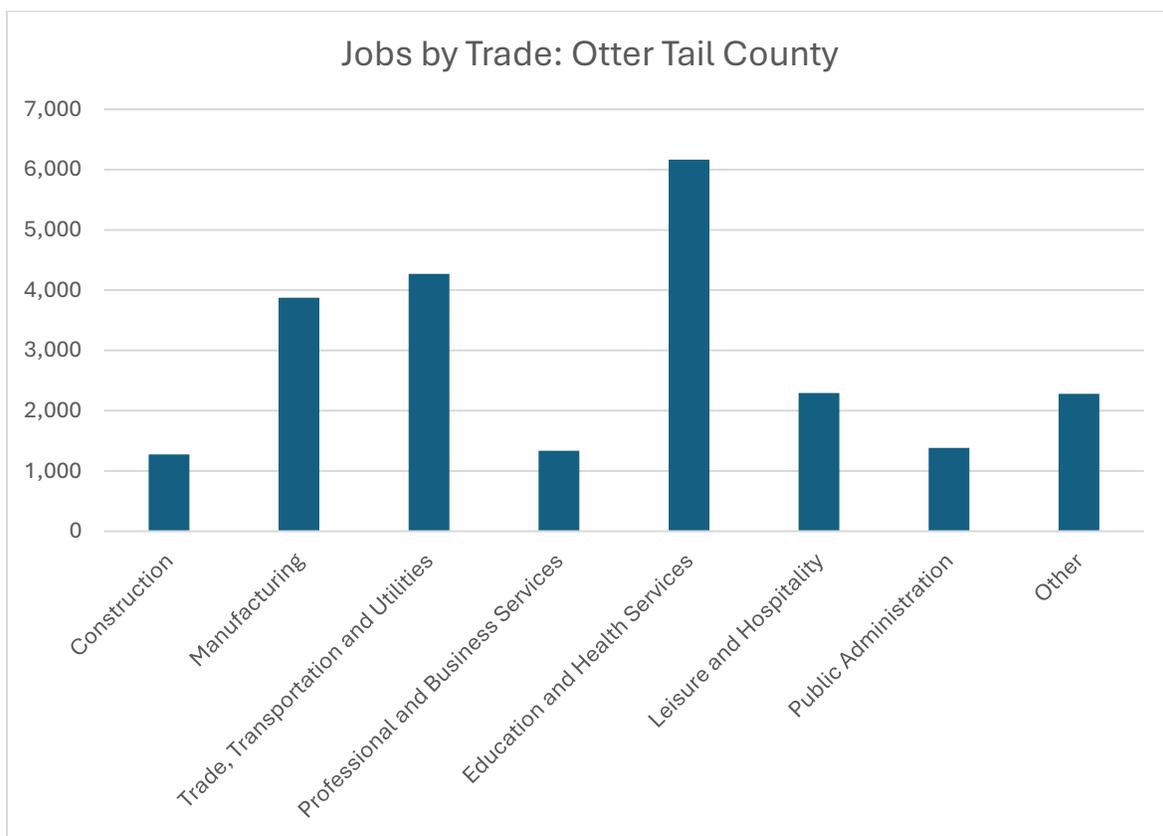
#### Local Economy and Labor Force

Otter Tail County is part of Economic Development Region 4 as defined by the Minnesota Department of Employment and Economic Development (DEED). Region 4 includes Becker, Clay, Douglas, Grant, Otter Tail, Pope, Stevens, Traverse, and Wilkin counties. The Applicants reviewed the 2022 Regional Profile; however, this information was heavily influenced by the pandemic. Instead, the Applicants elected to use the Otter Tail County Profile also developed by

DEED and dated May 2025. This profile provides post-pandemic data concerning Otter Tail County (DEED, 2024). Otter Tail County has the 18<sup>th</sup> largest economy in Minnesota. Of the 87 counties in the state, Otter Tail County “was the 42<sup>nd</sup> fastest growing in the past year and the 47<sup>th</sup> fastest growing since 2019.”

Otter Tail County rebounded from the recession associated with the pandemic by adding about 1,217 jobs from 2019 to 2024. There are currently 22,879 jobs in Otter Tail County. This is above pre-pandemic numbers; there were 22,843 jobs in 2019. Most jobs in Otter Tail County are associated with Education and Health Services and, in combination with jobs from the Trade, Transportation and Utilities; Manufacturing; and Leisure and Hospitality sectors, accounted for 73 percent of jobs in Otter Tail County. The Applicants used Quarterly Census Employment and Wages data to develop **Figure 12**, which shows employment by industry in Otter Tail County for 2024 (DEED, 2025a).

**Figure 12: Jobs by Trade in Otter Tail County, 2024**



The labor market had grown extremely tight until the pandemic spiked the number of unemployed workers. Over the past 4 years, Northwest Minnesota has set record lows for the unemployment rate and record highs for job vacancies (DEED, 2025b).

#### 6.4.9.1 Potential Impacts

The ROI for Socioeconomics is Otter Tail County. Potential impacts are expected to be positive, but minimal. Impacts will be short and long term and of a small size.

During construction, there might be short-term positive impacts to the nearby communities. Potential increases in local revenue could occur for businesses, such as hotels, grocery stores, gas stations, and restaurants to support utility personnel and contractors. Some materials might be purchased locally, such as concrete. Generally, landowners will receive one-time payments for new easements.

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.

#### 6.4.9.2 Mitigation Measures

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 and Wisconsin) or in states where Great River Energy has a physical location (North Dakota). As negative impacts to socioeconomics are not anticipated, no additional mitigation is proposed.

Commission route permits require permittees, their contractors, and subcontractors to pay no less than prevailing wage as defined in Minn. Stat. §177.42.

#### **6.4.10 Property Values**

Impacts on property values that result from power line construction have been studied, focusing primarily on residential, agricultural, and undeveloped properties as opposed to commercial or industrial properties. While the research demonstrates that property value impacts vary, the majority indicate that high voltage transmission lines (HVTL) have “no significant impact or a slight negative impact on residential properties (Pitts and Jackson, 2007).”

The impact on property values from the presence of an HVTL is influenced by a complex interaction of factors. Most of these factors are parcel-specific: condition, size, improvements, acreage, and neighborhood characteristics; the proximity to schools, parks, and other amenities; and the presence of existing infrastructure (e.g., highways, railways, power lines). In addition to property-specific factors, local and national market trends, as well as interest rates can affect all three measures. Thus, impacts from HVTLs on property values depend upon “many factors, including market condition, location, and personal preference (Pitts and Jackson, 2007).” The presence of a HVTL becomes one of many interacting factors that could affect a specific property value.

Generally, impacts to property values resulting from the existence of an HVTL are based on individual perceptions relating to “aesthetic concerns about the effect of overhead wires and supporting towers on views [and] concerns about the possible adverse health impacts associated with exposure to [EMFs] (Roddewig and Brigden, 2014).” The use and size of a property also influence potential impacts. Properties used exclusively for residential purposes “are more vulnerable to value impact than agricultural or recreational uses, where a broader set of property attributes become relevant for the purchaser (Chalmers, 2012).” Smaller properties are more vulnerable to value impacts “due to decreased flexibility in the siting of improvements,” though,

due to topography, access, and related constraints, this can also apply to larger sized parcels (Chalmers, 2012).

The use of multiple regression statistical analysis is generally accepted as the current professional and academic standard for evaluating potential property value impacts, as it reflects the actual behavior of property buyers and sellers in terms of recorded sales prices, while controlling for other factors, for example, home size (Kinnard and Dickey, 1995; Minnesota Department of Commerce, 2025a). The results are often reported as an average change over a number of properties; however, the effect on individual properties can vary—increase or decrease—widely.

The results of these studies can be summarized, generally, as follows:

- Over time, there is a consistent pattern with about half of the studies finding negative property value effects and half finding none.
- When effects have been found, they tend to be small; almost always less than 10 percent and usually in the range of 3 percent to 6 percent.
- Where effects are found, they decay rapidly as distance to the lines increases and usually disappear at about 200 feet to 300 feet.
- Two studies investigating the behavior of the effect over time find that, where there are effects, they tended to dissipate over time (Minnesota Department of Commerce, 2025a).

#### 6.4.10.1 Potential Impacts

The ROI for property values is the Local Vicinity. Impacts to property values could occur; however, specific changes to a property's value are difficult to predict. Impacts, if they occur, are expected to decay over time. Property value impacts fall off rapidly with distance; therefore, impacts are anticipated to be localized. Long-term impacts might or might not occur.

Every landowner has a unique relationship and sense of value associated with their property. Thus, a landowner's assessment of potential impacts to their property's value is often a deeply personal comparison of the property "before" and "after" a proposed project is constructed. These judgements, however, do not necessarily influence the market value of a property. Rather, appraisers assess a property's value by looking at the property "after" a project is constructed. Moreover, potential market participants likely see the property independent of the changes brought about by a project; therefore, they do not take the "before" and "after" into account the same way a current landowner might.

#### 6.4.10.2 Mitigation Measures

Impacts on property values can be mitigated by reducing aesthetic impacts and encumbrances to future land use. Collocating the transmission line with existing infrastructure might reduce aesthetic impacts and potential land use conflicts, and landowners will be compensated for any easements. The Applicants do not propose additional mitigative measures specific to property values.

## **6.5 Public Health and Safety**

Construction and operation of the Project have the potential to impact human health and safety. The Project will be designed in compliance with local, state, NESC, and Great River Energy and LREC standards regarding clearance to the ground, clearance to crossing utilities, strength of materials, and right-of-way widths. Construction and contract crews will comply with local, state, and NESC standards regarding installation of facilities and standard construction practices. Great River Energy and LREC will follow established safety procedures, as well as industry safety procedures, during and after installation of the Project, including clear signage during all construction activities. See Section 5.1.4 and Section 5.2.3 for discussions on construction practices and safety.

### **6.5.1 Interference**

As discussed in Section 6.4.6, the “corona” effect can ionize surrounding air molecules. Corona can transform discharged energy into very small amounts of radio noise. Corona-induced 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. In addition, structures could block line-of-sight communication signals. Interference from the new Otto Substation is not expected.

#### **6.5.1.1 Potential Impacts**

The likelihood of radio and television interference from the Project is minimal because the likelihood of significant corona formation on the Project is 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.

Should interference occur it would most likely be in the AM frequency range and occur underneath the conductors or very close to them within the Proposed ROW. Interference is not expected at higher frequencies including FM radio and the Allied Radio Matrix for Emergency Response (ARMER) system (see Section 6.5.3.)

#### **6.5.1.2 Mitigation Measures**

The ROI for interference is the Proposed Route. Because the Applicants do not expect radio and television interference to be an issue, the Applicants do not propose additional mitigative measures specific to interference.

Commission issued route permits typically include standard conditions that require the Permittee to take action if interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems or other communication devices is caused by the presence or operation of the project and Permittees must restore or provide reception equivalent to reception levels in the immediate area just prior to construction of the project.

### **6.5.2 Electric and Magnetic Fields**

As it pertains to the Project, the term “EMF” refers to the extremely low frequency (ELF) decoupled EF and magnetic fields (MF) 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 MF is related to the magnitude of the current flow through the conductor. EMF is a naturally occurring phenomenon. It is also 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  $\pm 5$  percent of nominal), the magnitude of the EF will be near-constant regardless of the power flowing on the line.

When an EF reaches a nearby conductive object, such as a vehicle or a metal fence, it can induce a voltage on the object (or, “induced voltage”). 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.

Neutral-to-earth voltage or “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. 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.

Although there is no state or federal standard for transmission line EF exposures, the Minnesota Environmental Quality Board (EQB) developed a standard of a maximum EF limit of 8 kV/m at one meter (3.28 feet) above ground; the Commission has adopted this standard.

### Magnetic Fields

Current passing through any conductor, including a wire, produces an MF in the area around the wire. The current flowing through the conductors of a transmission line generates an MF that, in similar fashion to the EF, extends outward from the energized conductors. The intensity of the MF associated with a transmission line is proportional to the amount of current flowing through the line’s conductors, and the magnitude of the MF 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 MF 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 state standards are to be considered at the edge of right-of-way. Studies of the health effects from MFs conclude that the evidence of health risk is weak (Minnesota State Interagency Working Group on EMF Issues, 2002; National Research Council Committee on the Possible Effects of Electromagnetic Fields on Biologic Systems, 1997). The general standard is one of prudent avoidance.

MF levels associated with some common electric appliances are provided in **Table 19**.

**Table 19 Magnetic Fields of Common Electric Appliances (mG)**

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
Source: EMF In Your Environment (USEPA,1992).			

### 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 the operation of most of their devices.

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 because of typical public exposure would be rare (Minnesota Power Systems Conference Proceedings, 2007).

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.

#### 6.5.2.1 Potential Impacts

The ROI for EMF is the Proposed ROW. 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 (NIEHS, 2025). Other studies have come to similar decisions (Minnesota State Interagency Working Group on EMF Issues, 2002; World Health Organization, 2007).

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.”<sup>7</sup> This conclusion was further justified in the Route Permit proceedings for the Brookings Project. In the Brookings Project Route Permit proceedings, Great River Energy/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.”<sup>8</sup> The Commission adopted this finding on July 15,

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<sup>7</sup> 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).

<sup>8</sup> *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)

2010.<sup>9</sup> Impacts to public health and safety are not anticipated. Impact calculations prepared by the Applicants for electric and magnetic fields are included below.

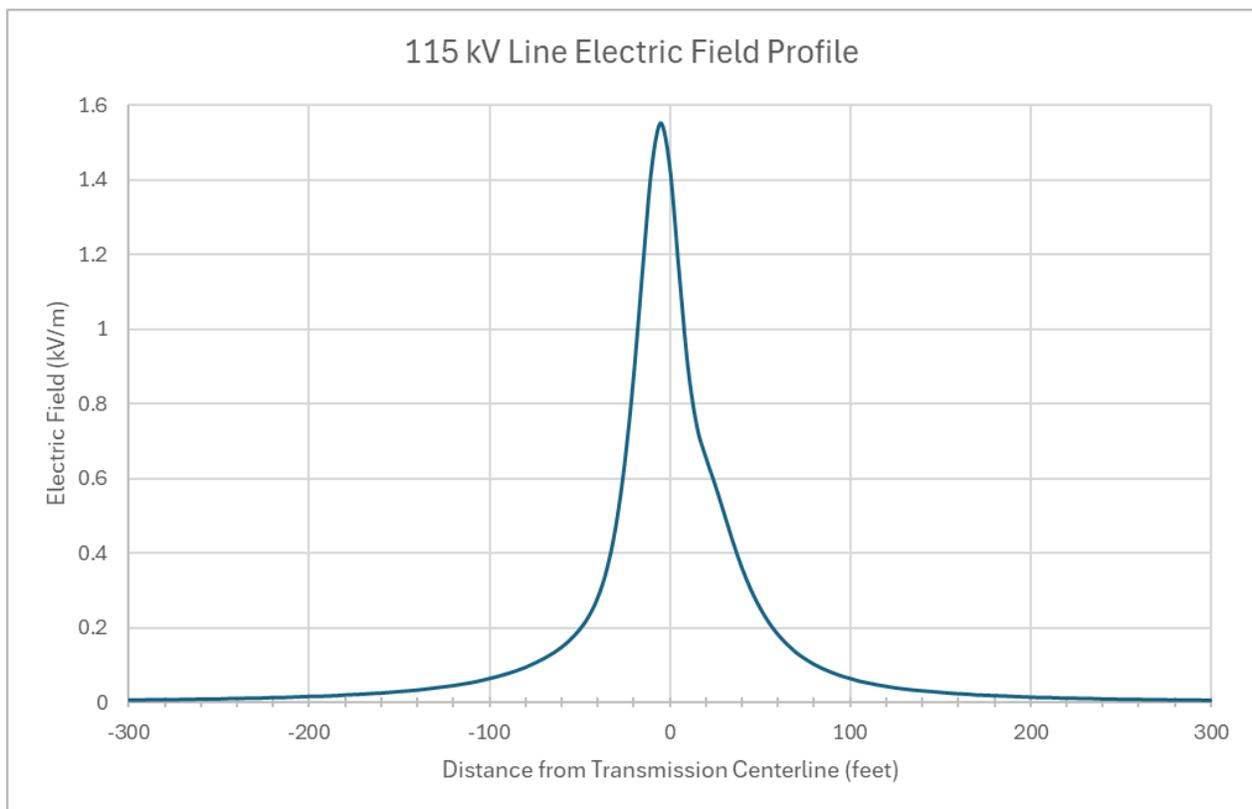
### Electric Fields

Great River Energy has calculated the approximate EF for the Project’s transmission configuration and estimates the peak magnitude of EF density to be approximately 1.55 kV/m underneath the conductors (one meter above ground), which is well below the Commission's standard. **Table 20** summarizes the EFs calculated for the proposed transmission line. These EF calculations are also shown graphically on **Figure 13**.

**Table 20 Calculated Electric Fields (kV/M) at One Meter Above Ground**

Operating Voltage (kV)	Max Operating Voltage (kV)	Distance from Transmission Line (feet)										
		-300	-200	-100	-50	-25	Max	25	50	100	200	300
115-kV	126.5	0.007	0.017	0.065	0.20	0.64	1.55	0.59	0.26	0.065	0.015	0.006

**Figure 13: Calculated Electric Field Profile**



<sup>9</sup> 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)

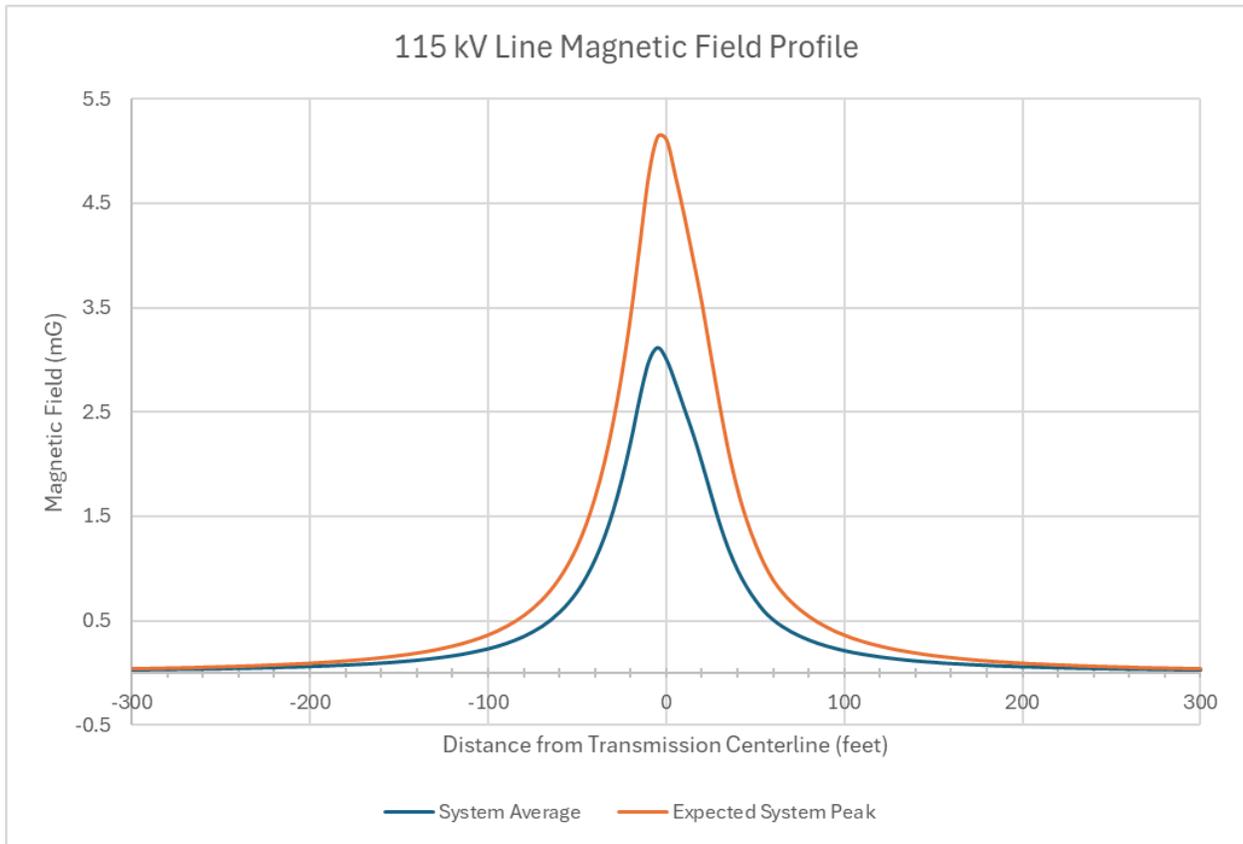
Magnetic Fields

**Table 21** 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 on **Figure 14**.

**Table 21 Calculated Magnetic Fields (mG) for Proposed Design**

Operating Voltage	Max Operating Voltage (kV)	Line Current (Amps)	Distance from Transmission Line (feet)										
			-300	-200	-100	-50	-25	Max	25	50	100	200	300
115-kV Average Load	126.5	21	0.026	0.059	0.229	0.779	1.86	3.12	1.71	0.694	0.210	0.056	0.025
115-kV Peak Load	126.5	35	0.42	0.96	0.367	1.22	2.87	5.14	3.04	1.24	0.364	0.096	0.042

**Figure 14: Calculated Magnetic Field Profile**



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.

### Implantable Medical Devices

Manufacturers of pacemakers and other IMDs have indicated that EFs below 6 kV/m are unlikely to cause interactions affecting the operation of most of their devices. **Table 21** and **Figure 14** show that the EFs for the Project are below levels at which modern bipolar devices are susceptible to interaction with the fields.

#### 6.5.2.2 Mitigation Measures

The Project will be designed in compliance with local, state, NESC, and Great River Energy and LREC standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and right-of-way widths. The Otto Substation will be equipped with protective breakers and relays. Protective equipment is designed to de-energize the transmission line when needed. The Otto Substation will be protected by locked gates and barbed-wire-topped fencing. Signage attached to the fence will list the owner, provide a telephone contact number, and warn about electrical hazards within the substation.

Great River Energy and LREC will ensure that safety requirements are met during the construction and operation of the facilities. Additionally, when crossing roads or railroads during stringing operations, guard structures will be used to eliminate traffic delays to the extent practicable and provide safeguards for the public.

Great River Energy would work with landowners regarding induced current concerns. 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.

Commission issued route permits typically include standard conditions that require the Permittee to design the transmission line and associated facilities to meet or exceed all relevant local and state codes, NESC, and North American Electric Reliability Corporation requirements.

Route permits from the Commission typically contain a standard condition that the Permittee shall design, construct, and operate the transmission line in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8 kV/m. Great River Energy has calculated the approximate EF for the Project's transmission configuration and estimates the peak magnitude of EF density to be approximately 1.55 kV/m underneath the conductors (one meter above ground).

Because the Applicants do not expect electric and magnetic fields to be an issue along the Proposed Route, the Applicants do not propose additional mitigative measures specific to EMF.

### **6.5.3 Emergency Services**

Emergency services are provided by a variety of entities in Otter Tail County. Emergency responders near the Project are discussed below. The Otter Tail County Sheriff's Office, Perham Police Department, and New York Mills Police Department provide police services. The Perham

Fire Department and the New York Mills Fire Department provide fire services. Perham Area Emergency Medical Services (EMS) provides ambulance services. New York Mills Fire Department has four trained EMTs on staff. The Sanford Perham Health Clinic is the closest emergency room to the Project. Astera Health, in Wadena, also houses an emergency room. While outside Otter Tail County, the city of Detroit Lakes in Becker County provides a variety of services including the Essentia Health St. Mary's – Detroit Lakes Hospital and the Sanford Health Detroit Lakes Clinic. Detroit Lakes is approximately 20 miles north on U.S. Highway 10.

The ARMER system is a radio communication system that is used by first responders across Minnesota. The ARMER system “is Minnesota’s primary two-way 700 to 800 megahertz (MHz) trunked public safety radio system for all state agencies as well as all Police, Fire, EMS, city, county, federal and tribal governments. The system was developed to improve communication amongst emergency service providers during natural and man-made disasters (Minnesota Department of Health [MDH], 2025a).”

#### 6.5.3.1 Potential Impacts

The ROI for Emergency Services is Otter Tail County. Construction of the Project is expected to have short-term, minimal impacts on emergency services. Operational impacts are anticipated to be negligible.

Construction of the Project could impact emergency services during construction by requiring emergency services to respond to any incidents or by interfering with the ability to respond to an emergency. Great River Energy will prioritize emergency response over construction to allow emergency services to access construction work areas, if required. U.S. Highway 10 will need to be closed for a brief period of time during conductor stringing operations. Closure of U.S. Highway 10 and the associated detour will be coordinated with local road authorities and emergency responders. As such, construction of the Project is not expected to affect emergency services.

The ARMER system is used across Minnesota. Broadcast frequencies are above 700 MHz. As discussed in Section 6.5.1, radio frequency noise, should it occur, would be outside this range; therefore, the ARMER system will not be impacted. ARMER towers vary in height but are generally over 330 feet tall. As such, the Project will not cause line-of-sight concerns (Robert Kimball & Associates, 2008).

There will be up to 27 workers on site at any given time. Local emergency services will respond to any accidents. Both Perham Health and Essentia Health St. Mary's have ambulance service. Perham Health is a 25-bed critical access hospital. Astera Health in Wadena is a Level 4 Trauma Center with a helipad. Essentia Health St. Mary's in Detroit Lakes is a 36-bed, Level 3 Trauma Center with a helipad.

#### 6.5.3.2 Mitigation Measures

Because the Applicants anticipate that impacts to emergency services will be negligible, no mitigation is proposed.

#### **6.5.4 Public and Worker Safety**

Construction and operation of the Project will involve risks to the public and workers. Public risks are associated with electrocution. Electrocution risks are associated with unauthorized entry to a substation. Electrocution can also occur if a person or equipment, such as large machinery or a pole saw, gets too close to an overhead transmission line. Contact with a downed power line also poses a risk; these risks are most associated with distribution lines. Lastly, vehicle collisions with transmission line poles could occur.

The hazards present at a transmission line or substation construction site are similar to those at most any large construction site. Generally, safety concerns include electrocution, falls, confined spaces, fires and explosions, sprains, strains, fractures, and environmental stress (U.S. Department of Labor Occupational Safety and Health Administration [OSHA], 2025). Transportation-related accidents are also a significant risk for all industries.

##### **6.5.4.1 Potential Impacts**

The ROI for Public and Worker Safety is the Proposed ROW. Potential impacts are anticipated to be short and long term, of a small size, and can be mitigated. Overall, impacts are expected to be minimal.

There are risks associated with construction and operation of a transmission line. Unauthorized entry to the substation would expose the public to electrocution risks. The new Otto Substation will be fenced, gated, and locked. A potential for electrocution exists should individuals approach the energized lines. Individuals can also be exposed to electrocution if they contact the transmission line from the ground whether in machinery or other means. This event is most often associated with distribution lines.

Workers could potentially be injured traveling to and from the construction site, slips and falls, and electrocution, among other common construction worksite risks. Local emergency services will respond to any accidents as discussed in Section 6.5.3.

##### **6.5.4.2 Mitigation**

Great River Energy is committed to meet or exceed the design, construction, and operational requirements of the NESC, North American Electric Reliability Corporation requirements, state and local codes.

Proper signage will warn the public of electrical dangers. The Applicants or their contractor will provide or require necessary safety equipment, including fall arrest equipment, and provide daily “tailgate” safety trainings. All work must comply with OSHA requirements. Downed transmission lines are deenergized either automatically by breakers or manually by switches and other safety equipment in substations. Should such equipment fail, the potential for electrocution exists if individuals contact the energized lines.

Commission issued route permits typically include standard conditions that require the Permittee to design the transmission line and associated facilities to meet or exceed all relevant codes.

## 6.6 Land-based Economies

### 6.6.1 Agriculture

According to the 2022 U.S. Department of Agriculture (USDA) Census of Agriculture, Otter Tail County has 2,497 individual farms with an average farm size of 309 acres and covers approximately 770,922 acres (about 61 percent) of the county. Approximately \$551 million was generated from crop and livestock sales in 2022 (USDA National Agricultural Statistics Service, 2022).

According to National Land Cover Database (NLCD) data, the Proposed Route consists of about 22 acres of cultivated cropland and 5 acres of pasture/hay lands. The Proposed Alignment will cross along the outer edges of about 800 feet of fields with center-pivot irrigation. Agricultural areas are shown in the detailed route maps provided in **Appendix B**. No organic farms will be impacted by the Project (USDA, 2025). There are no registered apiaries within 1 mile of the Proposed Route (MDA, 2025a). The Proposed Route does not cross soils designated as prime farmland.

#### 6.6.1.1 Potential Impacts

The ROI for Agriculture is the Proposed Route. Potential impacts are anticipated to be short term and minimal. There will be no impacts to prime farmland. The Proposed ROW is consistent for use as pasture, hay, or other crop cultivation. The new Otto Substation is on private land owned by LREC that is not in agricultural production; therefore, no impacts to agricultural production from the substation are anticipated.

Construction of the proposed transmission structures will require repeated access to structure locations to install the structures and to string conductors. Equipment used in the construction process will include backhoes, cranes, boom trucks and assorted small vehicles. Operation of these vehicles on adjoining farm fields can cause rutting and soil compaction, particularly during springtime and otherwise wet conditions. If drain tile is present in the disturbance area it could be damaged when augering holes for structures; however, irrigated fields like the ones present along the Proposed Route typically do not have drain tiles. Agricultural land could be taken out of production during construction of the transmission line; however, farming would resume after restoration is complete. Only structure locations (and associated guying, if any) would be precluded from future farming activities. These impacts could cause crop losses.

The transmission line will cross the edge of center-pivot irrigated fields. Center-pivot irrigation is generally compatible with transmission lines on its outer edges. In some situations where an end gun sprayer is in use, the sprayer may need to be adjusted to prevent spraying directly onto the transmission line. Great River Energy coordinates with landowners regarding any modifications required on the irrigation system. Induction onto the irrigator is typically not a concern with a transmission line of this voltage. Also, the wells and piping systems are inherently grounded, which will prevent the irrigator from accumulating a charge. If a farmer experiences shocks, Great River Energy will add additional grounding or bonding to the system to rectify the issue.

### 6.6.1.2 Mitigation Measures

Great River Energy will work with landowners to minimize impacts to agricultural activities and will compensate landowners for any crop damage/loss and soil compaction that might occur during construction. Areas disturbed during construction will be repaired and restored to pre-construction conditions as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate crop production or natural revegetation, provide for proper drainage, and prevent erosion.

Specific mitigation measures Great River Energy will implement include in addition to the standard permit conditions listed above include:

- Placing the transmission line on the edge of property to minimize agricultural interference, when possible.
- Where local roads cannot be used, movement of crews and equipment will be limited to the right-of-way to the greatest extent possible, this includes access. Contractors employed by Great River Energy will limit movement on the right-of-way to minimize damage to grazing land or property. If movement outside of the right-of-way is necessary during construction, permission will be obtained, and any damage will be paid to the landowner.
- Construction will be scheduled during periods when agricultural activities will be minimally affected to the extent possible, or the landowner will be compensated accordingly.
- Great River Energy will contact landowners after construction is complete to determine if they are satisfied with clean-up measures and if any other damage might 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.
- Great River Energy or its contractors will repair ruts or provide compensation to the landowner depending upon landowner preferences. Such ruts will be leveled, filled, and graded or otherwise eliminated in an approved manner. In pasture areas, compacted soils will be loosened, and ruts will be leveled by scarifying, harrowing, discing, or by other approved methods. Damage to ditches, terraces, roads, and other land features will be corrected using approved methods and in accordance with the Vegetation Management Plan, as necessary. The land and facilities will be restored as nearly as practicable to their original conditions.
- Great River Energy will restore or provide compensation for crop damage or other property damage that occurs because of construction or maintenance of the Project.
- Fences, gates, and similar improvements that are removed or damaged will be promptly repaired or replaced.
- For temporary storage or laydown yards, which will provide space to store material and equipment and temporary workspace needed for wire stringing and pulling equipment,

Great River Energy will work with landowners to lease the space by agreement with the respective owner(s).

An AIMP can be a common mitigation measure for work in agricultural areas; these are developed in coordination with the MDA. Great River Energy will continue to coordinate with MDA regarding preparation of an AIMP.

Route permits issued by the Commission typically contain the following mitigation measures relevant to agriculture:

- The Permittee shall work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land.
- Where practical, existing roadways shall be used for all activities associated with construction.
- The Permittee shall implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction shall be returned to pre-construction conditions.
- The Permittee shall restrict pesticide use to those pesticides and methods of application approved by the MDA, MDNR, and the U.S. Environmental Protection Agency (USEPA). Selective foliage or basal applications shall be used when practicable. All pesticides shall be applied in a safe and cautious manner so as not to damage adjacent properties including crops, orchards, tree farms, apiaries, or gardens. The Permittee shall contact the landowner at least 14 days prior to pesticide application on their property. The Permittee may not apply any pesticide if the landowner requests that there be no application of pesticides within the landowner's property. The Permittee shall provide notice of pesticide applications to landowners and beekeepers operating known apiaries within 3 miles of the pesticide application area at least 14 days prior to such application.
- The Permittee shall employ best management practices to avoid the potential introduction and spread of invasive species on lands disturbed by construction activities. The Permittee shall develop an Invasive Species Prevention Plan and file it with the Commission at least 14 days prior to the pre-construction meeting. The Permittee shall comply with the most recently filed Invasive Species Prevention Plan.
- The Permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed

certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes.

- The Permittee shall avoid, promptly repair, or replace all drainage tiles broken or damaged during all phases of the project's life unless otherwise negotiated with the affected landowner.
- The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Temporary space shall be selected to limit the removal and impacts to vegetation. The Permittee shall obtain temporary easements outside of the authorized transmission line right-of-way from affected landowners through rental agreements.
- The Permittee shall restore the right-of-way, temporary workspaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the project. Restoration within the right-of-way must be compatible with the safe operation, maintenance, and inspection of the transmission line.
- The Permittee shall fairly restore or compensate landowners for damage to crops, fences, private roads and lanes, landscaping, drain tile, or other damage sustained during construction.

## **6.6.2 Forestry**

Some forested areas exist in association with the wetland complex that is bisected by 470<sup>th</sup> Avenue, but none of the areas crossed by the Proposed Route are currently in commercial forestry operation. Woodlots occur outside center-pivot irrigation boundaries along 470<sup>th</sup> Avenue. Other relatively large blocks of trees are associated with residences. Private timber harvest or firewood collection might occur. Forested areas along road right-of-way are shown in the Detailed Route Maps provided in **Appendix B**.

### **6.6.2.1 Potential Impacts**

The ROI for Forestry Operations is the Proposed Route. Potential impacts are expected to be negligible because the transmission line does not cross current commercial forestry operations. The new Otto Substation will be located on land owned by LREC. Any timber harvest or firewood collection occurs on private lands. The Proposed Route follows existing distribution line right-of-way. Therefore, tree clearing will be limited to the incremental expansion of this right-of-way. Great River Energy will offer compensation for the removal of vegetation in the Proposed ROW to landowners during easement negotiations. Landowners will be given the option of keeping any portions of the trees (for example, timber, branches, chips, or shreds) cut within the easement area on their property. The Project could result in a short-term, small positive impact for those landowners wanting to keep cleared trees for personal use.

### **6.6.2.2 Mitigation Measures**

The Project will not result in any impact on commercial forestry operations; therefore, no mitigation is proposed.

### 6.6.3 Mining

The ROI for Mining is the Proposed Route. There are no mapped MDNR-identified gravel pits within the Proposed Route (MnDOT, 2025c). The Applicants confirmed this through desktop aerial imagery analysis. Additionally, there are no MDNR active mineral leases within the Proposed Route (Minnesota Geospatial Commons, 2025a). Mining operations are not present in the Proposed Route; therefore, impacts will not occur. No mitigation is proposed.

### 6.6.4 Tourism

Tourism is related to activities that bring visitors to the Project Area in a way that results in outside revenue being generated for the local economy. Tourism associated with outdoor recreational opportunities is most associated with publicly accessible lands and waters. These recreational opportunities associated with the Local Vicinity are discussed in Section 6.4.8. Tourism can also result from activities such as fairs and other community events.

The ROI for Tourism is the Local Vicinity. There are no public lands or regional or community events in the Local Vicinity. As such, potential impacts are not expected to occur. No mitigation is proposed.

## 6.7 Archaeological and Historic Resources

Merjent, Inc. (Merjent) conducted a cultural resource literature review of a 1-mile-wide buffer centered on the Proposed Alignment and Otto Substation referred to in this section as the Study Area. This literature review and Merjent's evaluation of the possible effects of the proposed Project on historic properties in the Study Area was provided to the Minnesota SHPO in a letter dated June 24, 2025 (**Appendix C**)<sup>10</sup>. SHPO responded on August 1, 2025. The following summarizes the results of the literature review and SHPO's response.

On February 12, 2025, Merjent retrieved previous survey reports on file from SHPO and on April 16, 2025, Merjent retrieved cultural resources site information (archaeological sites and historic structures). Merjent Cultural Resource Specialists reviewed archaeological site files on the OSA online portal, as well as the General Land Office (GLO) maps and available historical aerial photography accessed online through the OSA Portal (Minnesota Department of Administration State Archaeologist OSA, 2025). Merjent reviewed records within the Study Area. According to the OSA and SHPO files, one previously conducted archaeological survey was recorded within the Study Area, but outside the Proposed Route.

There are three previously recorded archaeological sites within the Study Area. One site, a precontact campsite, was located at the intersection of U.S. Highway 10 and 410th Street and is crossed by the Project. This site has not been evaluated for the NRHP but was destroyed by highway construction and the widening of both U.S. Highway 10 and 410th Street. Correspondence from the Shakopee Mdewakanton Sioux Community confirms this campsite was destroyed (**Appendix D**). Two additional sites are within the Study Area but are 0.75- to 0.9-mile

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<sup>10</sup> The maps provided to the SHPO are redacted in the correspondence provided in **Appendix C** 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).

west of, and not crossed by, the Project. One site is a precontact lithic scatter and the other site is a burial mound complex. These sites will not be impacted due to distance.

Three potential historic cemeteries are within the Study Area, all within T135N, R38W, Section 7. The St. Lawrence Church Cemetery is about 1 mile southwest of the Otto Substation. Our Lady of Miracles Cemetery is about 0.9 mile to the south-southwest. The precise location of the Cole Cemetery was not identified during review of historic aerials, historic atlases, and topographic maps.

Six historic buildings and structures (four bridges, one road, and one railroad district) are located within the Study Area, one of which overlaps the Proposed Route. Trunk Highway 10/U.S. Highway 10 intersects the northern end of the Project and has been determined not eligible for listing in the NRHP. The remaining five structures are within the Study Area, but do not overlap the Project. These structures will not be impacted due to distance.

Merjent reviewed nineteenth century GLO maps and notes on file with the Bureau of Land Management (BLM) (U.S. Department of the Interior BLM, 2025). The GLO map of the Study Area illustrated conditions in 1870 as being prairie, with several lakes and/or wetlands and connecting streams and rivers. No historic features were identified within the Study Area. An unnamed linear feature, presumably a road or trail is present along the east bank of the Otter Tail River, approximately 1 mile to the west of the Project. Aerial photographs from 1939, 1963, and the present all show that the current road system, the railway, and farms have been established, with agricultural fields dominating the landscape. There is no trace of the GLO road or trail on historic aerials; by 1939 it had been superseded by agricultural fields. Subsequent historic and modern aerial photographs following 1963 show that the landscape of the Study Area has remained largely unchanged.

Great River Energy requested feedback on the Project from the 11 federally recognized Tribes with geography within Minnesota, the 1854 Treaty Authority, MIAC, and Tribes outside of Minnesota with interest in the Project Area in its Project notification letters sent in May 2025. To date, three Tribes, along with MIAC, have responded. The Bois Forte Band of Chippewa asked several questions about the Project, including how the structures will be placed and if an Unanticipated Discovery Plan will be in place for the Project. The Leech Lake Band of Ojibwe indicated they do not have record of any historic properties in the Project Area but noted that this does not mean there are not any cultural resources present. The Shakopee Mdewakanton Sioux Community indicated there are no significant cultural resources remaining in the Proposed Route, and that a campsite was destroyed by construction of U.S. Highway 10. MIAC indicated that no known or suspected burial sites would be affected by the Project and requested additional Project information, which Great River Energy provided on June 30, 2025. This correspondence is included in **Appendix D**.

### **6.7.1 Potential Impacts**

The ROI for Archaeological and Historic Resources is the Project Area. Three archaeological sites, six historic structures, and three potential historic cemeteries were identified within the Study Area. One archaeological site intersects the Project, but it has been destroyed due to road construction. Two historic cemeteries potentially overlap the Project according to historic

documents. One historic structure intersects the Project, but it has already been determined Not Eligible for listing on the NRHP.

There is potential for precontact and historic-period sites within the Project Area; however, given that the Project is proposed within already disturbed right-of-way, there is a low potential for intact archaeological sites. The existing Otto Substation has had ground disturbance associated with the installation of the substation, the gravel lot, and the fence surrounding the substation. Ground disturbing work for the new Otto Substation will occur in the same area, immediately south of the existing substation.

Because the precise location of the Cole Cemetery was not identified during review of historic aerials, historic atlases, and topographic maps, there is potential for the new Otto Substation to overlap with the Cole Cemetery as both are located within T135N, R38W, Section 7.

### **6.7.2 Mitigation Measures**

SHPO responded to Merjent's June 24, 2025, letter on August 1, 2025, confirming Merjent's recommendation for survey, and requested an evaluation of the precontact campsite previously noted as destroyed by highway construction and the widening of both U.S. Highway 10 and 410th Street. The Applicants will complete a Phase I Archaeological Survey for the Project prior to construction. The survey will comply with the State Archaeologist's Manual for Archaeological Projects in Minnesota and the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation. As part of this survey, the Applicants will perform a survey of the Cole Cemetery to confirm that there is no evidence of the cemetery within the Project Area and to assess incremental changes to viewshed that could occur as a result of the Project.

Great River Energy will prepare an Unanticipated Discoveries Plan prior to construction of the Project. If any archaeological sites are identified during construction, work will be stopped and SHPO staff consulted as to how to proceed. If human remains are encountered during construction activities, all ground disturbing activity will cease, and local law enforcement will be notified per Minn. Stat. § 307.08.

Commission-issued route permits typically include standard conditions that require the Permittee to make every effort to avoid impacts on archaeological and historic resources when constructing a project. If a resource is encountered, the Permittee shall consult with the SHPO and the State Archaeologist. Where feasible, avoidance of the resource is required. Where not feasible, mitigation must include an effort to minimize project impacts on the resource consistent with SHPO and State Archaeologist requirements. Prior to construction, the Permittee shall train workers about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction. If human remains are encountered during construction, the Permittee shall immediately halt construction and promptly notify local law enforcement and the State Archaeologist. The Permittee shall not resume construction at such location until authorized by local law enforcement or the State Archaeologist.

## 6.8 Natural Environment

### 6.8.1 Air Quality

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 (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), lead, particulate matter equal to or less than 10 microns in diameter (PM<sub>10</sub>), and fine particulate matter equal to or less than 2.5 microns in diameter (PM<sub>2.5</sub>). 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. Otter Tail County is in attainment with all NAAQS (USEPA, 2025a).

As discussed in Section 6.4.4, the air quality near the Project Area is good. According to the MPCA MNRISKS model, the Census tracts within which the Proposed Route is located (Census Tract 9605 Block Group 4 and Census Tract 9606 Block Group 2 [Figure 10]) have air scores of 0.05 and 0.06, respectively. This means the air scores in the Proposed Route are in the lowest 10 percent of air scores in Minnesota and the air quality is better than 90 percent of the state. Additionally, air scores are below health benchmarks. A health benchmark is “...an amount of air pollution that is unlikely to result in health effects in sensitive populations after a lifetime of exposure (MPCA, 2025b).”

The Air Quality Index (AQI) is a measure that is used to communicate with the public about the quality of the air and how it might affect a person’s health. In 2023, the Detroit Lakes monitoring station, the closest monitoring station to the Project, reported 224 “good” AQIs, 133 “moderate” AQIs, 6 “unhealthy for sensitive groups” AQIs, and 2 “unhealthy” AQIs (MPCA, 2025c). The majority of AQI days not receiving a rating of “good” resulted from elevated levels of PM<sub>2.5</sub>. “In Minnesota, higher AQIs in the summer are increasingly attributed to smoke from the Canadian wildfires and those in the northern Rockies (MPCA, 2025d).” This trend is expected to continue.

Corona can produce ozone and oxides of nitrogen in the air surrounding the conductor. Ozone is a very 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.

### 6.8.1.1 Potential Impacts

The ROI for Air Quality is Otter Tail County. Potential impacts during construction are expected to be short term, of a small size, and not affect a unique resource. Temporary and localized air quality impacts caused by construction vehicle emissions and fugitive dust from 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.

#### Emissions Related to Construction

During construction of the transmission line and the new Otto Substation, 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. The Applicants anticipate starting construction on the transmission line and the new Otto Substation in fall 2027 and energizing the Project in summer 2028.

**Table 22** 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 construction emission calculations for the transmission line and the new Otto Substation are provided as **Appendix H**.

**Table 22 Construction Emission of Criteria Pollutants (tons)**

Description	NO <sub>x</sub>	CO	VOC <sup>a</sup>	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>Transmission Line</b>						
Off-Road Engine Emissions	1.59	0.34	0.09	0.00	0.06	0.06
Unpaved Roads	--	--	--	--	0.29	0.03
Earthmoving	--	--	--	--	4.82	0.51
<b>SUBTOTAL</b>	<b>1.59</b>	<b>0.34</b>	<b>0.09</b>	<b>0.00</b>	<b>5.17</b>	<b>0.59</b>
<b>Otto Substation</b>						
Off-Road Engine Emissions	1.41	0.30	0.11	0.00	0.06	0.06
Unpaved Roads	--	--	--	--	0.17	0.02
Earthmoving	--	--	--	--	0.12	0.01
<b>SUBTOTAL</b>	<b>1.41</b>	<b>0.30</b>	<b>0.11</b>	<b>0.00</b>	<b>0.35</b>	<b>0.09</b>
<b>TOTAL</b>	<b>3.00</b>	<b>0.63</b>	<b>0.20</b>	<b>0.00</b>	<b>5.52</b>	<b>0.68</b>
<sup>a</sup> Volatile organic compounds.						

#### Emissions Related to Operation

Corona-induced ozone and nitrogen oxides (NO<sub>x</sub>) are typically not a concern for transmission lines with operating voltages below 161-kV, like the Project, because the EF intensity is too low to produce significant corona. Therefore, Great River Energy expects ozone and NO<sub>x</sub> concentrations associated with the Project to be negligible, and well below all federal standards. There would be no operational emissions from the Otto Substation.

### 6.8.1.2 Mitigation Measures

Applicants and their contractors will implement appropriate dust control measures, including but not limited to:

- Reduced speed limits on unpaved roads, and use of water or other non-chloride-containing dust suppression applications;
- Water application to the Proposed ROW or new and existing Otto Substation sites if wind erosion occurs during dry weather;
- Street sweeping where soils are tracked onto paved roads; and
- If soil is wet during construction activities, vehicle tracking of soil from work areas (that could dry and become sources of fugitive dust emissions) will be minimized by using wooden or plastic construction mats at access points.

At the completion of construction activities, all construction-related air impacts would cease. Once the transmission line and new Otto Substation are operational, negligible impacts to air quality from vehicles used for maintenance activities are anticipated.

## **6.8.2 Climate Change and Resilience**

Climate change is the change in global or regional climate patterns over time. Changes in average precipitation or temperature over years or decades may indicate climate change. Generally, Minnesota's climate is already changing and will continue to do so. Noticeable effects in the future include warmer periods during winter and at night, increased precipitation, heavier downpours, increased summer heat, and the potential for longer dry spells (MDNR, 2025c).

The Project is not located within a mapped floodplain. Potential impacts associated with floodplains are discussed further in Section 6.8.8.

The Applicants reviewed climate trends for Otter Tail County using the MDNR Minnesota Climate Trends website (MDNR, 2025c). From 1980 to 2024, Otter Tail County experienced an increase in overall temperature of 0.41 degrees Fahrenheit per decade. During this same period, the average low temperature increased 0.49 degrees Fahrenheit per decade. Precipitation has increased in Otter Tail County by 0.68 inch per decade with periods of extended drought from 1988 to 1992 (MDNR, 2025d). The overall drought severity index shows a trend of 0.78 per decade. This is based on the Palmer Drought Severity Index, which is an index that generally corresponds to moisture excess or deficit. A positive number represents moisture excess, so 0.78 per decade corresponds with less severe drought over time.

The Minnesota Environmental Assessment Worksheet Guidance: Developing a Carbon Footprint and Incorporation Climate Adaptation and Resilience Projections estimates the occurrence of extreme heat, drought, wildlife, and flooding hazards into the 2040s (Climate Mapping for Resilience and Adaptation, 2025). To provide conservative estimates, the "higher emissions" category was used. Estimates are associated with an increase or decrease from the baseline period of 1976 to 2005.

The number of days with a maximum temperature above 90-, 95-, and 100-degrees Fahrenheit could increase by 11.5 days, 4 days, and 1 day, respectively. Cooling degree days, a measure associated with the demand for energy to cool buildings, might increase by over a third from 455.1 to 744.5 showing an increase demand for electricity in Otter Tail County.

Annual precipitation might increase by about 1 inch from baseline. No significant change in the number of days per year with no precipitation or the maximum number of consecutive dry days is predicted. Additionally, while total precipitation could increase that increase is not expected to significantly increase the number of consecutive wet days or increase the number of days with greater than 1, 2, or 3 inches of total precipitation. Given this increase in precipitation, metrics related to wildfire potential remain steady.

The EPA’s Climate Resilience Evaluation and Awareness Tool also projects potential impacts from climate change on future weather events (USEPA, 2025b). The Applicants used this tool to show how a changing climate could affect the intensity of storms. The model uses two scenarios: “not as stormy” and “stormy.” Accordingly, the intensity of storms might increase by 2.6 percent or by as much as 13.4 percent.

#### 6.8.2.1 Potential Impacts

The ROI for Climate Change and Resilience is Otter Tail County. Potential impacts are anticipated to be long term, of a small size, and not affect a unique resource. While total precipitation is expected to increase as well as the intensity of future storms, models indicate that precipitation totals over 1 inch are not expected to increase significantly over current levels. Therefore, increased risks associated with flooding are not anticipated.

Models show that more electricity will be needed to cool homes. The Project helps to maintain the resiliency of the electrical grid in Otter Tail County, helping to protect LREC customers from extreme heat events. This impact will be long term and positive.

#### 6.8.2.2 Mitigation Measures

Transmission lines and substations are designed with extreme weather in mind, mitigating potential effects from the chance of increased number and intensity of severe storms. Wildfire risks are not anticipated to increase over future conditions. Great River Energy is actively assessing risks to the reliable operation of its transmission system from the potential impacts of climate change and is working on opportunities to mitigate those risks. The Applicants do not propose additional mitigative measures specific to climate change.

Great River Energy is making efforts to strengthen electric infrastructure and make it less susceptible to damage. Resilience initiatives include, but are not limited to, upgrades to transformers and circuit breakers, remote monitoring, and emergency response plans (Great River Energy, 2024).

### **6.8.3 Greenhouse Gas Emissions**

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

Sulfur hexafluoride (SF<sub>6</sub>), a GHG, is used as an insulating material in substation breakers. Under normal operations and with adequate routine maintenance, the SF<sub>6</sub> remains contained in the breakers and is not released to the atmosphere.

Deforestation is a source of carbon dioxide to the atmosphere, as trees and forest land act as a carbon sink, absorbing carbon dioxide from the atmosphere and storing it. Removing forests releases most of the stored carbon stock, either through burning or decay. In addition, deforestation eliminates future carbon dioxide capture.

The State of Minnesota is taking significant action to reduce the amount of GHG emissions produced in the state. The 2007 Next Generation Energy Act set statutory benchmarks to reduce GHG emissions 15 percent from 2005 levels by 2015, 30 percent by 2025, and 80 percent by 2050. In 2023, the Minnesota Legislature adopted new goals included in Minnesota's Climate Action Framework to reduce emissions 50 percent by 2030 and achieve net-zero emissions by 2050. As of 2022, Minnesota has experienced a 14 percent reduction in greenhouse gas emissions across all sectors based on 2005 levels (MPCA Department of Commerce, 2023). While electrical generation emissions decreased by 50 percent, GHG emissions from residential, commercial, and industrial sources increased. Transportation is now the highest emitting source of GHG emissions in Minnesota (MPCA, 2025e).

#### 6.8.3.1 Potential Impacts

The ROI for GHG Emissions is the Project Area. Construction of the transmission line and the new Otto Substation will result in a temporary increase of GHG emissions from fuel combustion in construction equipment and associated vehicles. As stated in Section 6.4.1, no new greenfield right-of-way will be cleared; therefore, no GHG emissions related to land use change were calculated and impacts from deforestation are negligible. **Table 23** summarizes the estimated potential emissions of GHGs from construction activities for the Project. Emissions are based on estimated counts of diesel-fueled construction equipment, expected duration of operation, and estimated miles traveled for commuter vehicles, delivery trucks, and cement trucks. Detailed GHG emission calculations for the transmission line and the new Otto Substation are provided as **Appendix H**. At the completion of construction activities, all construction-related greenhouse gas emissions would cease.

GHG emissions associated with operation of the Project include vehicle and equipment emissions related to inspections and maintenance activities. Impacts from operation of the Project will be intermittent and short term. As discussed in Section 5.1.6, Great River Energy inspects the condition of its transmission line and structures on an adaptive schedule. There is typically a post-construction review approximately 1 year after construction. After that, Great River Energy generally inspects its 115-kV transmission lines every 2 years to determine if clearing is required. A 3- to 7-year cycle of vegetation maintenance is desirable (also see Section 3.7). Line and structure maintenance activities will occur as necessary but are not expected to be needed on a regular basis.

**Table 23 Preliminary Estimate of Construction Greenhouse Gas Emissions**

Description	CO <sub>2</sub> (Short Tons)	CH <sub>4</sub> (Short Tons)	N <sub>2</sub> O (Short Tons)	CO <sub>2</sub> e (Short Tons)
<b>Transmission Line</b>				
Off-Road Engine Emissions	70.70	0.00	0.00	70.93
Commuters and Delivery Vehicles	32.65	0.00	0.00	32.65
<b>SUBTOTAL</b>	103.35	0.00	0.00	103.58
<b>Substation</b>				
Off-Road Engine Emissions	64.97	0.00	0.00	65.18
Commuters and Delivery Vehicles	12.55	0.00	0.00	12.55
<b>SUBTOTAL</b>	77.52	0.00	0.00	77.74
<b>TOTAL</b>	180.87	0.01	0.00	181.32
Notes: CO <sub>2</sub> – carbon dioxide CH <sub>4</sub> – methane; 1 short ton CH <sub>4</sub> = 25 short tons CO <sub>2</sub> e N <sub>2</sub> O – nitrous oxide; 1 short ton N <sub>2</sub> O = 298 short tons CO <sub>2</sub> e CO <sub>2</sub> e – carbon dioxide equivalent Source: 40 CFR 98 Table A-1 (National Archives, 2025)				

Minnesota’s Greenhouse Gas Inventory (MPCA, 2025f) shows emissions within Minnesota totaled 126,140,738 metric tons (139,046,363 short tons) of carbon dioxide equivalent (CO<sub>2</sub>e) in 2022. Minnesota Rule 4410.4300, Subpart 15, Part B, establishes a mandatory category requiring preparation of an Environmental Assessment Worksheet for stationary source facilities generating 100,000 tons of GHGs per year. Accordingly, the preliminary estimate of Project GHG emissions, when compared to statewide levels and to the regulatory requirement for additional study for projects based on GHGs, would be negligible.

#### 6.8.3.2 Mitigation Measures

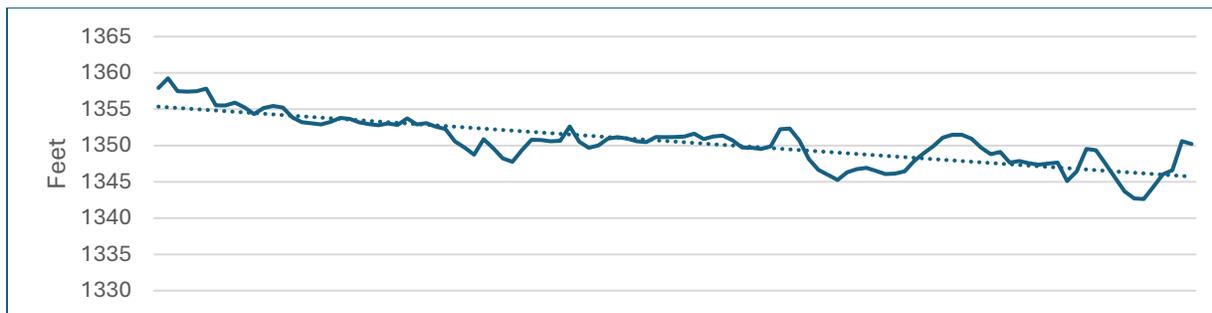
The Applicants will mitigate vehicle emissions by ensuring its construction contractor keeps equipment in good working order and limits vehicle idling. LREC will monitor the SF<sub>6</sub> gas levels in the substation breakers as part of routine monitoring of substation equipment. Should a loss of SF<sub>6</sub> be detected, the SF<sub>6</sub> is extracted to a separate tank to allow the breaker to be repaired. Any gas collected from decommissioned breakers is shipped offsite for recycling. No additional mitigation is proposed.

#### 6.8.4 **Geology and Topography**

The Hardwood Hills subsection (MDNR, 2025e) of the Ecological Classification System indicates that the depth of glacial sediment to bedrock varies from 100 to 500 feet. Depth to bedrock along the Project Route varies from approximately 330 to 380 feet (Natural Resources Research Institute, 2025). The underlying bedrock includes mafic metavolcanic rocks and minor volcanoclastic and hypabyssal intrusions (Natural Resources Research Institute, 2022).

The Proposed Route moves east to west and north to south over relatively flat terrain with approximately 16 feet of elevation change throughout the Proposed Route (**Figure 15**) (MDNR, 2025p). **Figure 15** approximates the topography along the Proposed Alignment; the landscape gradually descends downhill towards the Otto Substation.

**Figure 15: Topography: U.S. Highway 10 to Otto Substation**



#### 6.8.4.1 Potential Impacts

The ROI for Geology and Topography is the Proposed ROW. Constraints due to geology will not result in an impact on the design, construction, or operation of the Project. Given the depth to bedrock ranges from 330 to 380 feet, transmission line structures or their foundations, as well as substation foundations, will not impact subsurface geologic features.

The transmission line and new Otto substation will be constructed at existing grade. Limited, if any, grading will occur that significantly modifies the topography within the Proposed ROW. Once construction is complete, graded areas will be restored to match pre-existing contours to the extent possible.

#### 6.8.4.2 Mitigation Measures

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

### 6.8.5 **Rare and Unique Natural Resources**

The USFWS and MDNR maintain records of rare and unique natural resources within the Project Area. These include federally and state-listed special status species and designated critical habitat as well as a variety of rare plant communities. For example, the MDNR establishes High Conservation Value Forest, Minnesota Biological Survey (MBS) Native Plant Communities (including native prairie), MBS Sites of Biodiversity Significance, and Scientific and Natural Areas, among others. State- and federally listed special status species are discussed below.

#### State-Listed Species

Great River Energy submitted a formal Natural Heritage Review Request (2025-00113) on April 15, 2025, through the MDNR’s MCE system (MDNR, 2025f). The MDNR provided a response on May 20, 2025 (**Appendix C**). The results of the MCE Natural Heritage Review are valid for 1 year. The review concluded the MDNR “[does] not believe the proposed project will negatively

affect any known occurrences of rare features believe the proposed project will negatively affect any known occurrences of rare features.”

### Federally Listed Species

The Applicants reviewed the USFWS IPaC website (USFWS, 2025a) for a list of federally threatened and endangered species, candidate species, and designated critical habitat that may be present within the Project Area. Based on the official species list provided by the USFWS (**Appendix C**), one species federally listed under ESA and three candidate species have been previously documented within the vicinity of the Project (Error! Reference source not found.). No federally designated critical habitat is present within the Project Area.

**Table 24 Federally Protected Species within the Project Area**

Common Name	Scientific Name	Federal Status
Gray wolf	<i>Canis lupus</i>	Threatened
Monarch butterfly	<i>Danaus plexippus</i>	Proposed Threatened
Suckley’s Cuckoo bumble bee	<i>Bombus suckleyi</i>	Proposed Endangered
Western Regal Fritillary	<i>Argynnis idalia occidentalis</i>	Proposed Threatened

#### *Gray Wolf*

Ranging in weight from 40 to 175 pounds, the gray wolf is the largest member of the dog family. Wolves live in packs and are highly adaptable, surviving in a variety of habitats including temperate forests, mountains, tundra, taiga, grasslands, and deserts (USFWS, 2025b). The species will range long distances searching for food. Besides Alaska, Minnesota has the highest density of gray wolves in the United States (MDNR, 2025g).

In 2012, wolves in Minnesota were delisted from the ESA. On December 19, 2014, wolves were reinstated under the ESA. “This ruling returned the wolf to threatened status under the federal ESA and returned management to the U.S. Fish and Wildlife Service (MDNR, 2025g).”

#### *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 (USFWS, 2025c). Suitable habitat for the monarch butterfly might be present within the Proposed Route.

#### *Suckley’s Cuckoo bumble bee*

The Suckley’s cuckoo bumble bee is a parasitic bumble bee of the *Bombus* species of bees. Females are able to reproduce but they cannot take care of their young. As such, “Cuckoo bumble bees enter developing and established nests of other bumble bees, kill or subdue the host queen, lay her own eggs and control the workers to continue collecting pollen and nectar to provision (feed) her offspring (Washington Department of Fish & Wildlife, 2025).” Females will overwinter,

whereas males will die after mating. The decline of the Suckley's cuckoo bumble bee is attributed to the decline of other host bee species (OSU Extension Service, 2025). Suckley's cuckoo bumble bees are found in a wide variety of habitats (Washington Department of Fish & Wildlife, 2025). Suitable habitat for the Suckley's cuckoo bumble bee might be present within the Proposed Route.

### *Western Regal Fritillary*

The regal fritillary is about half as large as the monarch butterfly. The butterfly is quite distinctive. "Above, the forewings are a rich reddish orange with a number of irregularly shaped black spots and a row of small whitish flecks in a narrow black border along the outer margin. The upper side of the hind wings is a somewhat iridescent blue black, with an inner row of large white spots and an outer row of smaller spots that are orange in males and white in females. The underside of the hind wings is identical in both sexes: a bold pattern of large, triangular silver spots in a dark brown ground color (MDNR, 2025g)." The regal fritillary uses native prairie habitat. No native prairie is present along the Proposed Route.

### *Bald and Golden Eagles*

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are not legally protected under the ESA or in the state of Minnesota. The BGEPA, however, protects and conserves bald and golden eagles from take of an individual bird, chick, egg, or nest, including alternate and inactive nests. The BGEPA prohibits disturbance that may lead to biologically significant impacts, such as interference with feeding, sheltering, roosting, and breeding or abandonment of a nest. The disturbance distance for active bald eagle nests is 660 feet (0.125 mile) (USFWS, 2007).

The Migratory Bird Treaty Act prohibits the purposeful take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the USFWS. In Minnesota, the nesting season for migratory birds is generally from April through September.

#### 6.8.5.1 Potential Impacts

The ROI for Rare and Unique Resources is the Project Area. The Project does not cross High Conservation Value Forest, MBS Native Plant Communities (including native prairie), MBS Sites of Biodiversity Significance, or Scientific and Natural Areas. Potential impacts to these resources are not expected to occur.

The MDNR, in its MCE review, stated that the Project "will not negatively affect any known occurrences of rare features (**Appendix C**)." The Applicants completed the following impact analyses for the federally listed and candidate species that could occur in the Project area, as well as for bald eagles.

### *Gray Wolf*

Gray wolves are habitat generalists. Should wolves be present along the Proposed Route they would be displaced during construction but would return once construction is complete. Therefore, impacts to the gray wolf, if they occur, are anticipated to be minimal. According to the Minnesota-Wisconsin determination key within the IPaC system, unauthorized take of the gray wolf is not

anticipated. The USFWS requests that it be informed should gray wolf activity be observed that could indicate a den or rendezvous site near the Project.

#### *Monarch Butterfly, Suckley's Cuckoo Bumble Bee, Western Regal Fritillary*

Constructing adjacent to existing distribution line right-of-way and across agricultural fields minimizes impacts to suitable habitat for the monarch butterfly and Suckley's cuckoo bumble bee. Should suitable habitat be impacted, these impacts will be associated with construction of the Project. Long-term impacts to suitable habitat are not anticipated. The western regal fritillary uses native prairie habitat. No native prairie habitat is present within the Proposed Route. If the USFWS determines the any of these species should be listed and protections for the species coincide with Project planning, permitting, or construction, the Applicants will review Project activities for potential impacts to the species and develop appropriate avoidance and mitigation measures.

#### *Bald Eagles*

The Applicants reviewed aerial imagery and determined that suitable habitat for bald eagle activity, foraging areas, nests, and winter roost areas is present within 2 miles of the Project. The Applicants will comply with the requirements of the BGEPA and will coordinate with USFWS as necessary to ensure that unauthorized take of bald eagles does not occur.

#### 6.8.5.2 Mitigation Measures

The Applicants will continue to coordinate with the MDNR and USFWS to avoid and minimize impacts on sensitive species. The following general measures will be used to help avoid or minimize impacts to rare natural resources during and after the construction of the Project:

- Constructing adjacent to existing right-of-way where possible, minimizing impacts to suitable habitat for special-status species.
- Constructing the new Otto Substation on LREC's existing parcel instead of clearing an alternate site.
- Using BMPs to prevent soil erosion in areas of impact.
- Implementing sound water and soil conservation practices 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.
- Re-vegetating disturbed areas with native species and wildlife conservation species, where applicable and if the landowner agrees.
- Implementing raptor protection measures, including following Avian Power Line Interaction Committee (APLIC) Avian Safe Design recommendations and placement of bird flight diverters on the transmission line after consultation with USFWS and MDNR. USFWS recommended that bird diverters be placed along the transmission line near Albert Lake (**Appendix C**).
- Reporting any bald eagle nest discovered during survey of the transmission line or in the land acquisition process to the USFWS and adhering to guidance provided by the agency.

- Informing the USFWS should gray wolf activity be observed that could indicate a den or rendezvous site near the Project.

### 6.8.6 Soils

Soils in the Proposed ROW were deposited by glaciers about 35,000 to 7,000 years ago (Wisconsin Geological and Natural History Survey, 2025). The Hardwood Hills subsection (MDNR, 2025e) consists of soils that are dominantly loamy, with textures ranging from loamy sands and sandy loams to loams and clay loams. “Most are classified as Borolls (cold well drained soils developed under grassland) and Aquolls (wet soils developed under grassland), with some Udolls (dry soils developed under grassland, with soil temperatures warmer than Borolls). There are some Alfisols (soils developed under forested or savanna conditions) (MDNR, 2025e).”

USDA Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) data were reviewed to describe soil resources in the Proposed ROW. SSURGO data are available on the USDA Web Soil Survey. “Soil surveys can be used for general farm, local, and wider area planning. Onsite investigation is needed in some cases, such as soil quality assessments and certain conservation and engineering applications (USDA NRCS, 2025a).”

A soil series “is the lowest category of the national soil classification system (USDA NRCS, 2025b).” Each series represents a homogenous set of soil properties that distinguish it from soils of a different series. This includes characteristics, drainage, location, use, and vegetation. There are several soil series crossed by the Project. Hubbard series soils account for 80 percent of soils in the Proposed ROW. These soils are “very deep, excessively and well drained (USDA NRCS, 2013).” Forada and leafriver soils represent about 8 percent of the Proposed ROW. These soils, associated with wetlands, are very deep, poorly drained, and very poorly drained (USDA NRCS, 2011).

Prime farmland is “land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses” (USDA NRCS, 2025c) There are no areas of prime farmland in the Proposed ROW.

#### 6.8.6.1 Potential Impacts

The ROI for Soils is the Proposed ROW. Potential impacts associated with construction of the transmission line and the new Otto Substation are expected to be short term, of a small size and not affect a unique resource. Potential impacts include soil compaction associated with construction equipment traffic and exposing soil to wind and water erosion. Ground disturbance and soil exposure would be primarily limited to the structure locations, which would typically consist of a hole 10 to 20 feet deep and 36 to 60 inches in diameter for each structure and footers for substation equipment. Long-term impacts are not expected.

#### 6.8.6.2 Mitigation Measures

As described in Section 5.1.5, the restoration contractor would take measures to alleviate soil compaction where needed. As described in Sections 5.1.5 and 5.2.4, exposed soil will be revegetated as soon as possible to minimize erosion. The Applicants will implement their Vegetation Management Plan (see draft provided in **Appendix G**) during construction and operation of the Project.

Commission issued route permits include standard conditions that the Permittee shall implement erosion prevention and sediment control practices recommended by the MPCA Construction Stormwater Program. If construction of the project disturbs more than 1 acre of land or is sited in an area designated by the MPCA as having potential for impacts to water resources, the Permittee shall obtain a NPDES /State Disposal System Construction Stormwater Permit from the MPCA that provides for the development of a SWPPP that describes methods to control erosion and runoff.

The Permittee shall also implement reasonable measures to minimize erosion and sedimentation during construction and shall employ perimeter sediment controls, protect exposed soil by promptly planting, seeding, using erosion control blankets and turf reinforcement mats, stabilizing slopes, protecting storm drain inlets, protecting soil stockpiles, and controlling vehicle tracking. Contours shall be graded as required so that all surfaces provide for proper drainage, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation and prevent erosion. All areas disturbed during construction of the project shall be returned to pre-construction conditions.

### **6.8.7 Vegetation**

Vegetation in the Project Area can be generally characterized using the Ecological Classification System (MDNR, 2025e). The system was developed by the MDNR and USDA 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 Hardwood Hills subsection.

The Eastern Broadleaf Forest Province (MDNR, 2025h) serves “as a transition, or ecotone, between semi-arid portions of the state that were historically prairie and semi-humid mixed conifer-deciduous forests to the northeast. The western boundary of 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 & Northeast Iowa Morainal Section (MDNR, 2025h) “is a long band of deciduous forest, woodland, and prairie that stretches nearly 350 miles (560 kilometers) from Polk County in northwestern Minnesota to the Iowa border.”

The Hardwood Hills subsection (MDNR, 2025h) further details vegetation of the Project Area. Lakes and wetlands provided protection from fire in certain locations. “Mixed forests of oaks, sugar maple, basswood, and other hardwoods were present in fire protected sites” on the eastern boundary of the subsection (MDNR, 2025h). The western boundary was a mix of prairie, aspen-oak lands, and oak savanna where it met the prairie boundary. Current vegetation and land use is primarily agricultural; however, some forested areas still occur adjacent to lakes and steep slopes. According to the NLCD, vegetation in the Proposed ROW is made up of developed open space (50 percent), cultivated cropland (29 percent), pasture (6 percent), and wetlands (6 percent). Vegetation is shown through satellite imagery in the Detailed Route Maps provided in **Appendix B**.

The transmission line crosses Public Ditch #5346 at MP 2.6. Public Ditch #5346 is not a MDNR-designated public water but is identified on the Minnesota Buffer Protection Map. Public ditches

require that the landowner maintain a 16.5-foot vegetative buffer (Minnesota Geospatial Commons, 2025b).

The movement of construction equipment to, from, and between various work sites has the potential to introduce or spread invasive species. Invasive and noxious species in Minnesota are regulated by the MDNR (MDNR, 2025i) and the MDA (MDA, 2025b).

#### 6.8.7.1 Potential Impacts

The ROI for Vegetation is the Proposed ROW. Potential impacts are anticipated to be minimal but long term. While vegetation clearing will occur, collocation with existing distribution right-of-way limits this impact. The new Otto Substation will be constructed in a maintained grassland cover type south of the existing Otto Substation footprint, but within the existing LREC-owned property. Permanent removal of approximately 0.25 acre of this maintained grassland vegetation type will occur.

The Proposed ROW follows existing road and distribution lines except where it crosses U.S. Highway 10. Because the Proposed Alignment would follow existing distribution line right-of-way, any vegetation clearing will be incremental. Most of the Proposed ROW overlaps agricultural row crop fields, which will minimize impacts to previously undisturbed vegetation. Great River Energy will clear approximately 2.8 acres of trees within the 100-foot-wide Proposed ROW. The Proposed ROW will need to be maintained for the safe and reliable operation of the transmission line. The Applicants will implement their Vegetation Management Plan (see draft provided in **Appendix G**) during construction and operation of the Project.

The transmission line crossing at Public Ditch #5346 will not interfere with the landowner's required maintenance of a 16.5-foot vegetative buffer and Great River Energy will maintain the vegetation buffer throughout construction of the transmission line.

There are no known invasive and noxious species that are regulated within the Proposed ROW. The closest known observation is over 0.75 mile to the southeast (Spear thistle, *Cirsium vulgare*); however, due to disturbed and developed nature of the area it is likely that undocumented invasive and noxious species are present (Minnesota Geospatial Commons, 2025c).

#### 6.8.7.2 Mitigation Measures

The Project will parallel existing roads and electric distribution lines for about 97 percent of its length, minimizing impacts to vegetation. To minimize the potential for the introduction or spread of invasive species, the Applicants will implement the following BMPs during construction:

- Weed-free straw or weed-free hay will be used for erosion control.
- Herbicidal or manual vegetation removal might be implemented to minimize the spread of invasive species where such removal is consistent with easement conditions or landowner restrictions.
- The right-of-way 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 have been incorporated into the Applicants' draft Vegetation Management Plan (**Appendix G**).

Route permits issued by the Commission typically contain the following mitigation measures relevant to vegetation:

- Where practical, existing roadways shall be used for all activities associated with construction.
- The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.
- The Permittee shall remove tall growing species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission line. The Permittee shall leave undisturbed, to the extent possible, existing low growing species in the right-of-way or replant such species in the right-of-way to blend the difference between the right-of-way and adjacent areas, to the extent that the low growing vegetation that will not pose a threat to the transmission line or impede construction.
- The Permittee shall employ best management practices to avoid the potential introduction and spread of invasive species on lands disturbed by construction activities. The Permittee shall develop an Invasive Species Prevention Plan and file it with the Commission at least 14 days prior to the pre-construction meeting. The Permittee shall comply with the most recently filed Invasive Species Prevention Plan.
- The Permittee shall take all reasonable precautions against the spread of noxious weeds during all phases of construction. When utilizing seed to establish temporary and permanent vegetative cover on exposed soil the Permittee shall select site appropriate seed certified to be free of noxious weeds. To the extent possible, the Permittee shall use native seed mixes.

### **6.8.8 Surface Waters and Wetlands**

Hydrologic features in the Project Area and along the Proposed Route are shown on the maps in **Appendix B**. Lakes, rivers, wetlands, and floodplains perform essential functions within a landscape, including flood attenuation, groundwater recharge, water quality protection, and wildlife habitat production. The Project lies within the Otter Tail River watershed, in the southeast portion of the Red River of the North Basin (MDNR, 2025j).

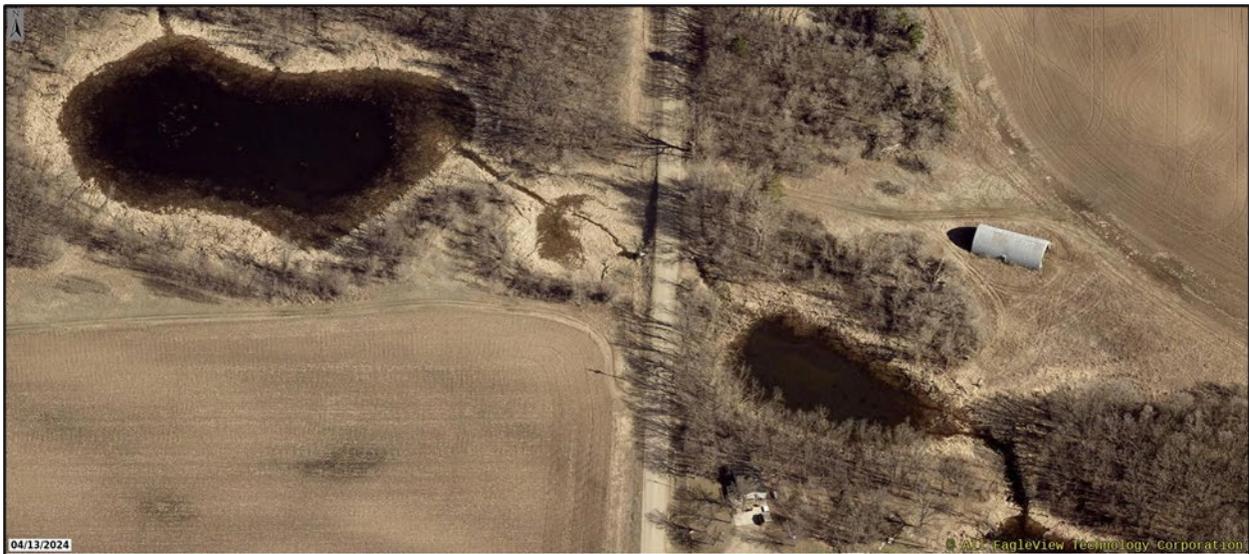
#### *Surface Waters*

No floodplains are mapped within the Proposed Route. The Applicants reviewed MDNR hydrography data along with aerial and topographic maps to determine if there are lakes or ponds in the Project Area (Minnesota Geospatial Commons, 2025d). The Proposed Route crosses two ponds associated with the wetland complex that is crossed by 470<sup>th</sup> Avenue. These unnamed ponds

are visible on aerial photography and topographic maps. Both are approximately 0.5 acre in size and are shown on **Figure 16**.

- Unnamed Pond 1: 90 feet south of MP 2.6 on the west side of 470<sup>th</sup> Avenue (**Appendix B, Page 7**). MDNR hydrography data note there is a small lake/pond feature. Aerial imagery shows that this area is a partially vegetated depression with some open water.
- Unnamed Pond 2: 175 feet northeast of MP 2.7 on the east side of 470<sup>th</sup> Avenue (**Appendix B, Page 7**). MDNR hydrography data note there is small lake/pond feature. Aerial imagery shows that this area is a partially vegetated depression with some open water.

**Figure 16: Ponds Near Milepost 2.6**



Public Waters are water basins, watercourses, and wetlands of significant recreational or natural resource value in Minnesota as defined in Minn. Stat. § 103G.005. The MDNR has regulatory authority over these waters, which are identified on the MDNR Public Waters Inventory maps (MDNR, 2025k). There are no public watercourses or basins located within the Proposed Route (MDNR, 2025q). The closest public watercourse is the Otter Tail River, which is about 3,600 feet west of the Proposed Alignment at its closest point. The nearest public water basin is Albert Lake, which is about 1,800 feet west of the Proposed Alignment. While not a public water, the transmission line will cross Public Ditch #5346 at MP 2.6 (**Appendix B, Page 7**). Potential impacts associated with the buffer zone associated with this ditch are discussed in Section 6.8.7.

Section 303(d) of the Federal Clean Water Act requires states to publish, every 2 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 authority over determining 303(d) waters. MPCA’s 2024 list was approved by the USEPA in April 2024. Based on this list, there are no impaired waters crossed by the Proposed Route. The closest impaired water is Rush Lake

approximately 1.5 miles south of the Otto Substation. Rush Lake is listed as impaired for aquatic consumption due to mercury levels (MPCA, 2025g).

*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 under Section 404 of the Clean Water Act. In Minnesota, wetlands are also protected under the Wetland Conservation Act.

The USFWS produced maps of wetlands based on aerial photographs and NRCS soil surveys starting in the 1970s. This effort is referred to as the National Wetland Inventory (NWI). NWI data were further updated for the state of Minnesota through a multi-agency effort led by the MDNR and were published in 2019 (MDNR, 2025i). Although wetlands identified by the Minnesota NWI might be inconsistent with current wetland conditions, Minnesota NWI data are the most accurate and readily available database of wetland resources within Minnesota and were used to identify wetlands occurring within the Proposed Route.

The Proposed Route contains discrete wetland communities (Minnesota Geospatial Commons, 2025e). Wetland Cowardin classifications within the Project Route include Palustrine Aquatic Bed, Permanently Flooded (PABH), Palustrine Unconsolidated Bottom, Permanently Flooded (PUBH), Palustrine Emergent, Persistent Temporarily Flooded Partly Drained/Ditched (PEM1Ad), and Palustrine Emergent, Persistent Seasonally Flooded Partly Drained/Ditched (PEM1Cd). There are no public water wetlands within the Proposed Route.

The Proposed Alignment crosses 9 feet (0.002 mile) of PEM1Cd (shallow marsh) near MP 0.0; 164 feet of PEM1Ad (seasonally flooded/saturated emergent wetland) near MP 0.1; and 152 feet (0.029 mile) of PUBH (freshwater pond) near MP 2.6 on the west side of 470<sup>th</sup> Avenue. There are no wetlands within the new Otto Substation site.

Wetlands within the Proposed ROW are identified in **Table 25** and shown in **Appendix B**.

**Table 25 Wetlands within the Proposed ROW**

Cowardin Type	Description	Number	Acres
PABH	Freshwater Pond	1	0.06
PUBH	Freshwater Pond	1	0.27
PEM1Ad	Freshwater Emergent Wetland	3	0.64
PEM1Cd	Freshwater Emergent Wetland	2	0.53
PFO1Ad	Freshwater Forested Wetland	1	0.24
<b>TOTAL</b>		<b>8</b>	<b>1.74</b>

*Calcareous Fens, Karst, and Springs*

No calcareous fens, karst, or springs are within the Proposed Route. The nearest calcareous fen is approximately 13 miles south of the Otto Substation near the city of Henning (Minnesota Geospatial Commons, 2025f). The nearest spring is to the northwest about 7 miles near Schuster

Lake (Minnesota Geospatial Commons, 2025g). No karst features are documented in Otter Tail County (Minnesota Geospatial Commons, 2025h).

#### 6.8.8.1 Potential Impacts

The ROI for Surface Water and Wetlands is the Proposed Route. Impacts will generally be of a small size, short term and minimal; however, tree clearing within wetlands could occur resulting in permanent impacts. Potential impacts can be mitigated in part.

There are no lakes or streams crossed by the Proposed ROW. The waterbody features (pond and drainage ditch) crossed by the Proposed Alignment—and those within the Proposed Route—are spaced such that construction activities will avoid direct impacts to those water resources, that is, these features can be spanned. Access over or across waterbodies is not anticipated for construction. The new Otto Substation will be constructed in an upland area and is not expected to impact water resources.

Indirect impacts to surface waters can occur from erosion and stormwater runoff. Runoff from rain events and snow melt has the potential to carry sediment and pollutants to surface waters (and groundwater). Vegetation removal and earth moving during construction activities can exacerbate stormwater runoff concerns. Stormwater management is regulated by the MPCA “to limit stormwater runoff and reduce pollution from stormwater (MPCA, 2025h).” As discussed in the previous section, two ponds are associated with the wetland complex that that is crossed by 470th Avenue and are within the Proposed Route.

Construction and operation of the Project is not anticipated to cause a water to be newly listed as impaired. There is limited potential to increase turbidity due to sedimentation from construction activities because of the distance to any receiving waters and the use of erosion and sediment BMPs to mitigate the potential for sediments or other pollutants to reach impaired waters.

Construction of the Project largely avoids wetlands, except for the 9-foot crossing at MP 0.0, the 164-foot crossing near MP 0.1, and the 152-foot crossing near MP 2.6. Based on the Proposed Alignment, Great River Energy does not anticipate pole placement within wetlands. If the final transmission line route design cannot enable the Project to span discrete wetland segments, permanent impacts to wetlands will occur where a structure is in the wetland (approximately 18 to 60 inches in diameter of permanent impact per structure). The Proposed ROW crosses 0.24 acres of forested wetland that could require clearing; therefore, limited conversion of wetland type could occur. These impacts are generally considered permanent.

#### 6.8.8.2 Mitigation Measures

Wetland impact avoidance measures that will be implemented during design and construction of the transmission line include spacing and placing the pole structures at variable distances to span and avoid all wetlands. The Applicants and their contractors will employ erosion and sediment control BMPs near the wetland crossing under 470th Avenue to minimize runoff during construction and could include but are not limited to the installation of sediment barriers (silt fence, straw bales, bio-logs), filter socks, mulch, upslope diversions, and slope breakers. Soil compaction within wetlands is not expected but would be mitigated by construction during frozen conditions or installation of construction mats.

The Applicants will install temporary and permanent erosion control devices. Erosion and sediment control devices will be inspected, maintained, repaired, and replaced, as necessary.

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, low ground pressure construction vehicles may be used, which are designed to minimize impact on soils in damp areas. Construction crews will attempt to access wetlands with the least amount of physical impact on the wetlands. Staging or stringing setup areas will not be placed within or adjacent to water resources to the extent practicable. Once construction of the Project is completed, Great River Energy will restore disturbed areas within wetlands to pre-construction conditions.

The Applicants will implement their Vegetation Management Plan (see draft in **Appendix G**) during construction and operation of the Project. Vegetation maintenance procedures under transmission lines prohibit trees from being established. Existing trees will be removed throughout the entire right-of-way. There are no trees located within the wetland crossing at MP 0, but there will be some clearing within PF01Ad wetlands and adjacent to PUBH wetlands at crossings near MP 0.1 and MP 2.6, respectively. Some clearing will also occur at PEM1Ad and PEM1Cd wetlands where the Proposed Alignment is adjacent to these wetlands. As described in Section 2.4.1, Great River Energy, in consultation with the USACE, St. Paul District, will review the Project for coverage under the Utility Regional General Permit once design of the transmission line is complete, and seek coverage if needed.

Route permits issued by the Commission typically contain the following mitigation measures relevant to surface waters and wetlands:

- The Permittee shall develop wetland impact avoidance measures and implement them during construction. Measures shall include spacing and placing the power poles at variable distances to span and avoid wetlands, watercourses, and floodplains. Unavoidable wetland impacts because of the placement of poles shall be limited to the immediate area around the poles. To minimize impacts, the Permittee shall construct in wetland areas during frozen ground conditions where practicable and according to permit requirements by the applicable permitting authority. When construction during winter is not possible, the Permittee shall use wooden or composite mats to protect wetland vegetation.
- The Permittee shall contain soil excavated from the wetlands and riparian areas and not place it back into the wetland or riparian area. The Permittee shall access wetlands and riparian areas using the shortest route possible to minimize travel through wetland areas and prevent unnecessary impacts. The Permittee shall not place staging or stringing set up areas within or adjacent to wetlands or water resources, as practicable.
- The Permittee shall restore wetland and water resource areas disturbed by construction activities to pre-construction conditions in accordance with the requirements of applicable state and federal permits or laws and landowner agreements. The Permittee shall meet the USACE, MDNR, BSWR, and local units of government wetland and water resource requirements.

### 6.8.9 Groundwater

The MDNR divides Minnesota into six groundwater provinces. The Project is in the Central Province, 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 (MDNR, 2025m). Groundwater availability in the Central Province is rated as “good” in surficial sands, “moderate” in buried sands, and “limited” in bedrock.

The MDH enforces the federal Safe Drinking Water Act including the National Primary Drinking Water Regulations created under the Act (MDH, 2025b). The Project is not located within the boundaries of any Drinking Water Supply Management Areas or Wellhead Protection Areas (MDH, 2025c).

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 (MGS, 2025). The CWI indicates that there are two wells located within the Proposed Route; one well is within the Proposed ROW. The nearest well is 8.5 feet away from the Proposed ROW. This well is a monitor well owned by the MDNR. Wells within the Proposed Route are identified in **Table 26**. The average depth to water level is 12.5 feet.

**Table 26 CWI Wells within the Proposed Route**

Unique ID	Within Proposed ROW	Surface Elevation	Static Water Elevation	Static Water Level (Depth to Water) Feet	Status	Use
00244199	Y	1348	1336	12	Sealed	Monitor Well
00710037	N	1353	1340	13	Active	Domestic

According to the Minnesota Water Table Aquifer Vulnerability data developed by MDA, MDH, and MDNR, and groundwater sensitivity within the Proposed Route is rated as high. This rating is based on the underlying geomorphology and the presence of sand and gravel. A rating of “high” means that “water moving vertically will reach the aquifer within hours to years (MDA, 2025c).”

**Table 26** provides the list of currently known wells that are located within the Proposed Route based on the CWI.

#### 6.8.9.1 Potential Impacts

The ROI for Groundwater is the Proposed Route. Potential impacts are anticipated to be short term and of a small size. Potential impacts can be mitigated.

Due to the shallow groundwater table in the Project area (**Table 26**), it is possible that pole installation or substation site preparation will encounter groundwater. Excavations may therefore require construction dewatering. 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. The

Applicants do not expect to exceed this permitting threshold; however, if higher groundwater levels are expected to occur, the Applicants could obtain coverage under the MDNR's Temporary Projects General Permit No 1997-0005, which authorizes temporary water appropriation for construction dewatering. Regardless, any effects on water tables would be localized and short term and would not result in significant impacts to hydrologic resources.

#### 6.8.9.2 Mitigation Measures

The Permittee shall also be responsible for compliance with all laws applicable to the generation, storage, transportation, clean up and disposal of all waste generated during construction and restoration of the Project. 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. No additional mitigation is proposed.

Commission standard permit conditions presented in Section 6.8.8.2 for surface water and wetlands are also protective of groundwater resources.

### **6.8.10 Wildlife and Habitat**

The Project is in the MDNR Nongame Wildlife – Northwest Region (MDNR, 2025n). “This region is home to a variety of reptiles and amphibians, like the plains hog-nosed snake, Canadian toad, tiger salamander, prairie skink, mudpuppy, and Blanding’s turtle. It also includes invertebrates like monarch butterflies, Dakota skipper butterflies, and creek heelsplitter mussels. Birds of note are the bald eagle, common loon, trumpeter swan, osprey, prairie chicken, and sandhill crane. The region is also home to a variety of mammals, such as the least weasel and the Northern long-eared bat.” Additional species include pheasants, deer, turkey, waterfowl, and other small game species. Species inhabiting the Proposed Route are generalist species that occupy disturbed open land habitats including agricultural row crops.

There are no MDNR Wildlife Management Areas or Aquatic Management Areas (MDNR, 2025o) crossed by the Proposed Route. There are no MDNR-designated Lakes of Biological Significance, Wild Rice Lakes, Trout Lakes, Trout Streams, Outstanding Resource Waters or Priority Shallow Lakes within the Proposed Route. Designated important bird areas do not exist with the Proposed Route.

Rare and natural flora and fauna are discussed in Section 6.8.5.

#### 6.8.10.1 Potential Impacts

The ROI for Wildlife and Habitat is the Proposed Route, except that the ROI for birds is the Local Vicinity. Potential impacts are anticipated to be short and long term, localized, and not affect a unique resource. Potential impacts can be mitigated.

There is minimal potential for the permanent displacement of wildlife and loss of habitat from construction of the Project. Wildlife that inhabits natural areas with the Proposed Route could be impacted in the short term within the immediate area of construction. The distance that animals will be displaced will depend on the species. Additionally, these animals will be typical of those found in agricultural settings and will not incur population level effects due to construction. The Proposed ROW will parallel existing road right-of-way and follow distribution line right-of-way

for about 97 percent of its length; therefore, there will be minimal impacts related to habitat fragmentation and habitat loss.

Raptors, waterfowl, and other bird species might be affected by the construction and placement of the transmission line. Avian collisions could occur during operation of the transmission line. 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.

#### 6.8.10.2 Mitigation

Any eagle nests discovered during survey of the transmission line or in the land acquisition process will be reported to the USFWS and Great River Energy will adhere to the guidance provided. USFWS recommended that bird diverters be placed along the transmission line near Albert Lake (**Appendix C**). No additional mitigation measures are proposed.

Commission issued route permits typically include standard conditions that apply to wildlife and habitat:

- The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences, and vegetation in areas such as trail and stream crossings where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.
- The Permittee shall, in cooperation with the MDNR, identify areas of the transmission line where bird flight diverters will be incorporated into the transmission line design to prevent large avian collisions attributed to visibility issues. Standard transmission design shall incorporate adequate spacing of conductors and grounding devices in accordance with APLIC standards to minimize the risk of electrocution to raptors.

### 6.9 Unavoidable Impacts

Minn. State. § 216I.05, subdivision 4(a)(9), requires that an application include “a list that identifies human and natural environmental effects that are unavoidable if the facility is approved at a specific site or route.” The Project will be designed, constructed, and operated in manner that mitigates potential impacts to the greatest extent possible. However, even with mitigation measures, there will be impacts that cannot be avoided. These impacts are distinct based on the phase of the project: construction or operation.

Unavoidable impacts associated with construction could include:

- Fugitive dust emissions on and near gravel roads.
- Greenhouse gas emissions.
- Incremental vegetative clearing.
- Minimal amounts of habitat loss.

- Noise disturbances and visual impacts.
- Soil compaction and erosion.
- Short-term traffic delays.
- Temporary construction dewatering.
- Temporary disturbance and displacement of wildlife; impacts to individual wildlife.

Unavoidable impacts associated with operation could include:

- Continued maintenance of tall growing woody vegetation.
- Conversion of agricultural land at structure locations and maintained grasslands at the new Otto Substation location.
- Increased EMF on the landscape. Potential impacts from EMF are minimal and are not expected to impact human health.
- Incremental increase in the potential for avian collisions or electrocution.
- Interference with AM radio signals.
- Limited GHG emissions.
- Incremental visual changes to the landscape.

## **6.10 Irreversible and Irretrievable Impacts**

Minn. State. § 216I.05, subdivision 11(b)(11), requires the Commission to consider “irreversible and irretrievable commitments of resources” when determining whether to issue Route Permit. “Resource commitments are irreversible when it is impossible or very difficult to redirect that resource to a different future use; an irretrievable commitment of resources means the resource is not recoverable for later use by future generations (Minnesota Department of Commerce, 2021).”

Irreversible resource commitments associated with the Project will include the land use associated with the new Otto Substation and transmission line components. While the land underlying the Otto Substation could be restored to agricultural use or some other function, tall growing woody vegetation could revegetate within the Proposed ROW, and certain Project components could be reused or recycled, this is unlikely to happen in the reasonably foreseeable future.

Irretrievable resource commitments associated with the Project are related to construction activities. The use of aggregate, concrete, fuel, human labor, steel, water, wood, and other consumable resources is irretrievable. Funding could be irretrievable in part.

## **6.11 Cumulative Impacts**

Minn. R. 4410.0200, subp. 11(a), defines “cumulative potential effects” as the “effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of

expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects.”

Department of Commerce Energy Environmental Review and Analysis documents have previously defined “environmentally relevant area” to mean “locations where the potential effects of the project coincide with the potential effects of other projects to impact the elements studied in this EA. Generally, this area includes the ROI for the different resource elements (Minnesota Commerce Department, 2021).”

The Applicants searched for reasonably foreseeable projects in both temporal and spatial proximity to the Proposed Project. No projects were identified. MnDOT is planning to resurface U.S. Highway 10 from Bluffton west to New York Mills in 2027. This project is about 8 road miles from where the Proposed Project will intersect U.S. Highway 10. Otter Tail County road work plans do not extend beyond 2025 on the county website (Otter Tail County, 2025c).

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