DAIRYLAND POWER COOPERATIVE

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

RELOCATE AN EXISTING 161-kV TRANSMISSION LINE IN WABASHA COUNTY, MN

MPUC DOCKET NOS.
ET3/CN-23-504
ET3/TL-23-388

March 27, 2024

DAIRYLAND POWER
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1.1 Introduction and Need Summary

Dairyland Power Cooperative (Dairyland, or the Applicant) submits this joint Certificate of Need and Route Permit Application (Joint Application) to the Minnesota Public Utilities Commission (Commission) for a Certificate of Need and Route Permit to relocate approximately 13.3 miles of 161-kilovolt (kV) high voltage transmission line (HVTL) and construct a new substation (the Wabasha Relocation Project, or the Project).

The Project will begin in the vicinity of Structure X-Q3-75 on the existing Dairyland LQ34 161-kV transmission line (the Wabaco-Alma transmission line or LQ34 line) near the Town of Plainview, Minnesota in Wabasha County. This structure will be removed as part of the Project and will be replaced with the starting structure for the new 161-kV line. After travelling 13.3 miles northeast and then east, it will tie directly into a new 4-acre 161-/69-kV substation located within a larger 10.8-acre site, which is proposed to be located off County Road 84, west of the Mississippi River and southeast of the City of Kellogg (Kellogg Substation). The Project is a relocation of approximately 10.4 miles of the existing LQ34 line, which presently connects to the Wabaco Substation (located approximately 2 miles south of the Town of Plainview) and to the Alma Substation (located on the east side of the Mississippi River in Wisconsin). The Project starts in Plainview Township, northeast of the Town of Plainview, and traverses northeast through Highland, Watopa, and Greenfield Townships, ending east of the City of Kellogg in Wabasha County, Minnesota near the Mississippi River. The Project is shown on **Figure 1-1**.

The LQ34 line was originally built in 1955 on a direct, diagonal northeast route between the east side of the City of Rochester to the City of Kellogg, Minnesota. The Wabaco Substation (to which the line currently connects and supplies power) was constructed in 1981. In 2012, the portion of the LQ34 corridor between the Town of Plainview and the City of Kellogg was approved as the route for the CapX2020 Hampton-Rochester-La Crosse 345-kV Project (CapX2020).[1] The CapX2020 project was co-located with the Dairyland LQ34 line in this 10-mile corridor as a double circuit (161-/345-kV) transmission line carrying both the Dairyland 161-kV line and the CapX2020 345-kV line. Recognizing future capacity needs, all the CapX2020 lines were constructed to be capable of carrying two circuits of 345-kV lines.

In July 2022, the Midcontinent Independent System Operator (MISO) approved a long-range transmission plan (LRTP) including a new Wilmarth-North Rochester-Tremval transmission line.[2] This new 345-kV line, referred to as the Mankato to Mississippi River 345-kV Transmission Project in Minnesota, would utilize the double circuit capability of the CapX2020 system between North Rochester and Alma, Wisconsin.[3] Xcel Energy, Dairyland, Rochester Public Utilities, and Southern Minnesota Municipal Power Agency are filing certificate of need and route permit applications for the Mankato to Mississippi River 345-kV Transmission Project in MPUC Docket Nos. E002/CN-22-532 and TL-23-157. Therefore, the Dairyland 161-kV circuit must be relocated

[1] Docket No. E002/TL-09-1448.

[2] https://www.misoenergy.org/planning/long-range-transmission-planning/

[3] https://mmrtproject.com/

from the CapX2020 structures to make room for a new, second 345-kV circuit on the existing CapX2020 structures.[4]

Dairyland's 161-kV transmission line must be relocated so that it may continue to supply power to the Wabaco Substation, which maintains reliability by providing power to the Town of Plainview and neighboring areas, following execution of the new Mankato to Mississippi River 345-kV Transmission Project. The new Kellogg Substation is required because the new Mankato to Mississippi River 345-kV Transmission Project's circuit across the Mississippi River will eliminate Dairyland's existing LN340 69-kV transmission line Mississippi River crossing and connection into the Alma Substation in Wisconsin. The new Kellogg Substation will then supply the LN340 69-kV transmission line, which travels north-south between Kellogg and the Utica, Minnesota area. Finally, constructing a 161-kV transmission path between Wabaco and Alma will maintain existing transmission capacity and generation outlet provided by the transmission line. Overall, the Project proposes to maintain the electrical capabilities of the existing transmission system in addition to making way for the new 345-kV line (Mankato to Mississippi River 345-kV Transmission Project) to use the existing infrastructure already capable of carrying a new 345-kV transmission line.

1.2 Dairyland Organization and System Background

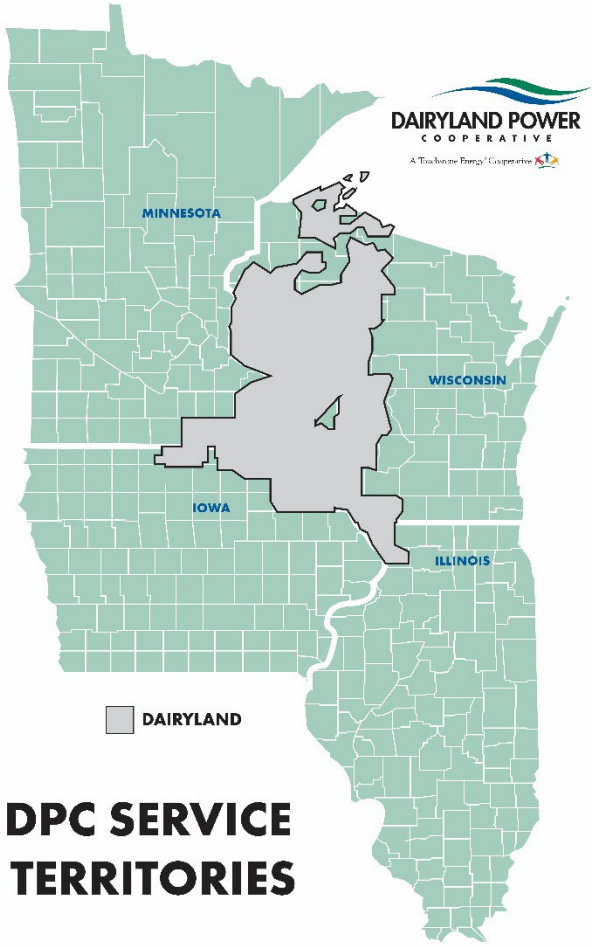
Dairyland is a not-for-profit generation and transmission electric cooperative formed in December 1941 and based in La Crosse, Wisconsin. Dairyland provides the wholesale electrical requirements to more than 700,000 people through its 24 distribution cooperatives and 27 municipal utilities in a four-state area including Wisconsin, Minnesota, Iowa, and Illinois. This includes People's Energy Cooperative (Peoples) and MiEnergy Cooperative (MiEnergy), the distribution cooperatives serving cooperative members in the area in which the Project will be located. Dairyland's transmission system is interconnected directly with neighboring transmission owners, and Dairyland is a member of the Midwest Reliability Organization (MRO) and MISO. Dairyland and its member distribution cooperatives' mission is to power its communities and empower cooperative members to improve the quality of their lives. Dairyland's service area is shown on **Diagram 1-1**.

Dairyland generates electricity by using both traditional and renewable energy resources to provide safe, reliable, and affordable electricity. Dairyland's power plants have the capability to generate more than 1,038 megawatts (MWs), of which approximately 18% is provided from renewable sources (i.e., wind, solar, hydroelectric power, and biomass generation). In addition, Dairyland has power purchase agreements for 207 MWs of wind, 193 MWs of solar, and 78 MWs of hydroelectric energy in Iowa, Illinois, Minnesota, South Dakota, and Wisconsin. Dairyland owns over 3,300 miles of transmission line (34.5-kV and higher) and 232 substations in Minnesota, Wisconsin, Iowa, and Illinois.[5]

[4] Docket No. E002/CN-22-532.

[5] https://www.dairylandpower.com/sites/default/files/PDFs/Annual%20Reports/AnnualReport-DPC-2022-FINAL-PROOF.pdf

Diagram 1-1. Dairyland Service Area



1.3 Project Contact

Dairyland is the requested permittee for the Project. Dairyland's address is:

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1.4 Proposed Project and Location

Dairyland proposes to relocate the existing LQ34 161-kV transmission line that is currently located on the CapX2020 structures. The Project includes the installation of a new 13.3-mile 161-kV transmission line and a new Kellogg Substation, all in Wabasha County. The Project is discussed in more detail in **Section 3.0**. The purpose and need of the Project are discussed in detail in **Section 4.0**. Dairyland must have its relocated line operational to ensure continued service to the Wabaco Substation prior to the stringing of the second 345-kV Mankato to Mississippi River 345-kV Transmission Project circuit, which is planned to be in operation in June 2028.

The term Proposed Alignment is used to refer to the location of the transmission line and structures. Dairyland proposes that the Proposed Alignment follow an approximately 13.3-mile route starting in the vicinity of Structure X-Q3-75 on Dairyland's LQ34 161-kV transmission line northeast of the Town of Plainview, Minnesota in Wabasha County to the new 4-acre Kellogg Substation. Dairyland will use single-pole steel structures. All structures will be self-supporting; therefore, no guying will be required. Typical pole heights will range from 75 to 140 feet above ground and spans between poles will range from 250 to 1,000 feet. Construction will occur within a 100-foot-wide right-of-way (ROW) easement that Dairyland will obtain to operate the transmission line. The 100-foot-wide ROW easement is centered on the Proposed Alignment (or 50 feet on either side of the transmission line).

The Project Route Width (or Proposed Route) is a larger area that is inclusive of the Proposed Alignment and the Kellogg Substation. Dairyland requests a standard Route Width of 400 feet (200 feet on either side of the Proposed Alignment for most of the Project). Dairyland is requesting a wider Route Width in some areas, up to 2,300 feet wide, to allow for additional route study and the potential need to make minor modifications to the Proposed Alignment in these areas.

The Proposed Alignment, Route Width, and Kellogg Substation are shown on **Figure 1-1**. **Appendices A.1 and A.2** contain a series of topographic and aerial maps depicting the Proposed Alignment, 100-foot-wide ROW, requested Route Width, and Kellogg Substation footprint.

The Route Width (including the Project Alignment and Kellogg Substation) is located in Plainview, Highland, Watopa, and Greenfield Townships in Wabasha County, Minnesota, and in the Township, Ranges, and Sections as shown in **Table 1-1**.

Table 1-1. Townships, Ranges, and Sections Crossed by the Project Route Width

Township	Range	Sections
108	11	1
109	10	4,5,7,8,18
	11	13,23,24,25,26,35
110	9	30,31
	10	25,26,27,33,34,35,36

The Project is collocated[6] with other road, railroad, or utility ROWs for 9.5 miles, or 71% of its length. Northern States Power Company, dba Xcel Energy (Xcel Energy), and Peoples have existing overhead distribution lines in the Project Route Width. Dairyland currently understands that Xcel Energy and Peoples plan to bury these lines where they are overtaken by the Project, rather than attach them to the new 161-kV structures installed by Dairyland. This work will be undertaken by Xcel Energy and Peoples and will not be conducted or directed by Dairyland. Dairyland will be responsible for reimbursing Xcel Energy and Peoples for costs incurred to bury their distribution lines. For reference, the location of existing distribution is depicted on the maps in **Appendix A**.

At the beginning of the Project (milepost (MP) 0.0), existing Dairyland structure X-Q3-75 will be removed and replaced with a new starting structure for the Project. Conductors that continue from this structure on to the CapX2020 structures (to the northeast) will be removed to make room for the planned 345-kV CapX2020 circuit. Conductors that continue to the southwest will be connected to Dairyland's first new structure. There is a possibility, based on engineering design, that the next structure beyond X-Q3-75 (to the southwest) will need to be replaced or modified to accommodate the changes in line configuration. There are some distribution circuits along various parts of the Proposed Alignment that will need to either be collocated with the new structures or relocated and/or buried underground.

The new 13.3-mile 161-kV transmission line will enter the Kellogg Substation from the west at MP 13.3. To the north of the Kellogg Substation, Dairyland structure X-N340-312 currently exists under the CapX2020 lines. This structure, which is within the Proposed Route, will be replaced or converted to 161-kV and brought directly into the northern side of the Kellogg Substation.

The new Kellogg Substation will then supply the LN340 69-kV transmission line, which travels north-south between Kellogg and the Utica, Minnesota area. Dairyland will modify approximately 1,500 feet of the existing 69-kV line to provide connection into the new Kellogg Substation. The 69-kV take-off structure in the Kellogg Substation may require some additional ROW as compared to the present ROW. Some 69-kV structures to the south of the Kellogg Substation will likely need to be replaced to accommodate the changes in line configuration. These structures will be wood poles and similar to what is presently installed.

[6] Collocation is defined as any road or utility located within 200 feet either side of the Proposed Alignment.

1.5 Project Schedule and Cost

Dairyland estimates the Project will cost approximately $32.4 million dollars, as further discussed in **Section 3.3**. Dairyland anticipates conducting site preparation activities at the Kellogg Substation site between June and July 2026. Then, Dairyland would build the Kellogg Substation and 161-kV transmission line between June 2027 – July 2028, as further discussed in **Section 3.4**. This timeline is consistent with the timeline associated with the Mankato to Mississippi River 345-kV Transmission Project, which is planned to be in-service by June 2028.[7]

1.6 Potential Environmental Impacts

Dairyland analyzed the potential environmental impacts from the Project (see **Section 8)** and anticipates that no significant unavoidable impacts will result from construction of the Project. Dairyland has selected a route that meets the Commission's routing requirements and for most resources, minimizes or avoids the human and environmental impacts that would be realized along reasonable alternatives as presented in **Section 6**. Given the use of existing ROWs for 71% of the approximately 13.3-mile Project, the potential environmental impacts from the Project are anticipated to be limited to temporary construction impacts and permanent impacts where new ROW is needed. Dairyland will continue to coordinate with federal, state, and local agencies to obtain the permits and authorizations needed to construct the Project, as well as address natural resource concerns.

The Department of Commerce (DOC), Energy Environmental Review and Analysis (EERA) is responsible for environmental review of the Project. The Certificate of Need rules require the preparation of an Environmental Report,[8] whereas the Route Permit rules for the Alternative Process require preparation of an Environmental Assessment (EA).[9] The commissioner of the DOC may elect to prepare an EA (in lieu of preparing both an Environmental Report under the Certificate of Need rules and an EA under the Route Permit rules) for the Project that analyzes potential environmental impacts from the Project and meets all statutory and rule requirements of both the Environmental Report and the EA.[10]

1.7 Public Input and Involvement

Dairyland employs various engagement methods to provide information about the Project to the public and federal, state, and local agencies, Tribal Nation representatives, and non-government organizations. These engagement methods included in-person stakeholder meetings, in-person public open houses, newspaper ads, direct mailings, social media posts, a dedicated email and hotline to field questions and comments, an interactive online comment map, a Project website (https://www.dairylandpower.com/wabasha-relocation-project), and detailed maps that could be downloaded and printed from the Project website. Additional information regarding the public outreach efforts conducted prior to the filing of this Application is provided in **Section 9**. Copies of project correspondence is included in **Appendix B**. This includes pre-application letters sent to

[7] Northern States Power Company Eighth Status Update to the Commission Letter In the Matter of the Application for a Certificate of Need for the Mankato to Mississippi River 345-kV Transmission Project, Docket No. E002/CN-22-532, January 29, 2024, Document ID 20241-202829-01.

[8] Minn. R. 7849.1200.

[9] Minn. R. 7850.3700.

[10] Minn. R. 7849.1900, subp. 1.

federal, state, and local units of government and Tribal nations to introduce the Project and serve as notice of the opportunity for a pre-application consultation meeting under Minnesota Statutes Section (Minn. Stat. §) 216E.03, subd. 3a.

2 REGULATORY PROCESS

2.1 Certificate of Need

Minn. Stat. § 216B.243, subdivision 2, states that "[n]o large energy facility shall be sited or constructed in Minnesota without the issuance of a Certificate of Need by the Public Utilities Commission...." A large energy facility is defined as "any high-voltage transmission line with a capacity of 100-kV or more with more than ten miles of its length in Minnesota or that crosses a state line."[11] Dairyland is requesting a Certificate of Need to be granted under Minn. Stat. § 216B.243.

The Commission has adopted rules for the consideration of applications for Certificates of Need at Minn. R. Ch. 7849. On December 13, 2023, Dairyland filed a Petition for Exemption under Minn. R. 7849.0200, subp. 6, requesting that it be exempt from certain filing requirements under Minn. R. Ch. 7849. The Commission approved the Petition, with modifications, in an order dated February 13, 2024 (Exemption Order). This Application contains the information required under Minn. R. Ch. 7849, as modified by the Commission in its Exemption Order. A copy of the Commission's Exemption Order is provided in **Appendix C**. A Certificate of Need completeness checklist is provided in **Appendix D** with cross references indicating where the information required by Minnesota statute and rules can be found in this Application.

2.2 Route Permit

Minn. Stat. § 216E.03, subdivision 2, provides that "[n]o person may construct a high voltage transmission line without a route permit from the commission." An HVTL is defined by Minn. Stat. § 216E.01, subd. 4, as "a conductor of electric energy and associated facilities designed for and capable of operation at a nominal voltage of 100-kV or more and is greater than 1,500 feet in length." Because the Project consists of a 161-kV transmission line that is greater than 1,500 feet in length, a Route Permit from the Commission is required.

This Application is submitted under the alternative permitting process set forth in Minn. Stat. § 216E.04 and Minnesota Rules and Minn. R. 7850.2900 to 7850.3700 and 7850.4000 to 7850.4400. The Project qualifies for review under the alternative permitting process authorized by Minn. R. 7850.2800, subp. 1(C) because it is a high voltage transmission line of between 100 and 200 kilovolts.

Dairyland notified the Commission on January 29, 2024, that it intended to use the alternative permitting process for the Project. This letter complied with the requirements of Minn. R. 7850.2800, subp. 2, to notify the Commission of this election at least 10 days prior to applying for a Route Permit. A copy of this letter is attached as **Appendix E**.

The Commission has adopted rules for the consideration of Route Permit applications in Minn. R. Ch. 7850. Minnesota Rule 7850.1900, subparts 2 and 3, set forth the information that must be included in a Route Permit Application. A Route Permit completeness checklist is provided in

[11] Minn. Stat. § 216B.2421, subd. 2(3) (2006).

Appendix F with cross references indicating where the information required by Minnesota statutes and rules can be found in this Application.

Under the Alternative Review Process, an Applicant is not required to propose any alternative routes but must disclose any other routes that were considered but rejected by the Applicant (Minn. Stat. § 216E.04, subd. 3). Further, an Environmental Impact Statement is not required under the Alternative Review Process. Instead, EERA is required to prepare an EA (Minn. Stat. § 216E.04, subd. 5). Unlike the full Route Permit process for higher voltage lines, a formal contested case hearing is not required (Minn. Stat. § 216E.04, subd. 6). The Alternative Review Process procedures are discussed below in **Section 2.3.2**. The regulatory process described in this section is the process that is followed to satisfy all the requirements under the Alternative Review Process Route Permit rules. *See* Minn. R. Ch. 7850.

2.2.1 Notice of Application

Consistent with the Notice Plan approved by the Commission on February 13, 2024, Dairyland provided pre-application notice of this Application by mail to landowners, local government officials, and tribes and published notice in the Star Tribune and Wabasha County Herald. A compliance filing documenting these notices was efiled in this docket on March 22, 2024.

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

An electronic version of the Application will be available on eDockets in docket numbers *23-504* and *23-388* and on the EERA webpage (http://mn.gov/commerce/energyfacilities). The Application will also be available on Dairyland's transmission projects webpage at: https://www.dairylandpower.com/wabasha-relocation-project.

As required by Minn. R. Ch 7850.2100, subp. 2.C, Dairyland has prepared a project mailing list that contains the information for all persons who own property adjacent to or within the Proposed Route (see **Appendix G**).

2.3 Request for Joint Certificate of Need and Route Permit Proceeding

Minn. Stat. § 216B.243, subd. 4 and Minn. R. 7849.1900, subp. 4 permit the Commission to hold joint proceedings for the Certificate of Need and Route Permit in circumstances where a joint hearing is feasible, more efficient, and may further the public interest.

Dairyland respectfully requests that the Commission order a joint regulatory review process for the Certificate of Need and Route Permit applications. A joint public hearing is feasible and more efficient than two separate proceedings and will further the public interest by having both need and routing issues examined in a singular proceeding.

2.3.1 Environmental Review Process

Upon acceptance of an Application for a Route Permit as complete, EERA will conduct an environmental review of the Project, which requires preparation of an EA. *See* Minn. R. 7850.3700. The EA will contain information on the human and environmental impacts of the Project and addresses mitigation measures for all routes considered. The EA also serves as the environmental report otherwise required under the Certificate of Need rules. *See* Minn. R. 7849.1900, subp. 1.

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

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

2.3.2 Joint Process

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

Once the hearing is concluded, the ALJ will prepare a report based on the entire Certificate of Need and Route Permit 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 Certificate of Need and route for the Project, using the criteria set forth in Minn. Stat. §216B.243, subd. 3, Minn. R. 7849.0120, Minn. Stat. § 216E.03, subd. 7(b), and Minn. R. 7850.4100 to guide its decision.

A Certificate of Need must be issued within 12 months of submission of an application unless the Commission extends the time period for good cause. *See* Minn. Stat. § 216B.243, subd. 5. A route permit under the Alternative Review Process shall be issued six months after the Commission's

determination that the Application is complete. This timeframe may be extended up to three months for just cause or upon agreement by the Applicant. *See* Minn. Stat. § 216E.04, subd. 7.

2.4 Other Permits/Approvals

In addition to the Certificate of Need and Route Permit sought in this Application, several other permits, license, approvals, or consultations may be required to construct the Project depending on the actual route selected and the conditions encountered during construction. A list of the local, state, and federal permits that may be required for this Project is provided in **Table 2-1**. Any required permits will be obtained by Dairyland in a timely manner.

Table 2-1. Summary of Possible Permits, Licenses, Approvals, and Consultations

Permit	Jurisdiction
Federal	
Section 404 Clean Water Act Permit	United States Army Corps of Engineers
Lease for Utility System Facilities on Federal Lands and Property	United States Army Corps of Engineers
Section 7 Endangered Species Act / Migratory Bird Treaty Act Consultation/ Bald and Golden Eagle Protection Act	United States Fish and Wildlife Service
Part 7460 Airport Obstruction Evaluation	Federal Aviation Administration
State	
National Historic Preservation Act Consultation Minnesota Statutes Chapter 138 (Minnesota Field Archaeology Act and Minnesota Historic Sites Act)	State Historic Preservation Office Tribal Historic Preservation Offices
License to Cross Public Waters	Minnesota Department of Natural Resources – Lands and Minerals
Water Appropriation General Permit – Construction Dewatering	Minnesota Department of Natural Resources
State Endangered Species Consultation	Minnesota Department of Natural Resources – Ecological Services
Calcareous Fen No Effect Concurrence	Minnesota Department of Natural Resources
National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit Coverage	Minnesota Pollution Control Agency
Section 401 Clean Water Act Water Quality Certification	Minnesota Pollution Control Agency
Wetland Conservation Act	Minnesota Board of Water and Soil Resources Wabasha County Soil and Water Conservation District
Utility Accommodation on Trunk Highway ROW	Minnesota Department of Transportation
Miscellaneous Work Permit for Trunk Highways	Minnesota Department of Transportation
Oversize and/or Overweight Permit	Minnesota Department of Transportation
Local	
Road Crossing/Driveway/ROW/Utility Permits	Plainview, Highland, Watopa and Greenfield Townships, Wabasha County
Over-Width Load Permits	Plainview, Highland, Watopa and Greenfield Townships, Wabasha County
Other	
Crossing Permits/Agreements	Other utilities such as railroads

Dairyland proposes that the Project follow an approximately 13.3-mile route starting in the vicinity of Structure X-Q3-75 on the existing Dairyland LQ34 161-kV transmission line near the Town of Plainview, Minnesota before terminating in the new Kellogg Substation. The proposed Project is located in Plainview, Highland, Watopa, and Greenfield Townships, in Wabasha County, Minnesota. An overview of the Proposed Route is shown on **Figure 1-1**, and the Proposed Route width is shown in **Appendix A** on a series of larger scale aerial photo maps depicting the Proposed Alignment, Proposed Route, and 100-foot-wide ROW for the Project.

3.1 Project Description

3.1.1 161-kV Line Proposed Alignment

The Proposed Alignment refers to the centerline of the transmission line. This Application includes a Proposed Alignment, which is Dairyland's initial thoughts on where the line will be built and where it turns or crosses from one side of a road to the other. The final alignment will likely be somewhat different due to input from landowners, agencies, and owners of other utilities in the area.

The Project will begin in the vicinity of Structure X-Q3-75 on Dairyland's existing LQ34 161-kV transmission line, located approximately 0.6 miles northeast of the intersection of Township Road 232 and 215th Ave in Plainview Township in Wabasha County. The Project Route will extend northwest for approximately 1.0 mile until 215th Ave, and then will continue north for approximately 0.6 mile to State Highway 42 near MP 1.6. From there, it will turn northeast and continue to follow State Highway 42 for approximately 6.4 miles until diverging south near MP 8.0. It will travel across a greenfield route for 1.7 miles until the crossing of U.S. Highway 61/Great River Road near MP 9.7. The Proposed Alignment will cross Great River Road and the Canadian Pacific Railroad, and then turn south on the east side of the railroad at MP 10.1. It will parallel the railroad for approximately 0.5 mile before turning east, then north and east again, to follow the south side of County Road 84. The Proposed Alignment then follows County Road 84 for approximately 1.7 miles to its connection point at the Kellogg Substation.

The Project will not be constructed within existing utility ROW; however, it will be collocated with existing utility, road, and railroad ROW for approximately 9.5 miles, or 71% of the Proposed Alignment.[12] Specifically, the Project:

- Is collocated with existing utility lines for 5.6 miles, as follows: Peoples' distribution lines for approximately 3.8 miles, Xcel Energy distribution lines for 1.3 miles, and Dairyland transmission lines for 0.5 mile. Some of these areas are also alongside road ROWs. Where the Project Alignment is collocated with existing distribution lines, Dairyland currently understands that Xcel Energy and Peoples plan to bury these lines where the Project overtakes them, resulting in the removal of those poles.

[12] Total collocation factors in that in several locations, the Project is collocated with more than one type of existing corridor. Therefore, the sum of collocation presented below in the breakout will not equal this total.

- Is collocated with Township roads, County roads, and State highways for 8.4 miles. Some of these areas are also alongside utility ROWs.

- Is collocated with the Canadian Pacific Railroad for 0.6 mile.

3.1.2 Right-of-Way

The ROW is the physical land area along the Proposed Alignment that is needed to construct and operate the energy facility; this is the area that will be maintained by Dairyland. Dairyland will require easements which allow for a ROW width of 100 feet (typically 50 feet of each side of the Proposed Alignment).

Additional temporary workspace (ATWS) beyond the 100-foot-wide ROW may be required at certain locations, such as road or railroad intersections, utility crossings, along steep slopes, and at stringing locations. In addition, there will be temporary staging of materials such as structures and hardware along the ROW prior to construction installation. Dairyland will avoid the placement of ATWS in wetlands and near waterbodies as practicable.

New easements will be needed for the 161-kV transmission line. Dairyland representatives will work directly with individual landowners to acquire the necessary easements for the Project. At a minimum, the Project will require a total ROW width of 100 feet (typically 50 feet off each side of the transmission centerline) for the 161-kV transmission line system.

3.1.3 Route Width

A "route" or "route width," referred to herein as the Proposed Route, is a wide corridor that is defined by the Commission in a route permit. The Proposed Route is wider than the ROW in order to provide flexibility in the Proposed Alignment and ROW placement to address human and environmental concerns that arise after the Route Permit has been issued.

Within this Application, Dairyland is generally requesting a 400-foot-wide Proposed Route; however, Dairyland is requesting a variable route width, up to 2,300 feet wide, for specific portions of the route to consider existing infrastructure, mitigate potential engineering challenges, and/or to facilitate any necessary realignments to accommodate agency and/or landowner requests. The route width areas are shown in **Appendix A.**

1. Variable width in some areas along State Highway 42 after the intersection with 215th Avenue (near MP 1.6) to just north of 615th Street (near MP 7.8) to account for flexibility in routing around homes, buildings, and features along the highway (**pages 2 to 6 of Appendix A.2**).

2. A variable, but up to 2,300-foot-wide route north of 615th Street (near MP 7.8) to just east of the U.S. Highway 61/Great River Road crossing (near MP 9.9) to account for flexibility in routing around steep slopes to the south of State Highway 42 and the U.S. Highway 61/Great River Road crossing (**pages 6 to 8 of Appendix A.2**).

3. A variable, but up to 1,850-foot-wide route near the Kellogg Substation between MPs 12.9 to 13.3 to allow for flexibility in the ultimate placement of the substation (**page 10 of Appendix A**).

3.1.4 Kellogg 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. The Kellogg Substation is needed to connect the 161-kV transmission lines and the existing LN340 69-kV transmission line. Dairyland is proposing to develop a 10.8-acre property, of which 4 acres will include the fenced area, stormwater pond, parking, accessing road, and transmission line ROWs that will enter/exit the substation. The height of new structures at the Kellogg Substation will range from 45 to 75 feet above ground. The property is currently used for agricultural production. The substation footprint is an estimation at this time; the size, shape and precise location could potentially change per engineering design standards and landowner feedback. An initial layout of the Kellogg Substation is provided in **Appendix H**.

3.1.5 Additional System Modifications

A number of modifications will need to be made to the existing system to accommodate the Project.

At the beginning of the Project (MP 0.0), existing Dairyland structure X-Q3-75 will be removed and replaced with a new starting structure for the Project. Conductors that continue from this structure on to the CapX2020 structures (to the northeast) will be removed to make room for the planned 345-kV CapX2020 circuit. Conductors that continue to the southwest will be connected to Dairyland's first new structure. There is a possibility, based on engineering design, that the next structure beyond X-Q3-75 (to the southwest) will need to be replaced or modified to accommodate the changes in line configuration. Distribution circuits along various parts of the Proposed Alignment will be buried underground.

The new 13.3-mile 161-kV transmission line will enter the Kellogg Substation from the west at MP 13.3. To the north of the Kellogg Substation, Dairyland structure X-N340-312 currently exists under the CapX2020 lines. This structure will be replaced or converted to 161-kV and brought directly into the northern side of the Kellogg Substation.

The new Kellogg Substation will then supply the LN340 69-kV transmission line, which travels north-south between Kellogg and the Utica area. Dairyland will modify approximately 1,500 feet of the existing 69-kV line to provide connection into the new Kellogg Substation. The 69-kV take-off structure in the Kellogg Substation will require some additional ROW as compared to the present ROW. Some 69-kV structures to the south of the Kellogg Substation will likely need to be replaced to accommodate the changes in line configuration. These structures will be wood poles and similar to what is presently installed.

3.2 Engineering and Operational Design Considerations

Design of transmission lines and associated facilities occur through multiple stages including identification of existing ROWs; transmission line design; substation design; ROW acquisition; and geotechnical investigations. Each stage is discussed in further detail in the sections that follow.

3.2.1 Transmissions Structure and Design Considerations

Potential structure designs and photographs are provided in **Diagrams 3-1** and **3-2**. Structure dimensions are provided in **Table 3-1**.

Table 3-1. Typical 161-kV Structure Dimensions

Structure Type	Material	Approximate Height Above Ground (feet)	Structure Base Diameter (inches)	Span Between Distances (feet)
Monopole with davit arms and suspension insulators	Steel	80 - 140	31 - 51	300 - 1,000
Monopole with strain attachments directly to pole	Steel	75 - 110	35 - 55	300 - 1,000

The majority of the new 161-kV transmission line will consist of single circuit steel structures spaced approximately 300 to 1,000 feet apart. Transmission structures will typically range in height from 75 to 140 feet above ground, depending upon the terrain and environmental constraints. The average diameter of the steel structures at ground level is 37 inches. Poles will be oriented in a delta configuration (one overhead ground wire at the top, two phases on one side and a single phase on the other) supported by suspension insulators at tangent structures and strain insulators at tension structures. All tangent poles with a line angle of 2 degrees or less will be directly embedded in the soil. Any structure with a line angle of greater than 2 degrees will be supported on a drilled shaft concrete foundation. Special horizontally configured structures (H-frame or 3 pole structures) may be required to cross under any higher voltage circuits in the corridor.

Multi-pole (e.g., 3-pole and/or H-frame structures) are designed in a horizontal configuration, which maintains the transmission line conductors parallel to the ground. Horizontal configuration is sometimes desirable where the proposed transmission line crosses under other existing high voltage transmission lines. The horizontal configuration allows the 161-kV transmission line to be as low as possible at the crossing point, while still maintaining the required clearances set by the National Electrical Safety Code (NESC). Specific sizing of these structures will be determined after a Route Permit is issued and detailed engineering design is initiated. Dairyland anticipates use of H-frame or 3-pole structures only near the new Kellogg Substation location to cross under the 345-kV CapX2020 circuit.

Diagram 3-1. Typical 161-kV Transmission Structure Design

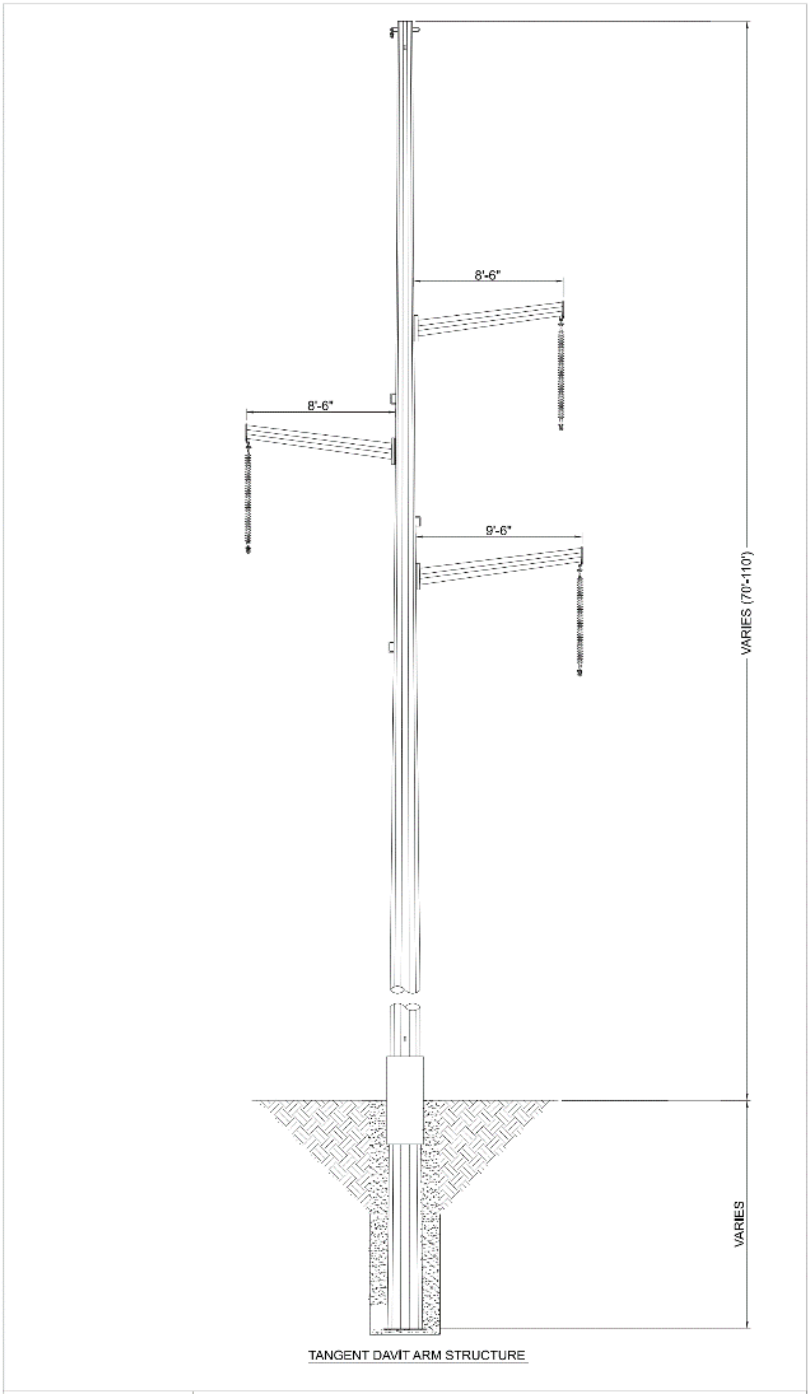


Diagram 3-2. Photo of Typical 161-kV Transmission Structure

A deadend structure is used to change direction and/or wire tension on a transmission line. Deadend structures are also used as a "storm structure" to limit the number of structures damaged by a cascading effect due to higher line tensions when a pole is knocked down by a storm. Deadend structures will be steel on concrete foundation structures.

3.2.2 Geotechnical Borings

Collection of geotechnical data will be necessary for final design of the transmission line and will be performed prior to construction activities. Soil borings are generally completed using rubber tired or tracked drill rigs, depending on site and access conditions. A pick-up truck or all-terrain vehicle (ATV) transports the crew and drilling supplies to the work area. Construction mats may be installed as needed based on site conditions and where access is required in wetland areas. Sites will be restored to pre-construction conditions upon completion of geotechnical investigations. Dairyland will obtain the applicable permits and approvals prior to conducting this work.

The Project is located in a region of Minnesota known to have karst features (see **Section 8.6.2**). The Minnesota Department of Natural Resources (MDNR), in its early coordination comments, noted the presence of karst in the Project area, noting that several karst features have been documented within 1,000 feet of the Project area (see **Appendix B**). Karst landscapes can develop where the dissolution of soluble bedrock can result in voids, sinkholes, springs, caves, or other such features at or near the surface.[13] This necessitates planning to identify karst features prior to construction, as well as development of a contingency plan should karst features be encountered during construction.

Dairyland will develop a Karst Survey Plan that will identify the locations of the proposed geotechnical investigations in relation to proposed structure locations, in addition to geophysical studies. Dairyland will coordinate with the MDNR regarding the Karst Survey Plan prior to execution of the geotechnical investigations.

Two geophysical methods will be performed due to different limitations associated with each method. The first geophysical method to be prescribed will be resistivity. This will involve using a multi-channel resistivity measurement array to create a ground resistivity image from the ground surface to the desired depth. Two resistivity measurements will be taken at each structure location, perpendicular to the other. Resistivity imaging is particularly useful with karst voids filled with clay. Clay is highly conductive and shows up clearly in resistivity images. When voids are filled with air or water, resistivity imaging is not as informative.

The second geophysical method that Dairyland will use is Multichannel Analysis of Surface Waves (MASW), which is a type of seismic survey that prepares images of below the ground surface by measuring the propagation velocities of surface waves generated by a seismic source, such as a sledgehammer striking a metal plate. MASW can be better at imaging karst voids when they are air or water filled.

Combining the resistivity and MASW imaging is a proven method for increasing confidence in karst void detection. Ideally, no unexpected voids will be encountered during construction.

[13] https://www.nps.gov/subjects/caves/karst-landscapes.htm

However, following completion of the studies noted above, Dairyland will develop a Karst Contingency Plan prior to construction that includes actions to take to mitigate any unexpected voids encountered during construction. Dairyland will work with the MDNR to develop the Karst Contingency Plan prior to construction.

3.2.3 Transmission Line Clearance Requirements

NESC sets minimum clearances of the conductors from structures adjacent to or within the ROW. NESC with U.S. Department of Agriculture (USDA) Rural Utilities Service (RUS) buffer clearance requirements are summarized in **Table 3-2**. For a 161-kV transmission line like the Project, the NESC minimum clearance under a 48 mile per hour (mph) wind is 9 feet. When there is no wind, the conductors must have a clearance of 9.5 to 12 feet from various structures as listed in **Table 3-2**. Dairyland Standard of Practice is to maintain a minimum of 12 feet horizontal distance with and without wind for lighting and traffic signal support and 14 feet for buildings with and without wind, which both exceed NESC and RUS requirements.

Table 3-2. NESC Rule 234 Clearance Requirements for 161-kV with 2-foot RUS Buffer

Risk Case	Minimum Separation (feet)	
	No Wind	NESC 48 mph wind
From a lighting support, traffic signal support, or support structure for another line.	9.5	9
From any other buildings, walls, projections, signs, chimneys, flagpoles, etc.	12	9

In addition, Dairyland typically requires the blowout to remain within the ROW under the same 48 mph wind condition. Approximately 5 feet are required from the blowout 161-kV conductors to the edge of ROW, in particular vegetation located at the edge of ROW. This is in accordance with the North American Electric Reliability Corporation (NERC) Standard FAC-003. The amount of blowout allowed depends on several factors including the span length and conductor type. On a typical 161-kV transmission line with a 700-foot span, blowout is approximately ten feet with 48 mph winds. The final line design will evaluate blowout based on actual span distances and the type of conductor being used.

3.2.4 Conductors

The single circuit structures will have three single conductor phase wires and one shield wire. It is anticipated that the phase wires will be 1590 thousand circular mil aluminum conductor steel supported (1590 Lapwing ACSS-HS) or a conductor with similar capacity. The shield wire will be 0.607-inch diameter optical ground wire.

3.2.5 Distribution Lines

On some projects, Dairyland has allowed other distribution utilities to attach distribution lines to its high voltage transmission line structures. This is commonly called “underbuild” or “underbuilt.” Xcel Energy and Peoples have existing distribution lines along State Highway 42

and County Road 84. Dairyland currently understands that Xcel Energy and Peoples plan to bury these lines where they are overtaken by the Project, rather than attach them to the new 161-kV structures installed by Dairyland. This work will be undertaken by Xcel Energy and Peoples and will not be conducted or directed by Dairyland. Dairyland will be responsible for reimbursing Xcel Energy and Peoples for costs incurred to bury their distribution lines.

3.2.6 Service Life

The service life of a transmission line is approximately 65 years, although based on experience, it is quite possible that the line and structures will last longer than 65 years.

3.2.7 Annual Availability

An average 161-kV transmission line is expected to be available approximately 99.9% of the year. Dairyland expects that this line should not be out of service for any extended period of time, other than the rare times when scheduled maintenance is required or when a natural event, such as a tornado, thunderstorm, or ice storm causes an outage.

3.2.8 Outages

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

3.2.9 Substation Design Considerations

The new Kellogg Substation will be designed to accommodate a full build out to a six-position 161-kV ring bus, eight-position 69-kV straight bus configuration, and two 161-/69-kV autotransformers. At the time of construction, three positions in the 161-kV ring bus, two positions in the eight-position 69-kV straight bus and one 161-/69-kV autotransformer will be built.

The scope of work at the Kellogg Substation includes:

- Installing three 161-kV circuit breakers, foundations, and control cables for transmission line switching;
- Installing two 69-kV circuit breakers, foundations, and control cables for transmission line switching;
- Installing one 161-/69-kV, 112 megavolt-ampere (MVA) autotransformer, foundation, and control cables;
- Installing 161-kV line steel dead-end structures with foundations to terminate the transmission lines;

- Installing a new building complete with auxiliary systems to house all necessary protection and control, communication, and Supervisory Data Control and Acquisition (SCADA) equipment;
- Installing fiber optic communication and SCADA equipment for system protection, remote control, and monitoring of the substation; and
- Installing disconnect switches, buswork, lightning protection structures, instrument transformers, surge arresters, and all appurtenances for a complete substation installation.

3.2.10 Future Expansion

Minnesota statutes and rules require the consideration of the potential for a project to accommodate future improvements to the transmission system. The Project is designed to maintain reliability requirements in the area and is sized to accommodate future expansion to the extent that future analysis determines it to be needed. The Kellogg Substation will be built for current system needs but designed to accommodate expansion if needed. Kellogg Substation will be designed for future expansion of the 161-kV and 69-kV bays and with enough space to add another transformer if needed. This will allow for future improvements, minimizing impacts to landowners and providing cost efficiency.

3.3 Project Costs

Estimated costs for the proposed Project are approximately $32.4 million (2023 dollars). Costs and tasks are divided into six phases as summarized in **Table 3-3**. Costs include permitting, land acquisition and ROW, design/Engineering, procurement of materials, construction costs, and contingency. If the Commission selects a route other than the Proposed Route or imposes non-standard construction conditions, the Project cost estimates may change. These cost estimates assume that the Applicant will pay prevailing wages for applicable positions for the construction of the Project. All capital costs for the Project will be borne by Dairyland.

Table 3-3. Estimated Costs for the Proposed Project

Project	Planning/ State Permitting	Land Acquisition/ Permits	Design	Procurement	Construction	Contingency	Total
Transmission Line	$1.3M	$1.4M	$1.5M	$5.9M	$8.1M	$2.0M	**$20.3M**
Substation	$0.2M	$0.2M	$0.3M	$5.5M	$4.8M	$1.1M	**$12.1M**
Total							**$32.4M**
Note: Totals do not add in all instances due to rounding.							

3.3.1 Transmission Line Construction Costs

In rural areas, single pole construction and easement costs are approximately $875,000 per mile (2023 dollars). The Project's costs are anticipated to be higher than this per-mile average due to the Proposed Alignment largely following existing roads and the need to avoid existing homes and other existing structures. Specialty poles and foundations add additional cost as the Proposed

Alignment does not always follow a perfectly linear path. Contingency has also been included due to the uncertainty around material costs and the lead times.

3.3.2 Substation Costs

Substation costs are fluctuating significantly. The most significant procurement item in a substation is the transformer. Over the last three years the costs to obtain a transformer have increased by a factor of two, and the lead times to acquire a transformer have almost tripled. Dairyland has and will continue to leverage its existing vendor agreements to contain project pricing and schedule. The current budget to construct a substation of this type and magnitude is currently at $12.1M including a contingency of $1.1M. Timing is critical as some of the lead times for equipment now exceed three years.

3.3.3 Operation and Maintenance Costs

Once constructed, operation and maintenance costs associated with the new transmission lines will be initially driven by controlling regrowth vegetation within the ROW. The estimated annual cost of ROW vegetation maintenance is estimated at $7,000 to $15,000 every five years. Transmission line maintenance for the Project is estimated at $30,000 to $35,000 annually. Storm restoration, annual inspections, and ordinary replacement costs are included in these annual operating and maintenance costs.

Over the life of the new substation, inspections will be performed regularly to maintain equipment and make necessary repairs. Transformers, circuit breakers, batteries, protective relays, and other equipment need to be serviced periodically in accordance with the manufacturer's recommendation. Routine compliance inspections will be performed, and the site must also be kept free of vegetation and drainage maintained. Dairyland's substation maintenance costs typically range from $20,000 to $30,000 annually.

3.3.4 Effect on Rates

The Commission's certificate of need rules require that an applicant provide the annual revenue requirements to recover the costs of a proposed project. Dairyland requested an exemption from this rule requirement. Instead, Dairyland committed to provide an explanation of how MISO will allocate the cost of the Project how MISO LRTP project costs are spread among users of the transmission grid.

The Project is part of the MISO LRTP Tranche 1 Portfolio, which has been determined by MISO to meet the criteria for being designated a Multi-Value Project (MVP) according to the MISO tariff. Therefore, the Project, along with all other projects in the LRTP Tranche 1 Portfolio, qualifies for regional cost allocation. MISO has determined that the LRTP Tranche 1 portfolio will be allocated to transmission customers in the MISO Midwest Subregion 14, where the portfolio is located and provides proximate benefits. The allocation of the Project's costs to transmission customers is governed by *Schedule 26-A, Multi-Value Project Usage Rate*[14], in the MISO tariff.

[14] https://www.misoenergy.org/planning/multi-value-projects-mvps/#nt=%2Fmultivalueprojecttype%3AMVP%20Analysis%20Reports%20(2022-Tranche%201)&t=10&p=0&s=Updated&sd=desc

The annual revenue requirement for the Project is determined pursuant to the formula rate in *Attachment MM - MVP Charge* in the MISO tariff. Loads withdrawing energy in the MISO Midwest Subregion pay the annual revenue requirement through *Schedule 26-A* charges, which are assessed based on actual monthly energy consumption by customers. Minnesota customers' allocated share of the annual revenue requirement is determined by the percent of total MISO energy used by Minnesota utilities, which has been estimated at approximately 15% to 20% based on MISO's posted 2021 energy withdrawal data.

MISO estimates Dairyland's local balancing authority will be allocated approximately 1.3% of the total costs for the Project with the rest of the costs being allocated to load in the remaining MISO Midwest Subregion. As a not-for-profit transmission and generation cooperative, Dairyland's costs are allocated to its member-owner distribution cooperatives based on a board approved formula rate methodology. This formula rate methodology allocates power supply and transmission costs by agreed upon applicable billing determinants. Each Dairyland member-owner distribution cooperative develops their own rates based on individual costs, including allocated costs from Dairyland, for their member-consumers via applicable customer rate class.

3.4 Project Schedule

Dairyland anticipates conducting site preparation activities at the Kellogg Substation site between June and July 2026. Then, Dairyland would build the Kellogg Substation and 161-kV transmission line between June 2027 and July 2028. The start of construction is dependent on the receipt of all required permits and approvals. Dairyland anticipates that the Project will be energized in July 2028. **Table 3-4** summarizes the permitting schedule that would enable the Project to be in service in time for CapX2020 to install the second circuit.

Table 3-4. Anticipated Permitting Schedule

Certificate of Need and Route Permit application filed	March 2024
Scoping meeting	June 2024
Public hearing	December 2024
Commission Decision	April/May 2025

3.5 Proposed Ownership

Dairyland will own the 13.3-mile 161-kV transmission line and the 10.8 acres associated with the 4-acre Kellogg Substation.

4.1 Chapter Overview

The Project's primary purpose and need is to maintain existing transmission grid capabilities and reliable service to area communities while relocating the existing 161-kV line from the CapX2020 structures to make way for a new 345-kV line – the Mankato to Mississippi River 345-kV Transmission Project – that will require use of the CapX2020 poles. The primary purpose and need fall into four areas are listed below and in more detail in **Sections 4.1 through 4.5**.

- Need to Remove Existing Line from CapX2020 Structures
- Need to Maintain 161-kV Line for Area Reliability
- Need to Maintain 161-kV Transmission Capacity in the Area
- Need for the New Kellogg Substation

Sections 4.6 through 4.11 address additional Certificate of Need filing requirements.

4.2 Need to Relocate the Existing 161-kV Line

Dairyland's existing LQ34 161-kV circuit is one of four 161-kV transmission lines that have been supplying power to local communities in the Rochester/Alma area for decades.[15] In 2012, the Commission approved a route permit for the CapX2020 Project.[16] For approximately 13 miles between the communities of Plainview and Kellogg, the CapX2020 Project was co-located with the LQ34 line as a double circuit (161-/345-kV) transmission line carrying both the Dairyland 161-kV line and the CapX2020 345-kV line. However, recognizing future capacity needs, the CapX2020 Project was "upsized" at approval and constructed to be capable of carrying two circuits of 345-kV lines, with the Commission recognizing at that time that the 161-kV circuit would need to move off of the CapX2020 Project at some future date.[17]

In July 2022, MISO approved an LRTP portfolio including a new Wilmarth-North Rochester-Tremval 345-kV transmission line (now referred to as the Mankato to Mississippi River 345-kV Transmission Project).[18] This new 345-kV line would utilize the double circuit capability of the CapX2020 system between North Rochester, Minnesota, and Alma, Wisconsin. Therefore, the 161-kV circuit must be removed and relocated from the CapX2020 structures to allow the second circuit to be operated at 345-kV.[19]

[15] Amanda King Direct Testimony, *In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and Others for Certificates of Need for Three 345 kV Transmission Lines with Associated System Connections*, Docket No. E002/CN-06-1115 (May 15, 2008) at 9.

[16] Order Issuing Route Permit as Amended, *In the Matter of Xcel Energy's Application for a Route Permit for the CapX 2020 Hampton-Rochester-La Crosse High Voltage Transmission Line,* Docket No. E002/TL-09-1448 (May 30, 2012).

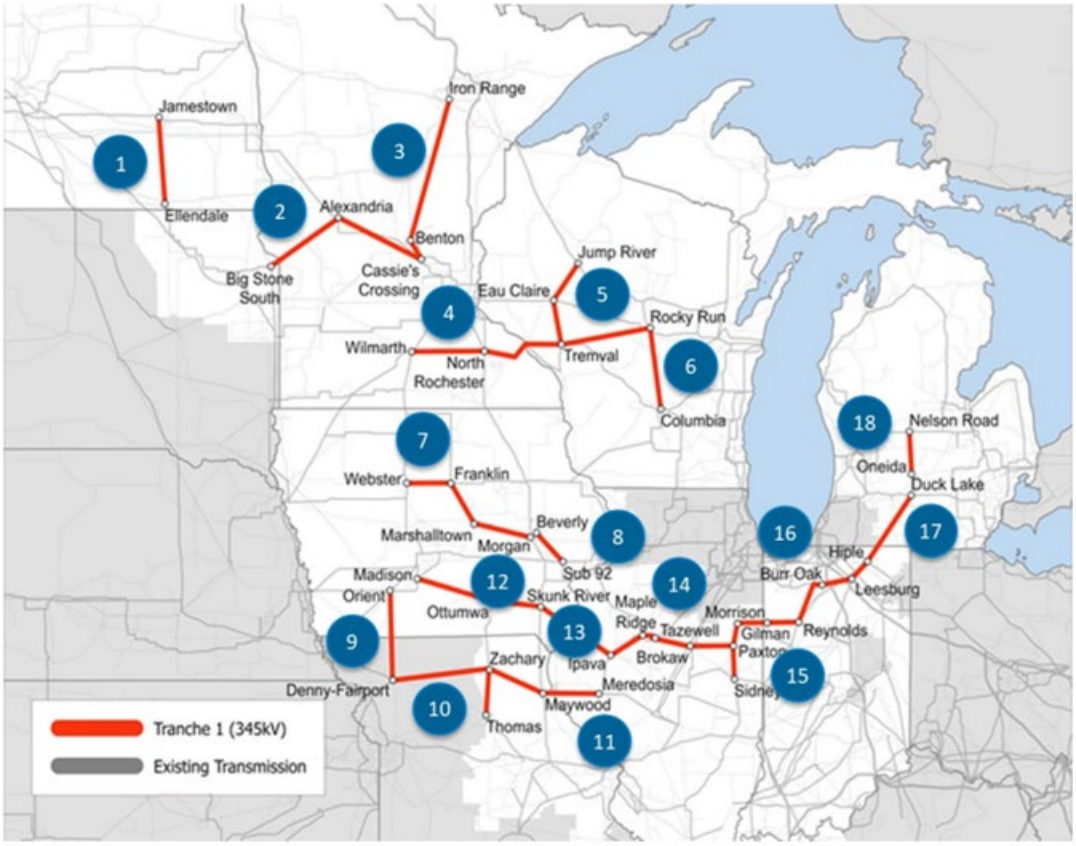
[17] Order Granting Certificates of Need with Conditions, *In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and Others for Certificates of Need for the CapX 345-kV Transmission Projects*, Docket No. E002/CN-06-1115 (May 22, 2009).

[18] *See* MTEP21 Report Addendum: Long Range Transmission Planning Tranche 1 Executive Summary (2022), https://cdn.misoenergy.org/MTEP21%20Addendum-LRTP%20Tranche%201%20Report%20with%20Executive%20Summary625790.pdf.

[19] *See* Docket No. E002/CN-22-532.

The need to maintain but relocate the 161-kV line was known at the time the CapX2020 Project was approved and confirmed again as part of MISO's LRTP process. In July 2022, MISO approved the first phase or "tranche" of the LRTP. The MISO LRTP Tranche 1 Portfolio consists of 18 transmission projects. The Mankato to Mississippi River 345-kV Transmission Project was identified by MISO as project number four (**Diagram 4-1**). The MISO LRTP Tranche 1 Portfolio includes approximately 2,000 miles of new and upgraded high-voltage transmission lines equaling approximately $10 billion in investment, to enhance connectivity and maintain adequate reliability for the Midwest by 2030 and beyond.

Diagram 4-1. MISO LRTP Tranche 1 Portfolio



Overall, the LRTP Tranche 1 Portfolio is needed to:

- Address reliability violations as defined by the NERC at over 300 different sites across the Midwest. In addition, increase transfer capability across the MISO Midwest subregion to allow reliability to be maintained for all hours under varying dispatch patterns driven by differences in weather conditions.

- Provide $23.2 billion in net economic savings over the first 20 years of the LRTP Tranche 1 Portfolio's service, which results in a benefit to cost ratio of at least 2.6. This amount

increases to $52.2 billion in net economic savings over 40 years, resulting in a benefit to cost ratio of 3.8.[20]

- Support the reliable interconnection of approximately 43,431 MW in new, primarily renewable, generation capacity across the MISO Midwest subregion – 8,339 MW of which is in Minnesota and the surrounding region.

In addition to the 18 transmission lines identified in **Diagram 4-1**, MISO also identified lower voltage projects that are necessary to enable and fully recognize the benefits of the Tranche 1 projects. The Wabasha Relocation Project was included in MISO's 2021 Transmission Expansion Plan (MTEP21) Appendix A as part of Project ID 23371.[21] Because this Project is required to accomplish and implement the overall LRTP Tranche 1 Portfolio and realize the benefits demonstrated by MISO, costs of the Project will be shared within the MISO region.

4.3 Need to Maintain 161-kV Line for Area Reliability

As noted above the existing LQ34 line 161-kV transmission line has been serving the local area since the 1950s. It provides several important reliability purposes, including reliably providing a source of power to the City of Rochester, in addition to maintaining high voltage connections to substations serving the 69-kV transmission grid that ultimately brings power to the load distribution network.

The LQ34 161-kV line connects to Dairyland's existing Wabaco Substation. The Wabaco Substation is a 161-/69-kV transmission substation connecting the 161-kV and 69-kV transmission grids northeast of Rochester, Minnesota. In the existing transmission system, an outage on a section of the existing LQ34 161-kV line between the Rochester, Wabaco and Alma substations could be isolated using the existing remote control switches at the Wabaco Substation and a 161-kV source (from Rochester or Alma substations) and could be restored to the Wabaco Substation within minutes. If the LQ34 line is not relocated, the Wabaco Substation would be reduced to a single 161-kV transmission source from the Rochester Substation with no backup option for powering the 69-kV system served from the Wabaco Substation in the event that the Rochester Substation source was to go out of service. Substations served by the 69-kV network out of the Wabaco Substation would experience a decrease in local reliability and redundancy if the Wabaco-Alma 161-kV line is not maintained in its current state.

Similarly, the existing LQ34 161-kV line serves an important function providing power import capability to the City of Rochester, Minnesota. It is one of six 161-kV lines serving the City of Rochester. Maintaining the 161-kV connection provided by the Project will allow it to continue to function as a source of power to the Rochester area.

[20] Values as of July 2022. While market forces, have driven project costs to increase since 2022, the same forces will also cause benefits to increase.

[21] *See* MTEP21 LRTP Addendum Appendix A (2022). https://www.misoenergy.org/planning/transmission-planning/mtep/#nt=%2Fmtepstudytype%3AMTEP%20Reports&t=10&p=0&s=FileName&sd=desc

4.4 Need to Maintain 161-kV Transmission Capacity

Beyond the local reliability benefits summarized in **Section 4.3,** within the region, the Wabaco-Alma 161-kV transmission path represents a contiguous transmission system connecting the 161-kV transmission grid in southeastern Minnesota with the 161-kV transmission grid in western Wisconsin. The substations at Rochester and Alma serve as hubs to connect the 161-kV grid and serve an overall dual function of both transporting power on subregional basis to where it is needed as well as connecting 161-kV substations that serve the 69-kV transmission grid that ultimately brings the power to the distribution substations and end use consumers. Several hundred MW of power can flow on the existing Wabaco-Alma 161-kV transmission path. All previous transmission studies, including the MISO LRTP, yearly MTEP and ongoing MISO Generation Interconnection Queue (GIQ) studies to interconnect new generators have assumed this 161-kV transmission capacity to be in place to transport power. Not maintaining a Wabaco-Alma 161-kV transmission path would reduce the amount of transmission capacity and require the power to be rerouted elsewhere. MISO's LRTP report cites a driver for LRTP 4, 5 and 6 is "*...strong flows West to East across Minnesota to Wisconsin and a need for outlet of those renewables in times of high availability to deliver that energy to load centers in MISO.*" [22] Included in the available outlet capacity and transmission connection between Minnesota and Wisconsin is the Wabaco-Alma 161-kV transmission line. Not maintaining the Wabaco-Alma 161-kV path between Minnesota and Wisconsin may cause congestion and could reduce the benefits documented in the MISO LRTP analysis.

Due to a natural geographical constraint for transmission lines, like the Mississippi River, there are many miles between transmission lines crossing the river. The nearest high voltage transmission lines capable of transferring bulk power are at least 60 miles north or south of the Mississippi River transmission crossing at Alma. The existing Wabaco-Alma 161-kV line provides transmission capacity to efficiently move power from where it is produced to where it is consumed. While the LRTP 4 project will add a high voltage transmission line to the area, the lower voltage transmission must remain to provide transmission paths in the event of an outage of the higher voltage transmission and to serve the function of being a network of 161-kV transmission lines that move power and connect to the 69-kV grid that ultimately delivers power to the end use consumers. Removal of the 161-kV transmission line would remove existing transmission capacity, resulting in increased power flows elsewhere, leading to potential transmission congestion in the MISO market and impact existing LRTP, MTEP, and GIQ studies that were all completed and approved with the existing 161-kV transmission capacity in place. In order to remove the circuit from the CapX2020 structures and maintain the existing transmission capacity in this area, a replacement 161-kV transmission circuit as provided by the Project must be built to provide electrical connectivity between the Wabaco Substation and Alma Substation.

4.5 Need for the Kellogg Substation

The new Kellogg Substation is required because the new Mankato to Mississippi River 345-kV Transmission Project's circuit across the Mississippi River will eliminate Dairyland's existing LN340 69-kV transmission line crossing of the Mississippi River and connection into the Alma

[22] *See* MTEP21 Report Addendum: Long Range Transmission Planning Tranche 1 Page 30 (2022), https://cdn.misoenergy.org/MTEP21%20Addendum-LRTP%20Tranche%201%20Report%20with%20Executive%20Summary625790.pdf.

Substation in Wisconsin. The new Kellogg Substation will supply the local 69-kV transmission grid in southeast Minnesota, which is a source of electrical power for serving end use consumers. The existing area is served by 161- to 69-kV substations at Wabaco, Alma, and Harmony (near Harmony, Minnesota). Removal of the connection to Alma Substation requires a new high voltage connection and is the primary driver for a Kellogg Substation connecting the Wabaco-Alma 161-kV line to the LN340 69-kV transmission line on the west side of the Mississippi River. The LN340 connects to Dairyland's 69-kV transmission grid in southeastern Minnesota. Several 69-kV transmission lines are networked in southeastern Minnesota relying on the high voltage substations at Wabaco, Alma and Harmony as sources of power to serve consumers and act redundantly to back each other up in the event of an outage. Transmission lines serving communities in the southeast Minnesota area include St. Charles, Altura, Rollingstone, Rushford, Stockton, Lewiston, and Utica.

4.6 Project Area Load Data

The Project is needed to support regional transmission system reliability as the MISO region undergoes baseload generator fleet transition and increasing renewable energy resource penetration levels. As the regional energy landscape continues to evolve, transmission reinforcements like the Mankato to Mississippi River 345-kV Transmission Project and other grid enhancements to implement the LRTP Tranche 1 Portfolio like the Project are necessary to serve current demand as well as projected future demand in southeastern Minnesota and the MISO region.

Dairyland has member distribution cooperatives in four states. Dairyland's Minnesota distribution cooperatives include Peoples, MiEnergy, and Freeborn Mower Electric Cooperative (Freeborn-Mower). Dairyland prepares a load forecast every other year in compliance with RUS guidelines as stated in 7 Code of Federal Regulations (CFR), Part 1710, Subpart E of the Federal Register. This load forecast is approved by Dairyland's Board of Directors and RUS. The load forecast includes projected peak load and energy growth for its 24-member distribution cooperatives. The most recent load forecast was completed in November 2022. For its Minnesota distribution cooperatives, Dairyland projects a peak load and energy growth of 2.3% over the years of 2022-2041. These growth rates include the impact of the integration of Peoples, MiEnergy, and Freeborn-Mower's Southern Minnesota Energy Cooperative (SMEC) load into Dairyland beginning in August 2025.

In addition to supporting reliability in southeastern Minnesota, the Project is needed to support the broader MISO region and enable the Mankato to Mississippi River 345-kV Transmission Project to be constructed. MISO's base demand forecast is developed by aggregating each MISO member's forecasts. To consider a broader range of potential outcomes to "bookend" uncertainty, MISO creates multiple demand and energy forecasts from the base forecast in its Futures Report. The load forecasts used in MISO's Futures Report consider different assumptions for demand response, energy efficiency, and distributed generation (e.g., behind-the-meter solar) and differing impacts of electrification. MISO's demand and energy forecasts are developed for each of MISO's ten Local Resource Zones to consider regional differences. MISO's ten Local Resource Zone forecasts are then aggregated to a MISO-wide forecast.

The MTEP21 Futures' gross peak demand and annual energy forecasts for the MISO Market Footprint are provided in **Diagram 4-2** and **Diagram 4-3**, respectively. The associated peak demand and annual energy compound annual growth rates (CAGR) are provided in **Table 4-1**. It should be noted that MISO's demand forecast used in planning modeling is a gross forecast, which does not include the net reductions from demand response or distributed generation as is done in the Dairyland's load forecast. MISO's planning process explicitly models demand response and distributed generation as a supply-side resource. Additional details on the MTEP21 Futures and load forecast can be found in the MISO 2021 Futures Report. [23]

Diagram 4-2. MISO Market Footprint MTEP21 Futures Coincident Peak Load Forecast (GW)[24]

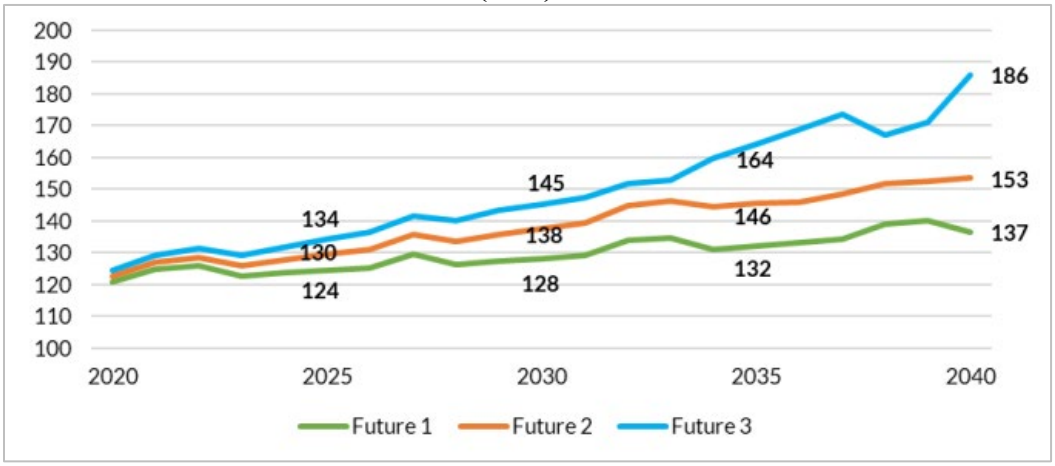
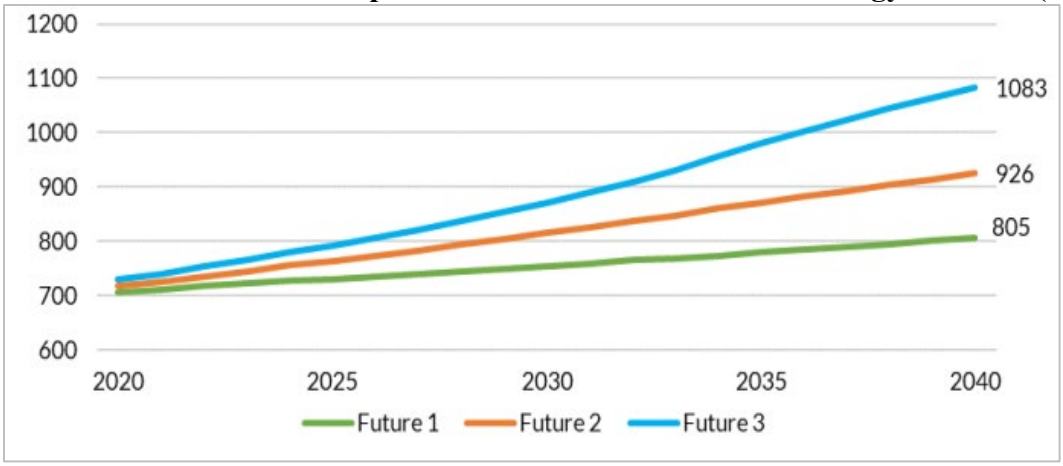


Diagram 4-3. MISO Market Footprint MTEP21 Futures Annual Energy Forecast (TWh)[25]



[23] https://cdn.misoenergy.org/MISO%20Futures%20Report538224.pdf.

[24] *Id.*

[25] *Id.*

Table 4-1. MTEP21 Futures 20-Year CAGR

MTEP21 Future	Annual Demand 20-Year CAGR	Annual Energy 20-Year CAGR
Future 1	0.60%	0.48%
Future 2	0.97%	1.09%
Future 3	1.41%	1.71%

4.7 Estimated System Losses

Losses are a measure of the energy flow across the system that is converted into heat due to impedance within the elements of the transmission system. It is necessary for utilities to provide enough generation to serve their respective system demands (plus reserves), considering the loss of the energy before it can be usefully consumed. When system losses are reduced or minimized, electrical energy is delivered to end users more efficiently, helping to defer the need to add more generation resources to a utility's portfolio. Therefore, system loss reduction results in monetary savings in the form of less fuel required to meet the system demand plus potentially delayed capital investment in generation plant construction.

Each new transmission line that is added to the electric system affects the losses of the system. In determining the losses associated with a particular transmission project, it is not reasonable to consider only the project's transmission facilities and calculate losses directly from operation of those new transmission facilities. Rather, it is necessary to look at the total losses of the Dairyland system that result with and without the proposed project. The losses were therefore studied using the larger Dairyland system for loss evaluation. In its Exemption Order, the Commission authorized Dairyland to provide line loss data for the system as a whole, rather than line loss data specific to an individual transmission line.[26]

Dairyland used power flow software PSS/E to calculate the losses at both peak demand and shoulder with high wind cases. The results are shown below in **Table 4-2**. The existing transmission system includes all projects with in-service dates prior to 2028.

Table 4-2. Calculated Project Peak Demand Loss Savings

Scenario	System Losses (MW)
2028 Summer Peak Case	
Existing Transmission System	34.2
System with Project	34.1
Difference	-0.1
2028 Shoulder with High Wind Case	
Existing Transmission System	44.8
System with Project	44.2
Difference	-0.6

[26] Exemption Order at 13 of 23.

The table shows that the Project's proposed transmission infrastructure results in a small amount of decreased losses on the electrical system. Under summer peak demand conditions, the losses incurred on the Dairyland transmission system are 0.6 MW less when the Project is energized as compared to the existing system configuration. The results are reasonable as the Project's primary need is to move off of the CapX2020 poles. The Project conductor will result in a slightly reduced impedance and lower losses.

Because demand for electric power is not constant and losses are related to the square of the current flowing through the transmission lines in the electric system, the losses will change over time, increasing as demand increases and decreasing as demand decreases. Because losses change over time, there is no precise method to calculate average annual loss reductions. One common method is to use the loss savings at peak demand to estimate the average annual loss savings based on the following formula:[27]

$$Loss\ Factor = (0.3 \times Load\ Factor) + (0.7 \times Load\ Factor^2)$$

$$Annual\ Loss\ Savings\ (MWh) = (Loss\ Factor \times Peak\ Loss\ Savings) \times 8760\ hours/year$$

Assuming a load factor of 55% and using the calculated loss savings at peak demand, the Project will reduce average transmission losses by an estimated 1,980 megawatt-hours (MWh) annually.

4.8 Impact of Delay

If the Project is delayed, there will be both regional and local reliability consequences. Delay of the Project could delay the in-service date of the Mankato to Mississippi 345-kV Transmission Project. The Mankato to Mississippi 345 kV Transmission Project relieves existing congestion on the system and is estimated to provide up to $2.1 billion in economic savings across the MISO footprint over the first 20 years that it is in service and up to $3.8 billion in economic savings across the MISO footprint over the first 40 years that it is in service.[28]A delay could also jeopardize Minnesota and other MISO states in meeting clean energy policy objectives given that the MISO Tranche 1 Portfolio provides critical infrastructure needed to meet Minnesota's carbon-free by 2040 standard and its interim targets.

In addition to the regional impacts, a delay in the Project will also have local impacts. The Project is needed to maintain reliability in southeastern Minnesota and western Wisconsin. As discussed in **Sections 4.3 and 4.4**, the Project is essential to maintaining reliable service to communities including St. Charles, Altura, Rollingstone, Stockton, Lewiston, and Utica.

Dairyland and MISO have determined that this Project is needed to maintain a safe and reliable electric system in this region.

[27] Gönen, Turan. *Electric Power Distribution System Engineering* at 55, 58-59, McGraw Hill (1986).

[28] *See In the Matters of the Application for a Certificate of Need and Route Permit for the Mankato – Mississippi River Transmission Project,* MPUC Docket Nos. E002/CN-22-532 and TL-23-157.

4.9 Effect of Promotional Practices

Dairyland has not conducted any promotional activities or events that have triggered the need for the Project. Rather, the Project maintains reliable service by ensuring that the reliability and generation outlet functions served by the existing LQ34 161-kV line continue to be available to serve the region and local communities.

4.10 Effect of Inducing Future Development

The Project is not intended to induce future development, but rather is intended to maintain reliable service to the regional and local communities.

4.11 Socially Beneficial Uses of Facility Output

The purpose of the Project is to maintain critical transmission reliability for Dairyland's members, local communities, and the broader MISO region. The existing LQ34 161-kV line has served as a backbone component of the local transmission grid since the 1950s. It is used to deliver power in the Rochester-Alma area, provide critical connections to local 69-kV systems that serve area towns, and provide generation outlet to the region. Each of these functions continues to support reliable service in the area and ensure local homes and businesses can rely on the electric system for day-to-day needs.

5 ALTERNATIVES TO THE PROJECT

5.1 Analysis of Alternatives

Minn. Stat. § 216B.243, subd. 2(6) requires that when assessing need, the Commission evaluate "possible alternatives for satisfying the energy demand or transmission needs including but not limited to potential for increased efficiency and upgrading of existing energy generation and transmission facilities, load-management programs, and distributed generation." The Commission's rules also require an applicant for a Certificate of Need to discuss in an application a number of alternatives. Minn. R. 7849.0260 states:

> Each application for a proposed large HVTL must include:
>
> B. a discussion of the availability of alternatives to the facility, including but not limited to:
>
> (1) new generation of various technologies, sizes, and fuel types;
>
> (2) upgrading of existing transmission lines or existing generating facilities;
>
> (3) transmission lines with different design voltages or with different numbers, sizes, and types of conductors;
>
> (4) transmission lines with different terminals or substations;
>
> (5) double-circuiting of existing transmission lines;
>
> (6) if the proposed facility is for DC (AC) transmission, an AC (DC) transmission line;
>
> (7) if the proposed facility is for overhead (underground) transmission, an underground (overhead) transmission line; and
>
> (8) any reasonable combinations of the alternatives listed in subitems (1) to (7).

Minn. R. 7849.0340 also requires an applicant to consider the option of not building the proposed facility.

This chapter discusses the various applicable alternatives to the Project that Dairyland considered, including: 1) generation; 2) demand-side management; 3) various transmission alternatives including upgrading the existing system, alternative transmission configurations, endpoints, and voltages; and 4) a no-build alternative. As discussed below, none of these alternatives is a more reasonable and prudent alternative to the Project.

5.2 Generation

Dairyland considered generation solutions, including new peaking generation, distributed generation, renewable generation, and battery energy storage. To be a viable alternative to the Project, a generation (or combination of alternatives) must, at a minimum, address the need for the

Project by being available for reliability and at least maintaining or adding transmission capacity to transfer power including acting as an outlet for local generation. This section will provide discussion of each of the generation and non-wires solutions considered by Dairyland.

5.2.1 Peaking Generation

Dairyland considered peaking generation as an alternative to the Project. Peaking generation means dispatchable generation that is interconnected to the transmission system and is able to generate when called upon, most likely using natural gas as the fuel source. Peak generation can be used to meet resource requirements but also as a form of congestion management to relieve a transmission overload by injecting power at the generator's point of interconnection.

Peaking generation can be called on and will generate as needed. The Project as proposed is for a 161-kV transmission line and new substation that generally have availability of over 99.99% to transmit power as opposed to a peaking generation facility that is called on for a small number of hours of the year. In order to meet the Project purpose and need as described in **Section 4.0**, a peaking generator would need to generate at all times to be available for reliability in the event the Rochester-Wabaco line were to go out of service unexpectedly. Additionally, part of the justification to maintain a Wabaco-Alma 161-kV path is for transmission capacity and generation outlet. Adding a generator does not add transmission capacity or generation outlet but may make transmission capacity constraints and congestion worse. Therefore, the addition of new peaking generation is not a more reasonable and prudent alternative to the Project.

5.2.2 Distributed Generation

Dairyland considered distributed generation as an alternative to the Project. Distributed generation means dispatchable generation, most likely run on natural gas or other fossil fuels, which is connected to the local distribution system and able to run continuously when called upon. Renewable distributed generation and battery energy storage are also discussed in subsequent sections. Fossil-fueled distributed generation has the same fundamental limitations as transmission-connected peaking generation, as discussed in **Section 5.2.1,** and likely at a greater cost if consisting of a number of smaller generators in diverse locations. Therefore, the addition of new fossil-fueled distributed generators is not a more reasonable and prudent alternative to the Project.

5.2.3 Renewable Generation

Dairyland considered renewable generation as an alternative to the Project. Renewable generation, in this context, means either solar or wind generation. The renewable generation may be interconnected at a single location on the transmission system or at multiple locations on the transmission or distribution system. To achieve the level of availability and provide reliability, to replicate replacing a transmission line, the power needs to be available when called upon in the amount required to provide power in the event of an outage to the Rochester-Wabaco transmission and replace power that would be provided by the Project. Because renewable generation is dependent on natural events, such as sunlight or wind speed, and cannot be dispatched if those conditions are not met, neither wind nor solar generation alone is a viable alternative to the Project.

Energy from these resources is not necessarily available at the times when it would be most necessary to support local reliability. For renewable generation to be an alternative to the Project, it would need to be available at all times of the day. The non-dispatchable nature of renewable generation is not a viable alternative to the Project. The combination of renewable generation with energy storage is discussed below in **Section 5.2.4**.

5.2.4 Energy Storage

Dairyland considered energy storage, both by itself and combined with new renewable generation, as an alternative to the Project. Energy storage, in this context, means a battery or some other energy storage technology capable of being charged and discharged when called upon to do so as long as there is sufficient energy available. In order to address voltage stability concerns and related thermal overloads for a single contingency, a significant amount of storage and reactive support is necessary. For shorter duration outages, eight-hour battery storage would be adequate. For longer duration outages (days), storage could be paired with solar to allow recharging of battery storage during daylight hours.

As summarized **Section 5.2**, a generation or energy storage solution would need to be available to provide a source of power at all times and for varying lengths of time to replace the power a transmission line would provide such as the Project. The limited duration of energy storage could create the risk of the energy storage running out of power and a scenario of reduced reliability with no remaining energy storage at a time of need. Further, as outlined in this **Section 4.4**, the Project must provide transmission capacity for power transfers and generation outlet. Like energy storage, adding more generation, regardless of the source, does not add transmission capacity, but conversely could consume local transmission capacity, impacting other generators and existing transmission capacity for transferring power and serving end use members. The addition of new energy storage in the Project area is not a more reasonable and prudent alternative to the Project.

5.3 Demand Side Management and Conservation

Dairyland considered demand-side management and conservation as alternatives to the Project. In this context, demand side management and conservation are assumed to encompass all forms of peak shaving programs, such as interruptible loads and dual fuel programs, as well as more general energy conservation programs, such as energy-efficiency rebates. Dairyland has a robust energy conservation and demand side management program. The state of Minnesota's Energy Conservation and Optimization Act (ECO) acts as a modernized Conservation Improvement Program (CIP) to provide a more comprehensive approach to energy conservation and efficiency programs. Under this program, Dairyland provides support to its Minnesota member co-ops through energy efficiency rebates to promote beneficial electrification and energy efficiency upgrades. Dairyland's existing LQ34 161-kV transmission line has provided reliable service since before Dairyland began offering its CIP/ECO programs, and although conservation programs will continue to be implemented in the Project area to encourage efficient use of electricity, these programs cannot replace or eliminate the need to continue to operate the 161-kV line in this area. For these reasons, solutions involving demand-side management and conservation are not a more

reasonable and prudent alternative to the Project. Additional information regarding Dairyland's most recent CIP/ECO Plan are available in Docket No. CIP-22-24.[29]

5.4 Upgrade of Existing Facilities

Dairyland considered upgrading existing transmission facilities as an alternative to the Project. To be a viable alternative to the Project, an alternative would need to address all of the Project purpose and needs as documented in **Section 4**. An alternative that upgrades existing facilities must, at a minimum, address the needs for the Project by moving the existing transmission infrastructure to allow for the existing 161-kV line conductor position on the CapX2020 poles to be utilized for the Mankato to Mississippi River 345-kV Transmission Project. Additionally, the upgrade of existing facilities alternative would need to maintain high voltage sources to the southeastern Minnesota 69-kV transmission system and finally, maintain existing transmission capacity provided by the 161-kV transmission system.

An upgrade to the existing 161-kV transmission line between Wabaco and Alma is not a viable alternative because it does not accomplish the need to move the transmission circuit off of the CapX2020 structures to allow for the Mankato to Mississippi River 345-kV Transmission Project to utilize those poles as a 345-kV double circuit. Any alternative that would accomplish this (moving off of the CapX2020 poles) would be considered to be the Project Dairyland is proposing in this docket, namely, moving and constructing the 161-kV transmission line on new ROW.

Any upgrades to the 69-kV or 345-kV system are covered in **Section 5.4**. The nearest 161-kV transmission facilities connecting Minnesota to Wisconsin is 83 miles to the north near St. Croix Falls, Wisconsin (note there are several lower voltages 69-kV and 115-kV connections) and electrically serves a different part of the transmission grid. To the south, the nearest transmission line is 62 miles away and provides a 161-kV transmission path between southeastern Minnesota and Western Wisconsin, similar to the existing Wabaco to Alma 161-kV line. For an upgrade of this facility to be considered a viable alternative to the Project it would need to address the Project purpose and needs outlined earlier. This includes maintaining reliability by providing high voltage sources to the southeastern Minnesota 69-kV transmission system and providing 161-kV transmission capacity. An upgrade of the 161-kV transmission facilities between the Harmony Substation and Genoa Substation in Genoa, Wisconsin would not provide a second 161-kV source to the Wabaco substation and alleviate the reliability issues created by not having a Wabaco to Alma 161-kV transmission line. Further, the Wabaco to Alma 161-kV line provides at least 300 MW of transmission capacity, allowing for the transfer of power and local generation outlet. If the Project were not built and existing facilities needed to be upgraded, at least 300 MW of transmission capacity would need to be added in this geographical location to be similar to the attributes provided by the Wabaco to Alma 161-kV line. The nearest 161-kV transmission is 83 miles to the north and 60 miles to the south and are not electrically similar to the geographic location of the Wabaco to Alma 161-kV line.

If the Project were not built, but needed to vacate the CapX2020 poles, any upgrade to existing facilities would not replicate the reliability the existing 161-kV Wabaco to Alma transmission line

[29] *See* Electric Conservation Improvement Program (CIP) 2021 Results and 2023 Plan, MPUC Docket CIP-22-2 (December 7, 2022), eDockets ID 202212-191179-02.

provides and would not be able to accomplish similar transmission capacity attributes in a similar geographic location as the Wabaco to Alma 161-kV transmission path provides. For these reasons, upgrading of existing facilities is not a viable alternative to the Project.

5.5 Alternative Voltages

5.5.1 Lower Voltage Alternatives

Dairyland considered lower voltage solutions involving additions of 69-kV, 115-kV, or 138-kV equipment to the local transmission system as an alternative to the Project.

An alternative that utilizes the 69-kV transmission system instead the Project was analyzed to review its ability to meet the Project's purpose and need. A 69-kV alternative was developed that connects the Wabaco 69-kV substation with a new 69-kV substation near Kellogg. The 69-kV alternative would include the following:

- A new 69-kV termination at Wabaco substation
- New three position 69-kV substation near Kellogg
- New 19-mile 69-kV line on new ROW between the Wabaco and Kellogg substations

A proposed 69-kV alternative would need to be on new ROW, allowing for the CapX2020 poles to be used for the Mankato to Mississippi River 345-kV Transmission Project. The 69-kV line would add a transmission line into Wabaco, and it would maintain the Alma Substation source to southeastern Minnesota via the 69-kV Mississippi River transmission crossing. There are three primary reasons Dairyland is not pursuing a lower voltage alternative that installs new 69-kV infrastructure via a new substation and a new 69-kV transmission line.

1. **A 69-kV line cannot maintain the existing level of transmission capacity and generation outlet as a 161-kV line.**

Part of the purpose and need of the Project is to maintain existing transmission capacity and generation outlet provided by the 161-kV line and maintain 161-kV connections as sources of power to the Wabaco substation in southeastern Minnesota. As proposed as part of the Project, the Wabaco-Kellogg-Alma 161-kV line will have a summer capacity of 321 MVA of capacity in the summer and up to 407 MVA in the winter under normal conditions. The limit can increase for a short period of time as an emergency limit. Conversely, Dairyland's highest capacity 69-kV line is constructed with a high capacity 69-kV conductor and has a summer/winter normal capacity of 120/157 MVA, respectively. The 161-kV limits are over 2.5 times that of the 69-kV limits for transporting electrical power. This is primarily due to a lower voltage resulting in higher current levels and an inability to transfer equivalent amounts of power as compared to a 161-kV line. As a result, although this 69-kV alternative would provide a contiguous transmission path from southeastern Minnesota to Alma in western Wisconsin, the capacity would be significantly less than the Project. As outlined in **Section 4.4**, the generation outlet capacity of a 69-kV line would not align with assumptions utilized in all previous MISO studies, assessing generation outlet for local generators connected to the grid, nor would it match the assumed capacity utilized in the MISO Tranche 1 LRTP Portfolio. These studies assumed the transmission capacity provided by

the Project was in place as power transfers occurred due to the changing dispatch pattern of renewables.

2. 69-kV transmission is not an efficient way to transfer power

A 69-kV line cannot efficiently transfer the same amount of power as the Project. Related to a 69-kV path being of lower capacity, the calculation for apparent power is summarized below and is a function of voltage and current. As voltage decreases, the current will increase to maintain the same amount of electrical power. A lower voltage 69-kV system of equal power capacity to the Project would require significantly more current to transfer the same amount of power. An increase in current flow requires higher capacity equipment that is higher in cost and size as well. In the case of a 69-kV option, equipment with the same ampacity as a 161-kV line is not possible.

$$Apparent\ Power\ (S) = Voltage(V) * Current(I)$$

Additionally, a lower voltage alternative is not as efficient. An electrical power system experiences losses as dissipation of heat in the line and equipment. System losses are a function of the square of the current multiplied by the line resistance, the 69-kV system can experience significantly more losses than utilizing the 161-kV system to transfer power due to an increase in current when trying to achieve a similar level of power transfer at a lower voltage.

$$Power\ System\ Losses\ (W) = Current^2(I) * Resistance(R)$$

3. A lower voltage alternative does not maintain the high voltage transmission network in the Alma area

The 69-kV alternative as proposed does not maintain the 161-kV line into Alma from Wabaco and the transmission capacity that line provides. In this alternative, the 69-kV line ends at a new 69-kV substation in Minnesota. In order to develop an electrical alternative closer to the Project and provide an increase in capacity into Alma, a new river crossing would be required to make it electrically similar. Based on experience from the development of the CapX2020 345-kV line, a new Mississippi River transmission crossing through the U.S. Fish and Wildlife Service (USFWS) Upper Mississippi River National Wildlife and Fish Refuge is highly unlikely to be approved.

Transmission operated at 115-kV and 138-kV are also lower voltage alternatives than the Project's proposed 161-kV transmission line. Beyond the fact that there is no 115- or 138-kV transmission in the area within 45 and 80 miles respectively, any option involving a 115- or 138-kV line would require operating the line and remaining on the CapX2020 poles, not accomplishing a primary purpose and need of the Project to move and make way for the Mankato to Mississippi River 345-kV Transmission Project. If a 115- or 138-kV line would be required to be constructed on new ROW, a new 115- or 138-kV line would be similar to the Project but would require additional transformers to convert the voltage to 115-kV or 138-kV adding cost, complexity and system losses and is therefore not a viable alternative. Based on this analysis, any lower voltages alternatives, such as 69-kV, 115-kV, or 138-kV, do not perform electrically similar to the Project and would require new transformers, increasing cost and transmission system losses and are not a more reasonable or prudent alternative to the Project.

5.5.2 Higher Voltage Alternatives

Dairyland considered higher voltage solutions involving new 345-kV transmission and substation infrastructure as an alternative to the Project.

An alternative utilizing the 345-kV infrastructure instead of the Project would require new 345-kV substations at Wabaco and Alma connecting to either the North Rochester-Briggs Road 345-kV line or the future Mankato to Mississippi River 345-kV Transmission Project. Adding 345-kV connections as an alternative to the Project could meet several of the Project purposes and needs. First, the 345-kV substation alternative would allow the existing 161-kV transmission line to vacate the CapX2020 structures making way for the Mankato to Mississippi River 345-kV Transmission Project. Second, the 345-kV substation near Wabaco would electrically replicate the redundant source that the Wabaco to Alma 161-kV line provides in the Project. In the event of an outage on Rochester-Wabaco, the Wabaco 345-kV source would provide electrical power to maintain the level of reliability to the local grid provided today and if the Project were constructed. Finally, a 345 to 161-kV substation near Wabaco and Alma would maintain that electrical transmission connectivity between southeastern Minnesota and western Wisconsin.

There are three primary reasons Dairyland is not proposing an alternative that installs 345-kV substations at both ends the Project instead of a 161-kV line.

1. **The 345-kV alternative is not as reliable and redundant as the Project.**

When a transmission line is removed from service, either forced or due to planned maintenance, the power that would have utilized that transmission capacity is required to go elsewhere as the transmission capacity provided by the line experiencing an outage is fully removed from the system. The Project as proposed would result in three high voltage transmission paths between southeastern Minnesota and western Wisconsin, the Wabaco to Alma (via Kellogg) 161-kV line, and both 345-kV lines, North Rochester-Briggs Road, and the Mankato to Mississippi River 345-kV Transmission Project currently under development. In the event of an outage on any of these lines, power is rerouted, and often will electrically take a similar path of least resistance. A 345-kV alternative would not include a 161-kV path, only 345-kV substations on both ends. If the 345-kV line connected to those substations were to go out of service, only a single path is maintained between southeastern Minnesota and western Wisconsin. The MISO LRTP Tranche 1 Portfolio was planned with all three transmission paths providing transmission capacity in the area. Further, as summarized earlier, MTEP and GIQ studies in the region were studied and approved with all transmission capacity available.

2. **The 345-kV alternative is more costly than the Project**.

Dairyland's Project is estimated $32.4M. A 345-kV alternative would require two new substations. Utilizing MISO's MTEP21 cost estimates in the Tranche 1 portfolio, a 345-kV substation with a connection to the 161-kV system could cost an estimated $56.2M, or $28.1M per substation. These costs include the required 345-kV circuit breakers, 345-/161-kV transformers, 161-kV circuit breakers and finally transmission line work to connect the substation to the existing 345- and 161-kV transmission systems. The costs estimate here are for installed costs only, ongoing operations and maintenance costs would continue. Substations involve many pieces of complex equipment

for monitoring and operations requiring ongoing maintenance costs beyond what a transmission line may require and could reasonably be projected to be higher ongoing operations and maintenance costs than the transmission line being proposed as part of the Project.

3. The 345-kV alternative is not an approved MISO Multi-Value Project

The 345-kV alternative is more costly than the Project being proposed by Dairyland, and it is important to note that the 345-kV alternative is not a currently a MISO MVP approved project that could recover project costs through MISO's MVP cost recovery mechanism.

Overall, while electrically a 345-kV option could be an alternative to allow the CapX2020 poles to be utilized for the Mankato to Mississippi River 345-kV Transmission Project, the 345-kV option is more costly for an upfront installed cost, would require a higher level of ongoing operations and maintenance costs. Further it does not have the same level of transmission capacity as MISO assumed the Project would provide as part of the overall MISO LRTP Tranche 1 Portfolio. Based on this analysis, a higher voltage alternative utilizing the 345-kV system is not a more reasonable or prudent alternative than the Project.

5.6 Double-Circuiting and Other Engineering Considerations

Double-circuiting is the construction of two separate transmission circuits (three phases per circuit) on the same structure. Placing two transmission circuits on common structures generally reduces ROW requirements, which potentially reduces human and environmental impacts. The electrical transmission line related to the Project is currently constructed as a double circuit on the CapX2020 poles and is operated as a 345-/161-kV double circuit. The Project would accomplish the need to vacate the CapX2020 poles by constructing on new ROW to make way for the Mankato to Mississippi River 345-kV Transmission Project to utilize the existing CapX2020 poles that are already 345-/345-kV double circuit capable.

The area the Project is proposed to be routed does not have other transmission lines to double circuit with. The only other transmission level voltage lines are Dairyland's 69-kV line between Alma, Wisconsin and Utica, Minnesota. Due to its location and distribution substations it connects to, this is not a double circuit candidate.

Dairyland also considered triple-circuit structures to reduce ROW requirements. Triple-circuiting is the construction of three transmission circuits on a common structure. Triple-circuiting is typically used in only limited applications due to reliability, resiliency, cost, and safety implications. NERC reliability standards require that the transmission system be planned to be able to withstand potential contingencies – including the loss of a common structure. For a triple-circuit to be a viable alternative, the system must be able to remain reliable if all three circuits were simultaneously lost. In addition, triple-circuits require larger, taller, and more expensive structures compared to a double- or single-circuit, requiring a wider ROW with the potential for greater impacts. A triple-circuit would also increase costs and have negative market impacts due to the removal of an existing transmission line.

For triple-circuit structures to be evaluated as an alternative, the Mankato to Mississippi River 345-kV Transmission Project would need to propose a 345-/345-/161-kV triple circuit in this 10- to 15-mile stretch of transmission ROW. If built, the system would need to withstand the loss of a

common tower removing all three circuits from service. While these transmission lines are not load-serving, loss of all three lines would sever east to west transmission paths and remove thousands of MWs of transmission capacity on the transmission system. Further, any transmission maintenance activities may also require the outage of all three transmission paths, potentially increasing congestion. Finally, the CapX2020 poles were constructed in 2015 and, in the relevant locations in this area, were already strung for 345-kV capability, reducing the need to disturb difficult to reach structure locations in southeastern Minnesota with additional construction. As further discussed in **Section 6.2**, if a triple circuit were constructed, it would require significant outages and construction work to replace existing infrastructure with significant life remaining.

Due to the location of the Project and existing infrastructure, additional co-location of lines or double circuiting are not alternatives.

5.7 Alternative End Points

The Project would maintain a 161-kV line between the Wabaco and Alma substations with a new mid-point substation called Kellogg. Alternative 161-kV end points were considered on the west end of the Project in Minnesota and on the east end of the project in Wisconsin.

On the west end of the Project, the nearest 161-kV substations that could connect to a 161-kV transmission line are the Rochester substation, adding 20 miles of construction, or the Harmony substation, adding 45 miles of construction. Both would require substation modifications to accommodate a new transmission line, and neither would provide a second transmission line to Wabaco for reliability as part of the Project need.

On the east end of the project, the Tremval and Rock Elm substations are the closest 161-kV substations that could connect a 161-kV line, 35 and 33 miles away from Alma, respectively. Both of these substations already have 161-kV transmission lines originating from the Alma substation. The Wabaco and Alma end points are the closest two 161-kV substations in this area, shortening construction length and helping to form the transmission grid locally for redundancy. Variations on these ends point do not achieve the Project need and would add costs and therefore are not recommended.

5.8 Alternative Number, Size, and Type of Conductor

Dairyland considered five different ACSS conductors for this project. After evaluation, Dairyland decided to use a single Lapwing ACSS-HS conductor due to the higher ampacity requirement of 3000 amps set by MISO, while also selecting conductors that are commonly manufactured. The process of selecting a conductor including the following factors:

- Conductor and supporting hardware cost;
- Supporting structure cost;
- Supporting structure height; and
- Maximum Operating Temperature of Conductor.

The two conductors that were considered in the final selection were ACSS Lapwing and Falcon, both normal tensile strength and high strength. Using Falcon ACSS (normal strength or high strength) resulted in generally higher overall costs than the Lapwing. When comparing the Lapwing ACSS normal strength and high strength, it was determined that the use of the high strength conductor resulted in slightly higher conductor costs, but lower supporting structure costs and shorter supporting structures. The estimate to construct the line was about the same for both types of Lapwing ACSS conductor considered, so the wire that resulted in shorter structures was selected, Lapwing ACSS-HS.

5.9 Direct Current Alternative

High voltage direct current (HVDC) lines are typically proposed for transmitting large amounts of electricity over long distances because line losses are significantly less over long distances on an HVDC line than on an alternative current (AC) line. An HVDC line is not a reasonable alternative to the proposed Project. The Project is being proposed to connect to the existing AC transmission system and substation approximately 20 miles apart, in addition to serving local load via the connections to the 69-kV system. In contrast, HVDC lines are typically proposed for regional transmission projects. The Project must be readily tapped now, and in the future, to serve consumers in the Project area or connect generators in the MISO GIQ. HVDC lines require expensive conversion stations at each delivery point because the direct current (DC) power must be converted to AC power before it can be used by customers. Such conversion stations would add significantly to the cost of the Project. There is no justification – in terms of reliability, economy, performance, or otherwise – for an HVDC line in this case.

5.10 Underground Alternative

Undergrounding is an alternative that is seldom used for high-voltage transmission lines like the Project. One of the primary reasons underground high-voltage transmission lines are seldom used outside congested city areas is that they are significantly more expensive than overhead lines. The cost range depends on the design voltage, the type of underground cable required, the extent of underground obstructions like rock formations, the thermal capability of the soil, the number of river crossings, and other factors, but the construction cost of locating the entire length of the Project's proposed transmission underground is estimated to be as much as 5 to 15 times greater per mile than if it were to be constructed overhead as proposed. This cost does not include the large reactors that would likely be required at each substation to counteract the large line charging currents present on underground high-voltage lines. In addition, there are increased line losses and additional maintenance expenses incurred throughout the useful life of an underground high-voltage line further increase the total additional cost of building an underground line instead of an overhead line.

Beyond initial costs, another important consideration of undergrounding lines is consistency with existing lines and standards. Dairyland does not have any buried lines at voltages above 69-kV. The addition of underground transmission is outside Dairyland's current practice and would require new installation and maintenance training, tooling, equipment, and new inventory to be carried for maintenance and critical spares resulting in increased costs and/or a reduction in inventory levels of other items, which then results in diminished maintenance and emergency restoration responsiveness and effectiveness.

A common argument in favor of implementing underground lines is that they will minimize the human and environmental impacts above ground. However, there are human and environmental impacts both during and after construction of an underground transmission line. During both underground and overhead transmission line construction, the ROW must be cleared of vegetation. For overhead transmission, excavation work is concentrated to line structure foundations; however, underground transmission excavation work is along the entirety of the line. This results in increased impact especially in sensitive environmental areas. In addition, large areas for access roads capable of supporting heavy construction equipment, trenching activities, and cable installation are needed for underground transmission. After construction, the ROW needs to be maintained free of all woody vegetation to reduce soil moisture loss, since high-voltage underground conductors make use of soil moisture for conductor cooling. A permanent road must also be maintained along the ROW for maintenance and repair.

Underground lines can also be more challenging to operate and maintain. While overhead lines are typically subject to more frequent outages than underground cables, service can usually be quickly restored. This is accomplished by automatic reclosing of circuit breakers, which results in only a momentary outage of the line. Since circuit breakers on underground lines are typically not reclosed until it can be verified that a fault has not occurred on the underground cable, the smaller number of outages is typically offset by their increased duration. A faulted underground line takes much longer to restore because of the difficulty in locating the fault and accessing the site to make repairs. If the fault is due to a failure in the cable, the segment of failed cable must typically be replaced. This usually involves completely replacing the failed cable between two man-hole splice points, which are ordinarily located every 1,500 to 2,000 feet along the line. To replace failed cable, it must be possible to bring heavy equipment, including cable reels weighing 30,000 to 40,000 pounds, into the ROW during all seasons of the year. If the fault occurs in a wetland area where all-season roads are not maintained, restoration can be delayed due to the need to install wetland matting to gain access to the utility holes involved in replacing the failed cable.

Due to the construction, maintenance, reliability, and cost drawbacks of high-voltage underground transmission lines, undergrounding is not a more reasonable and prudent alternative for any portion of the Project.

5.11 Combination of Alternatives

Individually, alternatives considered in **Section 5** are not able to match the benefits and need requirements provided by the Project. Creating a combination of the considered alternatives is also not able to achieve the need addressed by the Project.

A combination of alternatives, such as an alternative transmission voltage and a generator, would not be able to overcome the shortcoming outlined for each alternative individually as documented in **Section 5**. Combining a generator alternative with a transmission alternative at a different voltage would increase costs beyond the Project and not deliver similar benefits. The Project as proposed utilizes the local transmission voltage to connect substations with a transmission line and no generator is needed to provide the reliability, redundancy and transmission capacity needed. Combining a generator with an alternative voltage would increase costs and complexity and not achieve all of the benefits delivery by the Project. Through the alternative consideration process,

Dairyland believe the Project as proposed is optimally planned and sized to achieve the needs as outlined.

5.12 No-Build Alternative/Consequence of Delay

As required by Minn. R. 7849.0340, Dairyland also considered the no build alternative, i.e., no new transmission constructed to meet the identified reliability needs in southeastern Minnesota. If the Project were not constructed, the need benefits described in Chapter 4 would not be realized, resulting in less reliable service southeastern Minnesota and less available transmission outlet capacity. As detailed in **Sections 5.1 to 5.11**, demand side management and conservation, peaking generation additions, additional distributed generation, additional renewable generation, additional energy storage, additional reactive support resources, or existing system upgrades were not reasonable alternatives to the Project. Should the Project be delayed and/or not constructed, there would be local and regional reliability, policy, and economic consequences.

5.12.1 Reliability Consequences of Delay

Should the Project be delayed, it would have a direct impact on the schedule for the related Mankato to Mississippi River 345-kV Transmission Project. The Project is needed to make way for the Mankato to Mississippi River 345-kV Transmission Project and keep the existing transmission infrastructure in place to maintain existing transmission reliability to local load in southeastern Minnesota and existing transmission capacity.

5.12.2 Policy Consequences of Delay

The Project as it relates to the Mankato to Mississippi River 345-kV Transmission Project and the broader MISO LRTP Tranche 1 Portfolio is needed to maintain regional reliability as utilities and Minnesota add new clean energy resources and modify the way they use existing fossil-fuel plants. These additions and modifications in the coming decades are a key component of the changing resources in the area and part of the MISO market. A delay in the Project could result in a delay in the transition of generation resources in the area that proceed through the MISO generation interconnection queue to connect to the grid. As MISO studies the addition of new generators to the grid, including renewables, the transmission capacity that will be added to the grid through all the MISO Tranche 1 Portfolio of projects will be critical to enabling the connection of new generators. A delay of the Project would impact the overall transmission of generation resources and their ability to connect to the grid to utilize the transmission capacity that will be added once the LRTP Tranche 1 Portfolio is energized.

6 ROUTE SELECTION PROCESS

6.1 Route Selection Process

6.1.1 Route Development Process Summary

Dairyland used a multi-stage, interactive routing process to identify the Proposed Route[30] that focused on the use of existing transmission/distribution line or other utility and transportation ROWs. This process was intended to identify a Proposed Route that met the objectives of the Project along with minimizing impacts to the environment in conformance with Minnesota's routing considerations. The iterative process started with development of an initial area for evaluation for the Project, which was the area in the vicinity of the existing transmission line. As part of the LRTP 4 Project, MISO identified that the existing 161-kV transmission line currently located between the Wabaco Substation and the Mississippi River would need to be relocated to facilitate construction of 345-kV facilities in the existing location of the 161-kV facilities. Additionally, Dairyland determined that a new 161-kV substation would be needed near the Mississippi River. Therefore, it developed a study area that remained generally proximate to the location of the existing line.

The study area was then reviewed in light of the CapX2020 Environmental Impact Statement (EIS) (August 2011) (Docket No. E002/TL-09-1448). Relevant components of this review were used as a starting point for considerations on routing options, potential benefits, and potential disadvantages studied in prior environmental reviews.

This initial review resulted in a more detailed study of four potential routing options – one of which ultimately became the Proposed Route, and three of which were considered but ultimately rejected (see additional discussion in **Section 6.2**). All options benefitted from the presence of existing HVTLs, distribution lines, and road ROWs with which a potential route could collocate. Dairyland presented an initial route at the November 2023 open houses (see **Section 9**) and during meetings with agency stakeholders in the 4th Quarter of 2023. Some additional refinements to the Proposed Route presented in this application were made following these meetings and consultations with stakeholders.

6.1.2 Routing Factors

The factors to be considered by the Commission in designating a route for an HVTL are set forth in Minn. Stat. § 216E.03, subd. 7[31] and Minn. R. 7850.4100. These factors directed Dairyland's route development process.

Minn. Stat. § 216E.03, subd. 7(a) provides that the Commission's route permit determinations "must be guided by the state's goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure." Subdivision 7(e) of the same section requires the Commission to "make specific findings that it

[30] "Proposed Route" is defined in **Section 1.4.**

[31] Although Dairyland has applied for a Route Permit under the alternative review provisions of Minn. Stat. § 216E.04, Minn. Stat. § 216E.04, subd. 8 provides that the considerations of Minn. Stat. § 216E.03, subd. 7 shall apply.

has considered locating a route for an HVTL on an existing HVTL route and the use of parallel existing highway right-of-way and, to the extent those are not used for the route, the Commission must state the reasons."

In addition to the statutory factors noted above, Minn. Stat. § 216E.03, subd. 7(b) and Minn. R. 7850.4100 provide factors that the Commission will consider in determining whether to issue a route permit for an HVTL. These routing factors from Minn. R. 7850.4100 are:

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

B. effects on public health and safety;

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

D. effects on archaeological and historic resources;

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

F. effects on rare and unique natural resources;

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

H. use or paralleling of existing ROWs, survey lines, natural division lines, and agricultural field boundaries;

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

J. use of existing transportation, pipeline, and electrical transmission systems or ROWs;

K. electrical system reliability;

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

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

N. irreversible and irretrievable commitments of resources.

In 2023, the Minnesota Legislature amended Minn. Stat. § 216E.03, subd. 7(b) to also include the following considerations when designating routes:

- evaluation of the benefits of the proposed facility with respect to (i) the protection and enhancement of environmental quality, and (ii) the reliability of state and regional energy supplies;
- evaluation of the proposed facility's impact on socioeconomic factors; and
- evaluation of the proposed facility's employment and economic impacts in the vicinity of the facility site and throughout Minnesota, including the quantity and quality of construction and permanent jobs and their compensation levels. The commission must consider a facility's local employment and economic impacts and may reject or place conditions on a site or route permit based on the local employment and economic impacts.

Dairyland used these statutory and rule routing criteria, routing experience, engineering considerations, and stakeholder feedback to develop the Proposed Route for the Project. Dairyland started with the identification of existing linear infrastructure in the vicinity of the existing transmission line, which offered existing ROWs along which a new transmission line might be collocated to minimize impacts to the natural and human environment. Dairyland then identified routing opportunities and constraints in these ROWs through further review and a series of public engagement activities discussed in detail in **Section 9**.

Routing opportunities include existing linear infrastructure or other features (e.g., roads, transmission lines) along which siting an HVTL would be most compatible. Routing opportunities also facilitate Project development by minimizing impacts to identified resources. Minn. R. 7850.4100 requires the Commission to consider the use or paralleling of existing ROWs (e.g., transportation corridors, pipelines, and electrical transmission lines). Examples of constraints include natural resources such as lakes; existing land uses such as residences, and schools; federal, state, and locally designated environmental protection areas; critical habitats or sensitive natural resource areas; cultural resources such as national landmarks and archaeological sites; and public infrastructure such as airports and aeronautical and commercial telecom structures. The routing process aims to avoid and/or minimize constraints where practicable.

Technical and reliability considerations also affect the routing process. These include specific engineering requirements, standards, and objectives associated with the design and construction of the Project. For example, there are circumstances where technical and maintenance objectives make certain line collocations unworkable. Other engineering objectives may include spacing for line entrances into a substation, minimizing the overall line length, ensuring adequate access for construction and inspections, minimizing the number of angles, minimizing the number of "special" structures, and considering the use of longer than average spans between structures. Landowner considerations including proximity to existing or planned structures, desired land use, residences, and center pivot irrigation systems were also important when developing the Project.

6.1.3 Prior Environmental Review

The Proposed Route is similar to the "North Rochester Substation to Mississippi Segment Alternative 3B-003" that was considered in the CapX2020 EIS along State Highway 42.[32] In the ALJ Findings of Fact, Conclusions of Law, and Recommendation, the ALJ indicated that the MDNR supported the use of the State Highway 42 route option (3B-003).[33] However, ultimately this route was not selected by the Commission due to:

- A new corridor without transmission lines.
- Higher number of homes within the route width that might result in displacement.
- Larger elevation changes with slopes of more than 12%.
- Greater number of historical architectural sites impacted relative to the other routes.
- Parallel route to the existing CapX2020 corridor would present separate new potential hazards to bird migration parallel to the North American Mississippi River flyway.
- Minnesota Department of Transportation (MnDOT) concerns regarding steep banks, erosion, slope failure, water drainage, and rock fall along State Highway 42.
- Impacts on the State Highway 42 viewshed.

However, using a present-day analysis and consideration that the CapX2020 system was ultimately placed in the preferred route for that project, there are environmental advantages to Dairyland's Proposed Route, as compared to the alternatives considered but rejected in **Section 6.2**.

6.2 Alternatives Considered but Rejected

Under Minn. R. 7850.3100, Dairyland must identify rejected route alternatives in the Application with an explanation of the reasons for rejecting them. Rejected Route Alternatives are discussed below and shown in **Figure 6-1**.

Dairyland explored the potential to move the 161-kV line to another location on the existing CapX2020 structures that would still allow for the stringing of the second 345-kV circuit. Stringing the 161-kV transmission line on the existing CapX2020 structures is not possible without rebuilding the section in question to triple circuit. While rebuilding this section to triple circuit is possible, it is not feasible from an outage and reliability perspective. Replacing the over 10 miles of the CapX2020 system in this area with triple circuit structures would require a lengthy outage on the existing 345-kV circuit, which is already experiencing congestion that has resulted in curtailment of renewable energy sources. This alternative is rejected because it does not meet the Project schedule and would result in service disruptions.

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[32] *See In the Matter of the Route Permit Application for the CapX 2020 Hampton – Rochester – La Crosse 345 kV Transmission Line*, MPUC Docket No. E-002/TL-09-1448, OAH Docket No. 3-2500-21181-2, Final Environmental Impact Statement at 3 (Aug. 31, 2011). *See also, In the Matter of the Route Permit Application for the CapX 2020 Hampton – Rochester – La Crosse 345 kV Transmission Line*, MPUC Docket No. E-002/TL-09-1448, OAH Docket No. 3-2500-21181-2, Findings of Fact, Conclusions of Law, and Recommendation at 3-5 (Feb. 8, 2012).

[33] *In the Matter of the Route Permit Application for the CapX 2020 Hampton – Rochester – La Crosse 345 kV Transmission Line*, MPUC Docket No. E-002/TL-09-1448, OAH Docket No. 3-2500-21181-2, Findings of Fact, Conclusions of Law, and Recommendation at 85 (Feb. 8, 2012).

Dairyland then studied three Route Alternatives that would meet the purpose of the Project. Dairyland compared the human and environmental features of the three route alternatives in **Table 6-1** below. Crossings of sensitive features are discussed in more detail in **Sections 6.2.1 through 6.2.3**. Figures showing each route alternative as compared to the Proposed Route are included in **Figures 6-2 to 6-4**.

Table 6-1. Comparison of Human and Environmental Features Crossed by the Proposed Route and Route Alternatives [a]

Resource / Characteristic	Proposed Route	Capx2020 Alternative	County Road 14 Alternative	County Road 41/26 Route Alternative
Length (Miles)	13.3	10.5	13.0	14.1
Percent Collocated [b]	71.1	100.0	100.0	85.8
Land Use Features				
Residences within 200 feet of centerline	1	0	14	11
Parcels (No. Crossed)	51	41	65	56
U.S. Highway 61 (Great River Road) – Scenic Byway (No. of Crossings)	1	1	1	1
Snowmobile Trails (No. Crossed)	2	5	3	9
MDNR-Administered Wildlife Management Area (WMA) Land (Miles Crossed)	0.0	1.7	1.2	3.2
MDNR-Administered State Forest Land (Miles Crossed)	0.0	3.7	0.0	1.1
MDNR Scientific Natural Areas (Miles Crossed)	0.0	0.0	0.1	0.1
MDNR State Forest Easements (Miles Crossed)	0.0	1.2	0.5	2.0
MDNR WMA Easements (Miles Crossed)	0.0	0.0	0.0	0.6
U.S. Fish and Wildlife Service (USFWS) Wildlife Refuge (Miles Crossed)	0.0	0.0	0.0	0.8
U.S. Army Corps of Engineers Land (Miles Crossed)	1.1	0.2	0.5	0.5
The Nature Conservancy Easement (Miles Crossed)	0.0	0.0	0.7	0.7
MDNR / USFS Forest Legacy Program, Forest Stewardship Easement (Miles Crossed)	0.0	0.0	0.4	0.0
Geologic Features				
Regions Prone to Karst (Miles Crossed)	8.3	5.2	3.9	7.5
Surface Water Features				
National Wetlands Inventory (Miles Crossed)	0.2	2.0	0.6	1.3

Resource / Characteristic	Proposed Route	Capx2020 Alternative	County Road 14 Alternative	County Road 41/26 Route Alternative
MDNR Rivers and Streams (No. Crossed)	11	19	16	13
MDNR Lakes and Reservoirs (Miles Crossed)	0.0	0.0	<0.1	<0.1
MDNR Shallow Lakes (Miles Crossed)	0.0	0.0	0.1	0.4
MDNR Public Water Basin/Wetlands (Miles Crossed)	0.0	0.0	0.1	0.4
Impaired Streams (No. Crossed)	1	0	0	0
Floodplains (Miles Crossed)	1.6	2.4	1.2	1.7
Trout Streams (No. Crossed)	0	8	11	6
MDNR Public Water Watercourses (No. Crossed)	1	4	2	1
Proximity to Designated Calcareous Fen (Distance from in Miles)	1.4	0.2	2.0	2.0
Rare and Sensitive Resources				
Rusty Patch Bumblebee Low Potential Zones (Miles Crossed)	12.0	8.8	7.5	9.5
Rusty Patch Bumblebee High Potential Zones (Miles Crossed)	1.4	1.7	5.5	4.6
Important Bird Area (Miles Crossed)	0.0	1.5	5.2	8.0
Minnesota Biological Survey Sites of Biodiversity Significance with Good, High or Outstanding Ranking (Miles Crossed)	0.1	1.0	1.0	1.6
MDNR Native Prairies (Miles Crossed)	0.0	0.0	0.4	0.4
Minnesota Native Plant Communities with S1, S2, or S3 ranking (Miles Crossed)	0.0	0.2	0.6	0.6

Notes:

[a] To provide a reasonable comparison between the Proposed Route and Route Alternatives, resource impacts were assessed based on "miles crossed" by the Proposed Alignment or Route Alternatives.

[b] Collocation is defined as any utility, road or trail located within 200 feet either side of the centerline based on the proposed clearing width.

6.2.1 CapX2020 Collocation Alternative

As discussed in **Sections 5.6 and 6.2**, the 161-kV line cannot be installed on the same CapX2020 structures as the two 345-kV transmission lines. Dairyland therefore looked at installing a new 161-kV transmission line parallel to/alongside the CapX2020 alignment as shown on **Figure 6-2**. The present CapX2020 route was ultimately selected as the preferred route for that project because:

- It followed Dairyland's existing 161-kV transmission line corridor that was already present at the time of permitting;
- Had a flatter topography than the other route alternatives and less impacts to a state forest, businesses, farms, tree farms and a resort relative to the other route alternatives considered at the time;

- It was the shortest and most direct and the least expensive option; and
- It impacted fewer residences relative to other route alternatives considered at the time.

A separate 161-kV transmission line could feasibly be constructed parallel to the existing CapX2020 line, and it would be 10.5 miles long (or 2.8 miles shorter than the Proposed Route). It could also likely be collocated with CapX2020 for the entirety of its length. However, the CapX2020 Collocation Alternative was rejected by Dairyland for the following landowner, constructability, and environmental reasons:

- A new 161-kV line would need to be offset from the CapX2020 system and would require an additional 100 feet of new ROW in addition to the present CapX2020 ROW width of 150 to 310 feet. The new ROW would further directly impact residential and agricultural properties already impacted by the CapX2020 line with a cumulative ROW width of between 350 to 510 feet. Residential impacts would be similar for each route option (one home within 200 feet on the Proposed Alignment; no homes within 200 feet on the CapX2020 Collocation Alternative).

- The span lengths for the 161-kV poles are shorter than those of the CapX2020 system. Therefore, new poles on the CapX2020 Collocation Alternative would not be able to be aligned with existing poles in all instances, resulting in additional structural impedances to farm equipment and landowner access around the structures.

- Construction of a new adjacent 161-kV line would require a lengthy outage of the CapX2020 345-kV circuit to avoid induction issues. An outage on the CapX2020 system is not desirable, as the system is experiencing congestion that has resulted in curtailment of renewable energy sources and thus the need for the new 345-kV line between North Rochester, Minnesota, and Alma, Wisconsin.

- The CapX2020 Collocation Alternative would cross MDNR-administered land associated with the McCarthy Lake Wildlife Management Area (WMA; 1.7 miles) and the Richard J. Dorer Memorial Hardwood State Forest (3.7 miles). These crossings would require a License to Cross Public Lands from the MDNR. The MDNR manages these areas for forestry and wildlife habitat purposes. In contrast, the Proposed Route crosses no MDNR-administered lands. The CapX2020 Collocation Alternative also crosses 1.2 miles of MDNR easements associated with the State Forest; the Proposed Route does not cross these areas.

- The CapX2020 Collocation Alternative has five snowmobile trail crossings that include one crossing of the MDNR Snake Creek Unit Snowmobile Trail and four crossings of the Zumbrowatha Trail system. The Proposed Route only has two snowmobile crossings of the Zumbrowatha Trail system.

- The CapX2020 Collocation Alternative would have a greater impact on waterbodies, including crossings of eight trout streams and four public water watercourses, as compared to one public water watercourse and no trout streams crossed by the Proposed Route. It would also cross 19 streams and rivers identified by the MDNR, as opposed to the 11 crossed by the Proposed Route.

- The CapX2020 Collocation Alternative would cross approximately 2.0 miles of National Wetlands Inventory (NWI) wetlands as opposed to 0.2 miles on the Proposed Route.

- The CapX2020 Collocation Alternative would result in impacts to more lands designated as unique for their natural resource characteristics. The CapX2020 Collocation Alternative would cross 1.0 mile of land identified by the Minnesota Biological Survey (MBS) as Sites of Biodiversity Significance (SOBS) with a Good, High, or Outstanding ranking and 0.2 miles of land identified as a Native Plant Community (NPC) with rankings between S1 and S3. The Proposed Alignment, being mostly in agricultural areas, crosses 0.1 miles of SOBS with a Good, High, or Outstanding ranking and no NPCs.

- Each route crosses a similar mileage of lands identified as a High Potential Zone for the Rusty Patched Bumblebee (1.4 miles for the Project as compared to 1.7 miles for the CapX2020 Collocation Alternative), although the Project does cross more miles of Low Potential Zone (12.0 miles as compared to 8.8 miles for the CapX2020 Collocation Alternative). The CapX2020 Collocation Alternative crosses the 1.5 miles of Whitewater Valley Important Bird Area (IBA), which the Project avoids.

- Regarding sensitive geologic features, both route options cross regions prone to karst (5.2 miles for the CapX2020 Collocation Alternative and 8.3 miles for the Project). Additional coordination with the MDNR will be required regarding construction in karst-prone areas.

- The CapX2020 Collocation Alternative is located within approximately 0.2 mile of a state-listed calcareous fen within the McCarthy Lake WMA whereas the Proposed Alignment is 1.4 miles from the same calcareous fen.

In summary, the CapX2020 Alternative is shorter than the Project and could be collocated for more of its length. Due to the additive, direct impact to landowners already impacted by the CapX2020 corridor, the induction and outage issues associated with constructing the new 161-kV line adjacent to the operating CapX2020 system, and the unique crossing of sensitive state lands, waterbodies, proximity to a calcareous fen, and other environmental resources which are avoided, minimized, or similarly impacted along the Proposed Alignment, Dairyland has eliminated the CapX2020 Collocation Alternative from further consideration.

6.2.2 County Road 14 Alternative

Dairyland also considered a route alternative that would involve paralleling the CapX2020 corridor for approximately 2.8 miles to Wabasha County Road 14 (the "County Road 14 Alternative"). The County Road 14 Alternative would then turn east and follow County Road 14 until crossing U.S. Highway 61/Great River Road and joining Dairyland's LN340 69-kV line to the north. The County Road 14 Route Alternative would then involve upgrading Dairyland's existing LN340 69-kV transmission line to a double circuit 69-/161-kV line. This would require expanding Dairyland's existing 80-foot-wide ROW to a minimum of 100 feet, and potentially wider, in some locations with steeper slopes. This route would still require the installation of the new Kellogg Substation to accommodate for the removal of the LN340 69-kV crossing of the Mississippi River to the Alma Substation (**Figure 6-3**).

The County Road 14 Alternative could feasibly be constructed along this path, and it would be a similar length as the Proposed Route (0.3 miles shorter). It would also be collocated with existing roads for the majority of its length. However, the County Road 14 Alternative was rejected by Dairyland for the following landowner, constructability, and environmental reasons:

- The County Road 14 Alternative would not avoid some of the additive CapX2020 landowner impacts as outlined in **Section 6.2.1**. Landowners along the 2.8-mile stretch where the alternative is collocated would still be impacted by a widened ROW and by new poles that would be offset from the CapX2020 system structures, and impacts related to induction issues and a necessary outage of the CapX2020 system would still occur. There are also 14 homes within 200 feet of the County Road 14 Route Alternative as opposed to one home within 200 feet of the Project.

- From an Engineering perspective this route also has some terrain challenges and would require additional angles due to the windy nature of the roads followed.

- Although the County Road 14 Alternative would occur along Dairyland's existing 69-kV utility corridor east of U.S. Highway 61; a wider easement would be required to double-circuit the 161-kV line with the 69-kV line. The 69-kV line presently crosses 0.1 miles of the MDNR's Kellogg Weaver Dunes Scientific Natural Area (SNA) and 1.2 miles of the McCarthy Lake WMA. Therefore, in order to be double-circuited, the County Road 14 Alternative would require an easement width expansion across these conservation lands. require a wider easement through these areas.

  Crossing of SNAs is generally prohibited by the Commission per Minn. R. 7850.4300, subp. 2, "*unless the transmission line would not materially damage or impair the purpose for which the area was designated and no feasible and prudent alternative exists. Economic considerations alone do not justify use of these areas for a high voltage transmission line*.[34]" However, it could ultimately be possible to route the County Road 14 Alternative outside of the existing 69-kV ROW to avoid the crossing of the SNA, as the County Road 14 Alternative crosses the SNA on the far northwestern edge.

  The crossing of the WMA would require a License to Cross Public Lands from the MDNR. The MDNR manages this area for wildlife habitat purposes. In contrast, the Proposed Route crosses no MDNR-administered lands set aside for wildlife habitat.

- The County Road 14 Alternative also crosses 0.5 miles of MDNR easements associated with the Richard J. Dorer Memorial Hardwood State Forest and 0.4 miles of land under a MDNR/U.S. Forest Service Forest Legacy Program Stewardship Easement, which would require state and federal review. The Proposed Route does not cross these areas.

- Similarly, the County Road 14 Alternative where double-circuited with Dairyland's 69-kV line would also result in additive impacts to 0.7 miles of land held by The Nature

[34] https://www.revisor.mn.gov/statutes/cite/86A.05 and https://www.revisor.mn.gov/rules/7850.4300

Conservancy (TNC) associated with the Weaver Dunes area. A wider easement would be required through this area.

- The County Road 14 Alternative would cross the Zumbrowatha Trail system three times, whereas the Proposed Route would cross the same system twice.

- The County Road 14 Alternative would have a greater impact on waterbodies, as it would cross 11 trout streams and two public water watercourses, as compared to one public water crossing and no trout stream crossings along the Proposed Route. It would also cross 16 streams and rivers identified by the MDNR, as opposed to the 11 crossed by the Proposed Route.

- The County Road 14 Alternative would cross approximately 0.6 miles of NWI wetland, as opposed to 0.2 miles on the Proposed Route. It would also cross 0.1 miles of a MDNR Public Water basin located within the McCarthy WMA, which is also designated as a Shallow Lake and Lake/Reservoir by the MDNR.

- The County Road 14 Alternative would result in impacts to more lands designated as unique for their natural resource characteristics. The County Road 14 Alternative would cross 1.0 mile of land identified by the MBS as SOBS with a Good, High, or Outstanding ranking and 0.6 miles of land identified as an NPC with rankings between S1 and S3, of which 0.4 miles is associated with native prairie. The Proposed Alignment, being mostly in agricultural areas, crosses 0.1 miles of SOBS with a Good, High, or Outstanding ranking and no NPCs or native prairie.

- Although the County Road 14 Alternative would cross 7.5 miles of Low Potential Zone for the Rusty Patched Bumblebee as compared to the 12.0 miles crossed by the Project, the County Road 14 Alternative would cross 4.1 more miles of High Potential Zone (5.5 miles as compared to the 1.4 crossed by the Project). The County Road 14 Alternative also crosses 5.2 miles of the Whitewater Valley IBA, which the Project avoids.

- Regarding sensitive geologic features, both route options cross regions prone to karst (3.9 miles for the County Road 14 Alternative and 8.3 miles for the Project). Additional coordination with the MDNR will be required regarding construction in karst-prone areas.

The County Road 14 Alternative would be collocated for more of its length and is similar to the Project in total length. However, due to the additive, direct impact to landowners already impacted by the CapX2020 corridor, the induction and outage issues associated with constructing the new 161-kV adjacent to the operating CapX2020 system, and the unique crossing of sensitive state lands, waterbodies, and other environmental resources which are avoided, minimized, or similarly impacted along the Proposed Alignment, Dairyland has eliminated the County Road 14 Alternative from further consideration.

6.2.3 County Road 41/26 Route Alternative

The County Road 41/26 Route Alternative would start at the CapX2020 corridor where the Project originates and follow the CapX2020 corridor for 0.3 mile. It would then traverse greenfield for

approximately 2 miles before connecting with Wabasha County Road 41/26 until double-circuiting with Dairyland's existing LN340 69-kV transmission line west of the Community of Weaver at the existing Weaver Substation. The County Road 41/26 Route Alternative would then involve upgrading Dairyland's existing LN340 69-kV transmission line to a double circuit 69-/161-kV line from Weaver Substation to the new Kellogg Substation. This would require expanding Dairyland's existing 80-foot-wide ROW to a minimum of 100 feet, and potentially wider, in some locations with steeper slopes. This route would still require the installation of the new Kellogg Substation to accommodate for the removal of the LN340 69-kV crossing of the Mississippi River to the Alma Substation. This route alternative is shown in **Figure 6-4**.

The County Road 41/26 Route Alternative could feasibly be constructed along this path, and it would be 0.8-mile longer than the Proposed Route. It would also be collocated with existing ROW for approximately 86% of its length. However, the County Road 41/26 Route Alternative was rejected by Dairyland for the following landowner, constructability, and environmental reasons:

- The County Road 41/26 Route Alternative would not avoid some of the additive CapX2020 landowner impacts as outlined in **Section 6.2.1**. Landowners along the 0.3-mile stretch where the alternative is collocated would still be impacted by a widened ROW and by new poles that would be offset from the CapX2020 system structures, and impacts related to induction issues and a necessary outage of the CapX2020 system would still occur. There are also 11 homes within 200 feet of the County Road 41/26 Route Alternative, as opposed to one home within 200 feet of the Project.

- From an Engineering perspective this route also has some terrain challenges and would require additional angles due to the windy nature of the roads followed (i.e., the bluff area west of the Community of Weaver to U.S. Highway 61)

- As described in **Section 6.2.2,** Dairyland's LN340 69-kV line traverses MDNR and TNC property, including the MDNR Kellogg Weaver Dunes SNA (0.1 mile), the McCarthy Lake WMA (1.1 mile), and the TNC's Weaver Dunes Area (0.7 mile); these would also be crossed by the County Road 41/26 Route Alternative. Crossing of SNAs is generally prohibited by the Commission per Minn. R. 7850.4300, subp. 2. However, it could ultimately be possible to route the County Road 41/26 Route Alternative outside of the existing 69-kV ROW to avoid the crossing of the SNA, as the County Road 14 Alternative crosses the SNA on the far western edge.

- In addition to the 1.1 miles of the McCarthy Lake WMA crossing, the County Road 41/26 Route Alternative crosses 2.1 miles of the over 27,400-acre Whitewater WMA. Whitewater is the eighth-largest WMA in the state and is popular with hunters, trappers, anglers, and wildlife watchers and receives over 500,000 visitors annually.[35] Similar to other WMAs, the crossing of Whitewater WMA would require a License to Cross Public Lands from the MDNR. The MDNR has developed a 2023-2033 Master Plan for the WMA to preserve its characteristics as one of the largest remaining contiguous expanses of habitat in southeast Minnesota.[36] The County Road 41/26 Route Alternative also crosses 0.6 miles of land

[35] https://www.dnr.state.mn.us/areas/wildlife/whitewater_wma.html

[36] https://files.dnr.state.mn.us/areas/wildlife/whitewater/master-plan.pdf?v=2023.02.10-13.12.26

associated with MDNR WMA easements. In contrast, the Proposed Route crosses no MDNR-administered lands or MDNR easements.

- The County Road 41/26 Route Alternative also crosses 1.1 miles of state fee-owned land and 2.0 miles of MDNR easements associated with the Richard J. Dorer Memorial Hardwood State Forest, which would require state and federal review. The Proposed Route does not cross these areas. The crossing of state fee-owned land within the state forest would require a License to Cross Public Lands from the MDNR.

- Unique among all routes considered, the County Road 41/26 Route Alternative crosses the USFWS Upper Mississippi River National Wildlife and Fish Refuge for 0.8 mile on the north side of U.S. Highway 61. Although Dairyland has an existing 80-foot-wide ROW through this land, Dairyland would need to request additional easement to accommodate the 161/69-kV double-circuit.

- The County Road 41/26 Route Alternative would cross the Zumbrowatha Trail system nine times, whereas the Proposed Route crosses this same system twice.

- The County Road 41/26 Route Alternative would have a greater impact on designated waterbodies, as it would cross six trout streams as opposed to none for the Project. Both the Project and the County Road 41/26 Route Alternative would one public water watercourse. The County Road 41/26 Route Alternative would also cross 13 streams and rivers identified by the MDNR, as opposed to the 11 crossed by the Proposed Route.

- The County Road 41/26 Route Alternative would cross approximately 1.3 miles of NWI wetlands as opposed to 0.2 miles on the Proposed Route. Some of these wetlands are associated with the Upper Mississippi River Floodplain, which was designated as a wetland of international significance under the Ramsar Convention.[37] The Proposed Route does not cross any such features. It would also cross 0.4 miles of a MDNR Public Water basin located within the McCarthy WMA and the USFWS Upper Mississippi River National Wildlife and Fish Refuge, which is also designated as a Shallow Lake and Lake/Reservoir by the MDNR.

- The County Road 41/26 Route Alternative would result in impacts to more lands designated as unique for their natural resource characteristics. The County Road 41/26 Route Alternative would cross 1.6 miles of land identified by the MBS as SOBS with a Good, High, or Outstanding ranking and 0.6 miles of land identified as an NPC with rankings between S1 and S3, of which 0.4 miles is associated with native prairie. The Proposed Alignment, being mostly in agricultural areas, crosses 0.1 miles of SOBS with a Good, High, or Outstanding ranking and no NPCs or native prairie.

- Although the County Road 41/26 Route Alternative would cross 9.5 miles of Low Potential Zone for the Rusty Patched Bumblebee as compared to the 12.0 miles crossed by the

[37] https://rsis.ramsar.org/ris/1901

Project, the County Road 41/26 Route Alternative would cross 3.2 more miles of High Potential Zone (4.6 miles as compared to the 1.4 miles crossed by the Project).

- The County Road 41/26 Route Alternative also crosses the Whitewater Valley and Upper Mississippi/Trempealeau IBAs for 8.0 miles, which the Project avoids.

- Regarding sensitive geologic features, both route options cross regions prone to karst (7.5 miles for the County Road 41/26 Route Alternative and 8.3 miles for the Project). Additional coordination with the MDNR will be required regarding construction in karst-prone areas.

The County Road 41/26 Route Alternative is longer than the Project and is collocated for a similar length. However, the County Road 41/26 Route Alternative presents many unique issues compared to the Project and other alternatives. It involves crossing the USFWS Upper Mississippi River National Wildlife as well as the MDNR's Whitewater WMA. It has the same additive, direct impact to landowners already impacted by the CapX2020 corridor, the induction and outage issues associated with constructing the new 161-kV adjacent to the operating CapX2020 system, and the unique crossing of sensitive state lands, waterbodies, and other environmental resources where it follows the same route as the County Road 14 Alternative, along with new impacts where it is collocated with County Road 41/26. The Project avoids all of these sensitive resources. Therefore, Dairyland has eliminated the County Road 41/26 Alternative from further consideration.

6.3 Routing Conclusions

Dairyland is requesting a Route Permit for the Proposed Route because, as compared to the route alternatives considered and rejected, the Proposed Route best balances the Commission's routing criteria because of its collocation with existing infrastructure for 71% of its route while minimizing environmental impacts where possible. The Proposed Route will result in fewer waterbody crossings; no trout stream crossings; avoidance of all MDNR WMA, SNA, and State Forest lands (as well as any other land under MDNR fee ownership or easement interest); avoidance of TNC conservation land; avoidance of USFWS National Wildlife Refuge land; avoidance of NPCs, native prairie, and fewer snowmobile trails, SOBS, waterbody, public water and NWI wetland impacts. It is also further away from residences than two alternatives.

Further, Dairyland has the potential to avoid or reduce impacts to resources such as forested areas and wetland features during final design through modification of the Route Alignment and pole placement within the ROW. The impacts of the Project are outlined in detail in **Section 8**. Dairyland will continue to consult with agency stakeholders, such as the MDNR, USACE, and USFWS, to minimize impacts to sensitive resources as a result of the Project.

7 RIGHT-OF-WAY ACQUISITION, CONSTRUCTION, RESTORATION, AND OPERATION AND MAINTENANCE

7.1 Landowner Coordination and Right-of-Way Acquisition Procedures

Dairyland has initiated landowner outreach by providing information on the Project via letters mailed to potentially impacted landowners, interested parties and federal, state, and local governmental officials; publishing notices in area newspapers and online; and holding informational Open Houses (**Section 1.7**). Dairyland will continue to engage with landowners throughout the permitting process to answer any questions they may have regarding the easement process or the Project.

The land within the majority of the Proposed Route is privately owned. New easements will be needed for the 161-kV transmission line route and the new Kellogg Substation. Dairyland representatives will work directly with individual landowners to negotiate the necessary easements. At a minimum, the Project will obtain a total ROW of 100 feet (typically 50 feet from each side of the transmission centerline) for the 161-kV transmission line system. Where the transmission line parallels roads, the transmission line structures are typically installed one to five feet outside of road ROW, resulting in approximately 55 feet of ROW needed outside of the road ROW. In addition to acquiring needed easements, Dairyland will acquire the 10.8-acre site on which the 4-acre Kellogg Substation will be built.

During formal land rights acquisition, Dairyland will provide the landowners the transmission line easement, an offer of compensation, and information regarding the Project schedule, Dairyland's construction practices, vegetation removal, and construction damage settlement policy. 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. Dairyland would respond to any comments or questions landowners may have, including those related to the transmission line construction practices or operations of the transmission line.

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

As part of early transmission design work, Dairyland will need to complete preliminary survey work and may need to acquire some soil characteristics data (see **Section 3.2.2**). Dairyland will notify landowners in the event site access for soil boring is required to determine soil suitability in areas where special transmission structure design may be required.[38]

If a negotiated easement cannot be reached, Dairyland will use the eminent domain process to obtain the needed rights. *See* Minn. Stat. § 216E.12; Minn. Stat. Ch. 117. The eminent domain process allows impartial Commissioners the ability to determine just compensation for the acquisition of right of way.

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

7.2 Construction Procedures

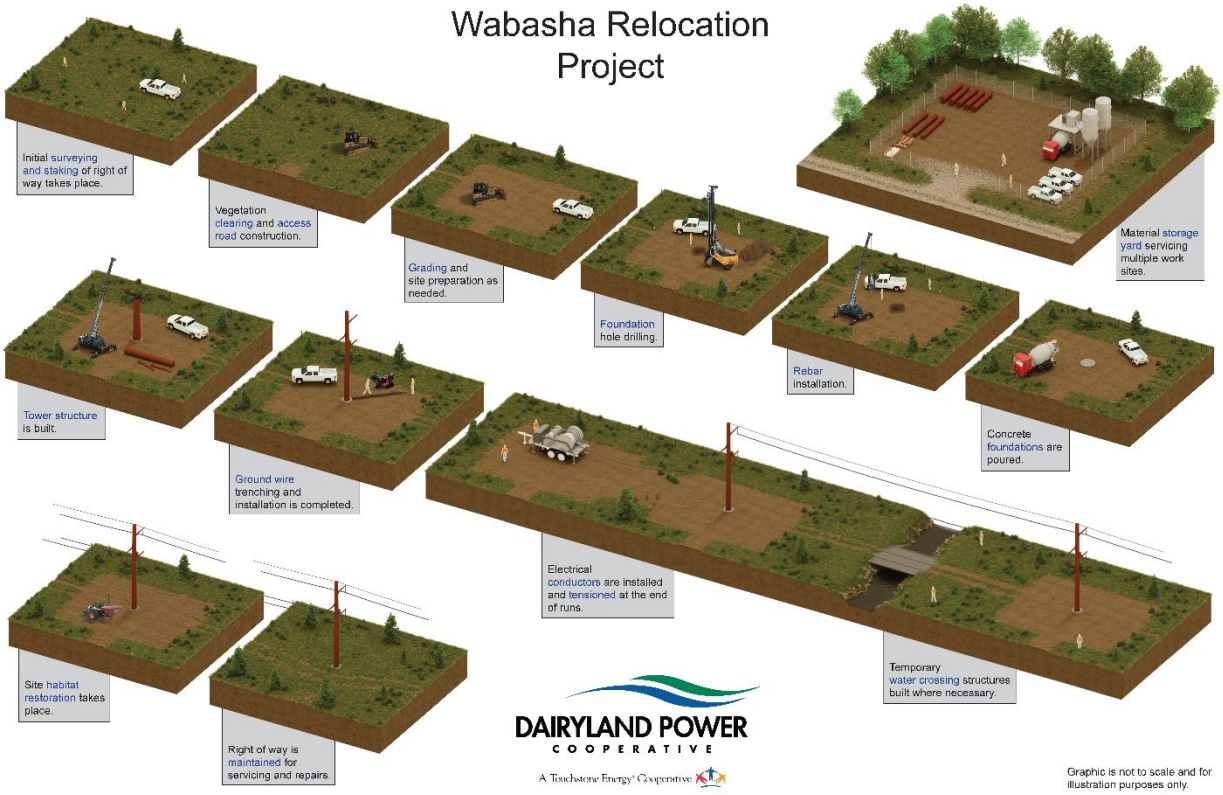
As illustrated in **Diagram 7-1** and described further below, construction will follow Dairyland's standard construction and mitigation best practices. Construction of a transmission line typically occurs as follows:

- Collection of geotechnical data (soil borings) required for final design of the transmission line, discussed in **Section 3.2.2**;
- Surveying and staking will be used conducted during multiple phases of the Project;
- Installation of erosion and sediment control best management practices (BMPs) prior to anticipated ground disturbance activities;
- Mobilization and preparation of staging / laydown yards;
- Road improvements or development to provide access to the ROW;
- Clearing activities of the ROW;
- Installation of construction mats in wetlands or other unstable soil areas, and installation of temporary bridges across waterways prior to construction along the ROW;
- Temporary material staging along the ROW prior to construction installation;
- Grading, excavation, and foundation installation;
- Structure setting;
- Wire stringing and clipping once there are enough structures set consecutively in a row to support a wire pull;
- Removal of existing transmission circuits;
- Cleanup and restoration of ROW; and
- Demobilization and laydown yard cleanup.

Construction of an overhead transmission line requires several different activities at any given location. The following subsections generally describe the major construction activities and approximate sequence.

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.

Diagram 7-1. Transmission Line Construction Sequence



7.2.1 Transmission Line Construction

During construction of an overhead transmission line, several different work functions happen concurrently at any given location. The following information generally describes the major construction activities, their approximate sequence, typical construction machinery used, and the anticipated impacts associated with each activity:

Surveying and Staking – Surveying and staking will be conducted during multiple phases of the Project and will include locating and marking the ROW and authorized off-ROW access roads, sensitive environmental resource boundaries, foundations or structure locations, property or section lines, underground and aboveground utilities, etc. Surveying and staking will be performed prior to and sometimes after construction activities such as during constructability reviews, soil borings (geotechnical investigations), staging / laydown yards, clearing, installation of foundations and hole excavations. These activities have limited impact on the environment or landowners and are generally completed by a two-person crew travelling by foot, ATV, or pick-up truck.

Erosion and Sediment Control – Installation of erosion and sediment control BMPs will be implemented prior to anticipated ground disturbance and in accordance with the Minnesota Pollution Control Agency (MPCA) National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit (see **Table 2-1**). Erosion and sediment control equipment

includes ATVs and trucks for crew transportation, as well as skid loaders, tractors, backhoes, hydro-seeders, and other light-duty equipment. BMPs will be inspected, maintained, repaired, and replaced in accordance with the MPCA Construction Stormwater General Permit.

Mobilization and Preparation of Staging / Laydown Yards – Initially, labor and equipment will be mobilized to prepare laydown yards for temporary trailer(s) and security measures to receive materials, storage containers, portable toilets, dumpsters, construction mats, tools, and equipment, etc. Activities involved to prepare the staging / laydown yards include installation of erosion and sediment control BMPs, any leveling of uneven surfaces, stripping and stockpiling of topsoil (if necessary), and installation of gravel, tracking pads near entry/exit, if needed, installation of culvert(s), power, and fencing. This work is generally completed using equipment such as a bulldozer and dump trucks. The disturbance from the laydown yard is dependent on soil type and topography. Depending on landowner preferences, laydown yards may be left in place or returned to prior conditions following construction activities.

Road Improvements and Development – In order to access the ROW, Dairyland may need to improve existing access roads, or develop new access roads. Road improvements may include tree trimming, tree clearing, road grading, widening and fill placement. Only construction mats will be used in wetland features; construction mats will be removed after completion of construction activities (see Construction Matting and Bridge Installation below). This work is generally completed using equipment such as a bulldozer, track-hoe, skid-loader, and dump trucks. The travel surface of the access road is generally 20 to 25 feet wide. The total amount of disturbance of the road (cut slope to base of the spoils slope) is dependent on soil type and topography. Depending on landowner preferences and permit requirements, access roads may be left in place or returned to prior conditions following construction.

Clearing of ROW – To facilitate construction equipment access and ensure safe clearances between vegetation and the transmission line, all vegetation will be cleared for the full width of the ROW. Vegetation will be cut at or slightly above the ground surface using mechanized mowers, sky trims, processors, harvesters, or by hand. Rootstocks will generally be left in place, except in areas where stump removal is necessary to facilitate the movement of construction vehicles, or when reasonably requested by the landowner. Side trimming the ROW would happen shortly after the clearing is completed. Following the side trimming, a final mowing of debris and stump cleanup will be completed. Where permission of the landowner has been obtained, stumps of tall-growing species will be treated with an herbicide to discourage re-growth.

Construction Matting and Bridge Installation – Matting will be used as a protective measure that minimizes ground impacts and will be installed to provide access through wetlands or other unstable soil areas prior to construction. Mats are also used to support and stabilize large equipment required for construction. Construction mat travel lanes will generally be 16 to 20 feet wide. Construction matting may consist of composite timber, or laminate mats and will be installed with rubber-tired grapple trucks, forwarders, forklifts, or skid loaders. The line will be constructed in segments with mats being moved and used in other segments as construction progresses.

In addition, permitted temporary bridges will be installed over waterways. Equipment bridges will be designed to meet the requirements of the applicable agencies and local authorities. Bridges will be installed during clearing and will be removed as soon as possible during final restoration once

the bridge is no longer required to complete and monitor restoration activities. Fording of waterbodies is prohibited (i.e., civil survey, potholing, or other equipment are not permitted to ford waterbodies prior to bridge placement).

Additional Temporary Workspace – ATWS beyond the 100-foot-wide ROW may be required at certain locations, such as road or railroad intersections, utility crossings and along steep slopes. In addition, there will be temporary staging of materials such as structures and hardware along the ROW prior to construction installation. This work involves such equipment as semi-trucks, loaders, and cranes to unload structures and other materials near each work location. Dairyland will avoid the placement of ATWS in wetlands and near waterbodies as practicable.

Grading, Excavation, and Foundation Installation – Prior to foundation installation, Dairyland will install a construction mat platform generally 40 feet by 40 feet around the structure location to ensure a level and safe working area. In some cases, Dairyland may grade an area approximately 40 feet by 40 feet around the structure location.

Excavation is required for all structures whether they are direct-embedded or use reinforced concrete foundations. In general, the excavated holes for each type of foundation will range from five to 10 feet in diameter and 20 to 50 feet in depth, or greater, depending on soil conditions. The method of installation, diameter and depth of the foundation will vary depending on the soil capability and structure loadings. For direct-embedded poles, a hole will be excavated to the appropriate depth. The base of the structure will be placed into the excavated hole or, if soils are unstable, into a culvert, the area around the pole will be backfilled with clean granular fill or concrete. For structures requiring a reinforced concrete foundation, the required hole will be excavated, and a rebar cage and anchor bolts will be placed into the excavation. The excavation will then be filled with concrete to a point where the rebar cage and anchor bolts are covered leaving a typical one to two-foot reveal of the foundation above grade with exposed threaded anchor bolts. The complete caisson will then be allowed to cure. Typical equipment for this phase of construction would include dump trucks, drill rigs, cranes, vacuum trucks, concrete mixers, and tanker trucks.

In areas with high water tables, or where water is needed to stabilize the hole during drilling, it may be necessary to dewater the excavation. Depending on site conditions, the water may be filtered through a geotextile filter bag or similar method and discharged to an upland area where it can re-infiltrate or be removed from the site via a tank truck. Appropriation and discharging activities will follow applicable regulations and permit requirements to ensure compliance with Minnesota water quality standards.

Structure Setting – For base plate structures (mounted on concrete foundation), the above-grade structure would be placed on the anchor bolt pattern, leveled, and tightened down. For direct-embedded structures, the base section would be installed, leveled, and backfilled with granular or flow-able fill. After that, the top section or sections will be installed. At each section, hydraulic jacking systems are typically used to slide the joints together to the engineered and fabricated tolerances. Equipment used for this phase of construction would include cranes and bucket trucks at each structure location.

Wire Stringing and Clipping – Once there are a sufficient number of structures set consecutively in a row to support a wire pull, the equipment for the wire pull is mobilized to the pull area and is set up. The conductor and static wires are then pulled and clipped into place. This stringing and clipping activity requires access to each structure with a bucket truck, crane, or helicopter. Other handling equipment used for this phase of construction includes reel trailers, wirepullers, and related stringing equipment.

Wire stringing areas or wire pulling areas are approximately 40 feet by 300 feet. At a minimum, at each wire pulling area, matting will be placed under wire equipment for construction grounding purposes. Incidental matting will also be required at most road crossings. Matting will be removed by similar equipment used for installation as each wire pull or construction segment is completed. During mat placement, use, and removal, standard procedures will be implemented to prevent or minimize the spread of invasive species.

Removal of Existing Facilities – Where replacing or overbuilding existing transmission circuits, the existing structures and wire will be removed. The removed materials will be evaluated to determine their appropriate disposal. Typical equipment used includes cranes, bucket trucks, reel trailers, wirepullers, and related stringing equipment. Where existing transmission structures are to be removed, it is common practice to remove the structure to a depth of at least 4 feet below grade; however, in some cases the structure may be cut off at grade. The determination will be site specific and will be based on the type of structure, land use at the site, and construction vehicle access constraints.

Cleanup and Restoration of ROW – Upon completion of construction, cleanup and site restoration occurs. This includes removing construction mats, temporary bridges, and other material or debris from the ROW. Any necessary seedbed preparation and seeding is performed along with BMPs. Typical equipment used for these activities include mat trucks, bobcats, pickup trucks, and other light-duty vehicles.

Demobilization and Laydown Yard Cleanup – The last step in the construction process is final cleanup of the laydown yards by removing all items such as trailers, security fence, left over materials, storage containers, portable toilets, dumpsters, construction mats, tools, and equipment from the Project site. Once the final laydown restoration is complete per contractual agreement with the applicable landowner, the construction phase is complete.

7.2.2 Substation Construction

The Kellogg Substation facilities are proposed to be sited on 4 acres within a larger 10.8-acre parcel of land. Approximately 4 acres of the site will be used for the substation, access drive, and stormwater drainage features. An initial layout of the Kellogg Substation is provided in **Appendix H**.

Site preparation would include installing erosion and sediment control BMPs, stripping topsoil, and hauling in structural fill to build up the subgrade for the substation pad. Once the substation pad is built to the subgrade, all areas will be restored, and the site will be ready for use. This work will occur the year prior to transmission line and substation construction to allow for one winter to allow the ground to settle.

Construction within the newly prepared substation pad will consist of drilled pier foundations ranging in size from three to seven feet in diameter and 10 to 35 feet deep. The foundations will be installed to support transmission line dead-end structures, static masts, and bus and equipment support structures. Slabs-on-grade eight feet square by two feet thick will be used for 161-kV circuit breakers, and six-foot square by two feet thick will be used for 69-kV circuit breakers. The control building will be on a 20-foot by 40-foot- by 1-foot-thick concrete slab. Transformer and reactor secondary oil containment will be a concrete-lined pot filled with stone. Conduit for control and communication cables and grounding conductor will be installed prior to the placement of the final layer of crushed rock surfacing. The ground grid will be installed 18 inches below the subgrade surface throughout the substation pad and extend four feet outside the substation security wall.

7.3 Restoration Procedures

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

Post-construction reclamation activities will include removing and disposing of debris, removing all temporary facilities (including staging and laydown areas), installing appropriate erosion and sediment control BMPs, reseeding areas disturbed by construction activities with vegetation similar to that which was removed with a seed mixture certified as free of noxious or invasive weeds, and restoring the areas to their original condition to the extent possible. In cases where soil compaction has occurred, the construction crew or a restoration contractor uses various methods to alleviate the compaction, or as negotiated with landowners. Further details are provided in Dairyland's Vegetation Management Plan (VMP) provided in **Appendix I**.

Dairyland will contact landowners after construction is complete to determine if the clean-up measures have been to their satisfaction and if any other damage may have occurred. If damage has occurred to crops, fences, or the property, Dairyland 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.

For the Kellogg Substation site, a detailed restoration plan will be developed after the Commission's routing decision is made, and the plan will be prepared as part of Dairyland's Stormwater Pollution and Prevention Plan in accordance with the MPCA Construction Stormwater General Permit. This plan will include the overall site design, including graveled areas, vegetated areas, and a stormwater pond.

7.4 Construction Work Force Required

Although the workforce will ebb and flow over the course of the Project, Dairyland anticipates that approximately 20-30 construction (Dairyland employees and contract workers) workers will be employed during construction over the construction phase of the Project, and Dairyland will utilize Union labor. Dairyland will also have a construction supervisor onsite throughout the construction phase.

7.5 Operations and Maintenance

Dairyland's long-term goal of the vegetation management maintenance program is to establish a sustainable ROW consisting of vegetation that would be considered compatible. The NESC states that "vegetation that may damage ungrounded supply conductors should be pruned or removed." Trees along the ROW edge will need to be trimmed from time to time to manage the appropriate clearance distances between the conductors and the trees. To ensure continued safe operation of the line, tree removals may also occur outside the easement area when a tree tall enough to impact our facilities is dead, dying, diseased, leaning or compromised.

Integrated vegetation management practices are utilized in Dairyland's vegetation management program to establish the long-term goals of the program on a nominal 3- to 5-year cycle. Dairyland implements the use of many control methods within their vegetation management maintenance program that vary based on site conditions and can include manual (chainsaws), mechanical (mowers and other specialized vegetation management equipment including aerial saws where appropriate) and herbicides.

Herbicide application methods utilized will vary based on vegetation density, size and location, time of year, environmental conditions and property owner or easement restrictions. Some application methods include basal, cut stump, foliar or cut stubble. In general, our herbicide applications are selective in nature targeting woody species. Through the new easement acquisition process, landowners will be able to give or decline permission for the use of herbicides on their property.

Dairyland has developed a VMP to outline the practices that will apply to operational vegetation management activities across the Project (see **Appendix I**). The use of herbicides focuses on controlling woody vegetation within the ROW to reduce the impacts of the need to mow on a property and help establish a sustainable ROW that can be managed with selective herbicide treatments. A timeframe for the conversion of a ROW to establish compatible, non-woody vegetation will vary based on site conditions. A property owner could also encourage this conversion of the ROW to compatible vegetation by allowing selective herbicide use and through planting vegetation that results in increasing compatible vegetation within a ROW.

This portion of the Application provides a description of the human and environmental resources crossed by the Proposed Alignment, within the Proposed Route, or in the vicinity of the Project; potential impacts to these resources; and proposed mitigation measures.

8.1 Environmental Setting

The Project lies in The Blufflands Subsection, Paleozoic Plateau Section of the Eastern Broadleaf Forest Province, according to the MDNR Ecological Classification System. The MDNR describes The Blufflands as:

> *This subsection consists of an old plateau covered by loess (windblown silt) that has been extensively eroded along rivers and streams. It is characterized by highly dissected landscapes associated with major rivers in southeastern Minnesota. Bluffs and deep stream valleys (500 to 600 feet deep) are common. River bottom forests grew along major streams and rivers.*[39]

The environmental setting of the Project area includes several hydrologic features, such as wetlands, ponds, streams, lakes, including McCarthy Lake, Gorman Creek, and the Mississippi River to the east of the Kellogg Substation. Land use within the Project area is primarily agricultural and rural residential, with some wooded areas limited to areas of steep slopes associated with the Mississippi River bluffs. There is some developed/commercial land as the Project nears Kellogg and the Canadian Pacific Railroad. The majority of the Project (71%) is collocated with existing electric distribution, road, and railroad corridors (see **Section 3.3.1**, and route maps in **Appendix A**). 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 development of this Project.

8.2 Human Settlement

8.2.1 Aesthetics

The proposed transmission line will be visible along the Proposed Route. The majority of the poles will be single-pole steel structures (see **Diagrams 3-1 and 3-2)**. Special horizontally configured structures (H-frame or 3 pole structures) may be required to cross under any higher voltage circuits. All structures will be self-supporting; therefore, no guying will be required. Typical pole heights will range from 75 to 140 feet above ground and spans between poles will range from 300 to 1,000 feet.

Xcel Energy and Peoples have existing overhead distribution lines in the Project Route Width for approximately 5.1 miles, primarily along State Highway 42 and County Road 84 (see maps in **Appendix A**). Dairyland currently understands that Xcel Energy and Peoples plan to bury these distribution lines where they are overtaken by the Project, rather than attach them to the new 161-kV structures installed by Dairyland.

[39] https://www.dnr.state.mn.us/ecs/222Lc/index.html

Design standards for a 161-kV line require taller structures than for distribution lines.[40] Where the Project is adjacent to existing distribution lines and the distribution poles will be removed and those line will be buried, there will be fewer 161-kV structures than distribution structures because the taller structure heights allow for longer spans between structures. Therefore, although the view will change with the new, taller poles, the new poles will not contribute additive impact to the poles that are presently installed.

The landscape in the Project area west of U.S. Highway 61 is a mix of agricultural land, rural residential, and some wooded lands along the Mississippi River bluffs. East of U.S. Highway 61, the landscape is rural residential, commercial/industrial, and open space until the Kellogg Substation. Land to the east of the substation consists of a wooded buffer between the site and first the Zumbro River, then the Mississippi River. Utility infrastructure is common across the Project, including near the site of the Kellogg Substation where multiple transmission and distribution lines meet (see **page 10 of Appendix A.2**).

The visual effect experienced from the Project will depend largely on the perceptions of the observers across these various landscapes but will remain similar to current conditions. Although the area already has existing distribution lines and transmission lines in the viewshed, the visual contrast added by the taller transmission structures and lines may be perceived as a visual disruption. Conversely, the removal of some distribution poles and the height of the wires on the new transmission poles may contribute to an improved viewshed from some perspectives.

The Kellogg Substation will not be visible from the Zumbro or the Mississippi River, as densely wooded areas lie in between these features. Approximately 0.3 mile of trees stand between the substation parcel and the Zumbro River, and then between the Zumbro River and the Mississippi River stand another approximately 500 feet of trees. No trees will be cleared to construct the substation or facilitate connection of the transmission infrastructure to the substation.

During the CapX2020 proceeding, the State Highway 42 route option (3B-003), which was in that proceeding parallel to State Highway 42, was opposed by some stakeholders during the CapX2020 proceeding due to its scenic nature, despite it not formally being designated as a scenic byway.[41] The road winds and drops in grade significantly through a wooded corridor from approximately 615 Street to U.S. Highway 61 (see **page 7 of Appendix A.2**) In contrast to that alignment, Dairyland has designed the Project Alignment to deviate to the south of the State Highway 42 through a cleared, mostly unwooded area with less relief. Where trees are cleared through this segment, they will not be visible from the road. This will reduce the impacts to the wooded areas along State Highway 42 that contribute to its scenic nature.

The Project crosses U.S. Highway 61 at milepost 9.7 (see **page 8 in Appendix A.2**), which is part of the Great River Road, a National Scenic Byway. The Great River Road is a network of roads that follow the Mississippi River through ten states that promote exploration and interpretation of the Mississippi River. The Great River Road in Minnesota is overseen by the Minnesota Mississippi River Parkway Commission (MRPC), whose mission is to "preserve, promote and

[40] The existing 69-kV structures are typically approximately 50-60 feet above ground.

[41] *See In the Matter of the Route Permit Application for the CapX 2020 Hampton – Rochester – La Crosse 345 kV Transmission Line*, MPUC Docket No. E-002/TL-09-1448, OAH Docket No. 3-2500-21181-2, Findings of Fact, Conclusions of Law, and Recommendation at 88-91 (Feb. 8, 2012).

enhance the scenic, historic and recreational resources of the Mississippi River, to foster economic growth in the corridor and to develop the national, scenic and historic byway known as the Great River Road."[42] The MRPC's work is organized and guided under Minn. Stat. § 161.1419 and managed under the umbrella of the Legislative Coordinating Commission and is guided by a Corridor Management Plan[43] with support from MnDOT under Minn. Stat. § 161.142. National Scenic Byway designation does not confer land use regulation or permitting authority, but through the Corridor Management Plan, there is encouragement to safeguard the road's scenic qualities.

It would not be possible to construct the Project without crossing the Great River Road in some location. The existing CapX2020 system which presently carries the Dairyland 161-kV line crosses the Great River Road about 1.9 miles south of the proposed Project crossing. Therefore, Dairyland met with the MRPC, as well as MnDOT, early in Project planning to discuss the Proposed crossing location (see Project correspondence in **Appendix B** and discussion in **Section 9.2**).

Dairyland presented the Project to the MRPC in November 2023 and held a meeting in December 2023 where Dairyland reviewed the proposed crossing of U.S. Highway 61. Dairyland selected this crossing location as to avoid the steep topography on the west side along State Highway 42 (see note above), and to consider properties owned by the U.S. Army Corps of Engineers (USACE) (see **Section 8.4.5**) as well as in consideration of the Wabasha County Highway Department's future improvement plans for County Road 84 (see **Section 8.2.7**).

The MRPC offered several suggestions on the crossing, including the following:

- minimize the tree clearing on both sides and/or try to site the poles behind the treed areas to screen the structures as much as possible;
- use a perpendicular crossing rather than paralleling the roadway;
- set back the poles as far as possible, to the extent practicable;
- choose a color of poles that blends into the landscape; and
- provide visual simulations of before and after the crossing.

Later in December 2023, Dairyland reached out to MRPC to advise of a change in the Project alignment approximately 0.4 mile east of the U.S. Highway 61 crossing. This change was driven by subsequent meetings with the USACE regarding their interests along County Road 84. The new Project Alignment, presented in this Application, now parallels the Canadian Pacific Railroad on the eastern side, away from U.S. Highway 61. In between the Proposed Alignment and U.S. Highway 61 are numerous wooded areas, a tree line, the railroad, and various buildings and structures, including a solar field.

Dairyland has also met with MnDOT regarding the U.S. Highway 61 crossing. MnDOT advised that Dairyland coordinate with MRPC; in addition, MnDOT noted that there is a scenic byway group within MnDOT that will review and advise on the U.S. Highway 61 crossing. After MnDOT's initial review of the crossing location in MnDOT's Environmental Landscape Mapper[44], there is a gap in the Scenic Area in the area where the Project is currently crossing.

[42] https://www.mnmississippiriver.com/about-us/

[43] https://www.mnmississippiriver.com/about-us/management-plan/

[44] http://www.dot.state.mn.us/project-development/subject-guidance/environmental-landscapemapper/index.html

Dairyland has prepared a visualization of the U.S. Highway 61 crossing; this information was shared with the MRPC on March 13, 2024 and the MnDOT on March 14, 2024. Visualization images are presented in **Diagrams 8-1 through 8-3.**

8.2.1.1 Impacts and Mitigation

Because the Project will replace existing Xcel Energy and Peoples distribution lines for 5.1 miles and will otherwise largely be collocated with existing road and railroad ROW (see **Section 3.1.1**), aesthetic impacts in most areas along the Project Alignment are anticipated to be minimal. The existing distribution lines have been in place for decades, as the area has developed. Visual impacts might be perceived by a viewer as less because the existing distribution lines will be buried by the owner of those facilities and there will be fewer structures. The new transmission line structures will be 20 to 30 feet taller with larger insulators, which might increase the visual impacts perceived by a viewer.

Where trees need to be cleared, this change to the landscape is typically a noticeable visual impact to receptors. The Proposed Alignment south of County Road 84 was designed in part to minimize the amount of tree clearing, which helps to minimize visual impacts. No trees will be cleared as part of the Kellogg Substation and the substation will not be visible from the Zumbro or Mississippi Rivers. Dairyland will work with landowners to identify concerns related to the transmission line and aesthetics. In general, mitigation includes enhancing positive effects as well as minimizing or eliminating negative effects. Potential mitigation measures include:

- Location of structures, ROW, and other disturbed areas will be determined by considering input from landowners to minimize visual impacts.
- Care shall be used to preserve the natural landscape. Construction and operation shall be conducted to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the work.
- Landowners may be compensated for the removal of trees and vegetation based on easement negotiations.
- Structures will be placed at the maximum feasible distance from water crossings, within limits of structure design and applicable regulations.

Diagram 8-1. Visualization of Highway 61 – West Side of Highway, Looking South

Before

After

DAIRYLAND POWER COOPERATIVE

Photos Taken
December 19, 2023

Figure 8-1: Visualization of Highway 61 - West Side of Highway, Looking South
Wabasha Relocation Project
Dairyland Power Cooperative
Wabasha County, Minnesota

Diagram 8-2. Visualization of Highway 61 – West Side of Highway, Looking Southwest

Before

After

DAIRYLAND POWER COOPERATIVE

Photos Taken
December 19, 2023

Figure 8-2: Visualization of Highway 61 - West Side of Highway, Looking Southwest
Wabasha Relocation Project
Dairyland Power Cooperative
Wabasha County, Minnesota

Diagram 8-3. Visualization of Highway 61 – East Side of Highway, Looking North

Before

After

DAIRYLAND POWER COOPERATIVE

Photos Taken
December 19, 2023

Figure 8-3: Visualization of Highway 61 - East Side of Highway, Looking North
Wabasha Relocation Project
Dairyland Power Cooperative
Wabasha County, Minnesota

Regarding the U.S. Highway 61 crossing, there will be a new visual impact as a result of the Project. Distribution and transmission line crossings exist elsewhere along U.S. Highway 61. Dairyland has worked with the MRPC to understand concerns related to the new crossing location. On the west side of U.S. Highway 61, although some trees will be cleared within the 100-foot-wide ROW, Dairyland placed the Proposed Alignment to minimize tree clearing. The westerly pole will be shielded from view to some extent by the remaining forested area (see **Diagram 8-3**). Regarding the east side of U.S. Highway 61, Dairyland has placed the easterly alignment in an area where minimal large tree removal will occur on the north side of the Proposed Alignment (see **Diagrams 8-1 and 8-2**). The south side of the alignment is presently sparsely vegetated. The span length between the two poles is approximately 800 feet, which is near the maximum span length of 1,000 feet. The poles will be red-brown (weathered steel), which will allow them to blend with existing colors in the area. The crossing will also occur perpendicular to the road, which was the preference of the MRPC. After sending the visualizations to MRPC and MnDOT, MRPC had no further comments on the crossing or visualizations; MnDOT is reviewing the visualizations as part of the Utility Early Notification Memo process. Dairyland will continue to coordinate with the MRPC and MnDOT as the Project progresses.

8.2.2 Displacement

No displacement of residential homes, structures, or businesses will occur as a result of this Project. The NESC and Dairyland standards require certain clearances between transmission line structures and buildings or structures within the ROW for safe operation of the proposed transmission line (**Table 3-2**). Dairyland reviewed the locations of homes, buildings, and other structures during the development of the Proposed Route and has sited the Project purposely to avoid these features, moving the transmission line to the other side of the road, or further offset from the road, to avoid impacts to farmsteads, homes, or buildings that were built closer to the road (see **page 5 of Appendix A.2** as an example). The width of the Proposed Route provides sufficient design flexibility and distances from existing homes and structures for a transmission line design that achieves the requisite clearances.

The nearest residences to the Project are located along State Highway 42. There is one home within 200 feet of the Proposed Alignment, and it is approximately 134 feet away near MP 8.7 (see **page 7 of Appendix A.2)**. The nearest residence to the substation is approximately 430 feet to the northern edge of the substation property boundary, with existing transmission lines separating the substation from the property structures (see **page 10 of Appendix A.2**). **Table 8-1** summarizes the residential and non-residential buildings within 200 feet of the Proposed Alignment.

Table 8-1. Building Distances from Proposed Alignment

Building Type	0-50 feet	50-100 feet	100-150 feet	150-200 feet	Total
Home	0	0	1	0	1
Business	1	0	0	0	1
Outbuilding	0	0	1	3	4
Total	**1**	**0**	**2**	**3**	**6**

8.2.2.1 Impacts and Mitigation

No residences or businesses are anticipated to be displaced by the Project. Dairyland's new transmission line will be designed in compliance with local, state, NESC, and Dairyland standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths. Dairyland has sited the Project purposely to avoid these features. Dairyland will work with landowners during the easement acquisition process to address alignment adjustments or pole placement, as necessary.

8.2.3 Noise

There will be temporary noise associated with the construction phase of the Project and from operation of the Project. Because human hearing is not equally sensitive to all frequencies of sound, the most noticeable frequencies of sound are given more "weight" in most measurement schemes. The A-weighted scale corresponds to the sensitivity range for human hearing. Noise levels capable of being heard by humans are measured in dBA, which is the A-weighted sound level recorded in units of decibels.

A noise level change of 3 dBA is considered the lowest perceptible level to human hearing. A 5 dBA change in noise level is considered clearly noticeable. A 10 dBA change in noise level is perceived as a doubling of noise loudness, while a 20 dBA change is considered a dramatic change in loudness. **Table 8-2** shows noise levels associated with common, everyday sources.

Table 8-2. Common Noise Sources and Levels

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

The MPCA noise regulations[45] establish Noise Area Classifications (NAC) based on the land use activities at the location of the receiver and noise standards are applied to that land use activity. Residential areas, churches, educational and health services, and similar type land use activities are included in NAC 1; commercial-type land use activities are included in NAC 2; and industrial-type land use activities are included in NAC 3. Established daytime and nighttime noise standards

[45] Minnesota Rule 7030.0040

per NAC are provided in **Table 8-3**. The standards are expressed as limiting levels of dBA within a one-hour period; L_{50} is the dBA not to be exceeded over 50% of the time (30 minutes) within an hour, while L_{10} is not to be exceeded over 10% of the time (6 minutes) within the hour.

Table 8-3. MPCA Noise Limits by Noise Area Classification (dBA)[46]

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

Noise-sensitive receptors (NSRs) along the Project Route include residences and businesses. There are 44 NSRs (8 residences, 4 commercial buildings, and 31 outbuildings) within the Proposed Route. NSRs in the vicinity of the Project are shown on the maps in **Appendix A.2**. The nearest residence to the transmission line is approximately 134 feet from the Proposed Alignment near MP 8.7 (see **page 7 of Appendix A.2)**. The nearest residence to the Kellogg Substation is approximately 430 feet from the northern edge of the substation property boundary (see **page 10 of Appendix A.2**).

8.2.3.1 Noise Related to Construction

Construction noise is generally expected to occur during daytime hours as the result of heavy equipment operation and increased vehicle traffic associated with the transport of construction personnel and materials to and from the work area. Construction activities will be performed with standard heavy equipment such as backhoes, cranes, boom trucks, and assorted small vehicles. Construction equipment noise levels will typically be less than 85 dBA at 50 feet when equipment is operating at full load[47] and will only occur when equipment is operating. Upon completion of construction activities, noise associated with construction equipment will cease.

8.2.3.2 Noise Related to the Transmission Line

Operational noise levels produced by a 161-kV transmission line are generally less than outdoor background levels and are therefore not usually perceivable. As such, appreciable operational noise impacts are not anticipated from the Project. Further, proper design and construction of the transmission line in accordance with industry standards will help to ensure that noise impacts are not problematic.

Transmission lines can generate a small amount of sound energy during corona activity where a small electrical discharge caused by the localized electric fields (EF) near energized components and conductors ionizes the surrounding air molecules. Corona is the physical manifestation of

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

[47] https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook00.cfm.

energy loss and can transform discharge energy into small amounts of sound, radio noise, heat, and chemical reactions of the air components. Several factors, including conductor voltage, shape and diameter, and surface irregularities such as scratches, nicks, dust, or water drops can affect a conductor's electrical surface gradient and its corona performance.

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

The industry standard for utilities is calculated based on L_{50} for audible noise emissions. The worst-case scenario is when the transmission line is exposed to heavy rain conditions (i.e., one inch per hour). Anticipated noise levels for heavy rain conditions for a typical 161-kV line based on the results from the Bonneville Power Administration Corona and Field Effects Program version 3 (U.S. Department of Energy, Bonneville Power Administration, Undated) are listed in **Table 8-4**.

Table 8-4. Anticipated 161-kV Transmission Line Noise Levels with Heavy Rain

Load Condition	Audible Noise (dBA) (Rain)											
	Line Current (Amp	Cross Section Distance to 161-kV Transmission Line (feet)										
		-300	-200	-100	-50	-25	0	25	50	100	200	300
Average Historic Load	541	15.45	17.38	20.53	23.25	25.08	26.64	26.11	24.11	21.06	17.66	15.64
Peak Historic Load	1115	15.46	17.39	20.55	23.29	25.16	26.77	26.22	24.17	21.09	17.68	15.65
Peak Rated Load	2000	15.51	17.45	20.64	23.44	25.43	27.24	26.61	24.36	21.18	17.74	15.71
Maximum Operating Temperature	2182	15.53	17.47	20.66	23.49	25.51	27.38	26.73	24.42	21.21	17.76	15.73

The Project is located in a rural residential area. Ambient noise level in a rural residential area is about 40 dBA, day/night average sound level L_{dn}[48]. As shown in **Table 8-5**, the noise contribution due to corona effects will result in a change of 0.12 dBA above ambient. This change will not be noticeable to the human ear.

[48] USEPA. 1978. Protective Noise Levels

Table 8-5. Anticipated Total Noise Levels Associated with Heavy Rain

Item	Sound Level (dBA)
Ambient Sound Level - Rural Residential	40.0
Sound Contribution of Project Corona (maximum calculated)	27.4
Sound Contribution of Corona Noise plus Ambient	40.12
Potential Increase above the Ambient Level	0.12

8.2.3.3 Noise Related to the Substation

Dairyland is proposing to construct a 4-acre 161-/69-kV substation as part of the Project to supply the LN340 69-kV transmission line. An initial layout of the Kellogg Substation is provided in **Appendix H**. The nearest residence to the substation is approximately 700 feet from the northern edge of the substation property boundary (see **page 10 of Appendix A.2**), and over 1,000 feet from the substation transformer.

Sound power levels from the new transformer and control building heating, ventilation, and air control system were modeled with the conservative assumption of continuous operation at maximum operating levels. Acoustical modeling of noise levels from equipment is based on ISO 9613-2 International Standard Acoustics—Attenuation of Sound Propagation Outdoors. The acoustical model utilizes this calculation methodology in a grid system and accurately calculates sound pressure levels from substation operations at any coordinate(s) surrounding the substation property.

As presented in **Table 8-3**, the most stringent applicable MPCA noise standard for Class 1 Property is the L50 daytime and nighttime standards equivalent to 60 dBA and 50 dBA, respectively. Households, including farmhouses, are considered Class 1 property in Minnesota Reg. 7030.0050 Noise Area Classification. Agricultural land is considered Class 3 which corresponds to the actual substation site. The Class 3 daytime and nighttime standard is 75 dBA for both time periods.

The modeled sound impact at the roadway entrance to the nearest residence is 38.2 dBA and drops to 36.9 dBA at the nearest residence. As presented in **Table 8-2**, levels below 40 dBA correspond to sound levels one might experience in a library, or quiet bedroom at night.

The modeled sound level impact of the substation at the northwest property corner (nearest to the residence) is 41.5 dBA. These levels are well below the applicable noise standards and substation noise will not cause excursions of the most stringent 50 dBA noise standard.

8.2.3.4 Impacts and Mitigation

Sound levels associated with construction of the Project will be temporary in nature. To mitigate noise impacts associated with construction activities, work will generally be limited to daytime hours between 7 a.m. and 9 p.m. weekdays. Occasionally, there may be construction outside of those hours mentioned or on a weekend if Dairyland has to work around customer schedules, line outages, or if the schedule has been significantly impacted due to permitting delays or other factors. Dairyland will work with applicable stakeholders in the event construction becomes necessary

outside of these hours. Heavy equipment will also be equipped, as required by local ordinances, with sound attenuation devices such as mufflers to minimize the daytime noise levels.

Operational noise levels for the Project demonstrate compliance with the applicable state noise standards. The new transformer will comply with the National Electrical Manufacturers Association (NEMA) TR-1 standards[49] published by NEMA for transformers, step voltage regulators, and reactors. These standards cover a wide range of topics, including:

- Design and construction.
- Testing and performance.
- Marking and labeling.
- Safety requirements.
- Noise.

Compliance with NEMA TR-1 noise standards that were updated and published in 2019 is considered good engineering practice, and no further noise reduction for the site would be necessary to comply with state standards.

8.2.4 Socioeconomics & Environmental Justice

The socioeconomic setting of the Project area was evaluated on a regional basis, comparing data for Wabasha County and the State of Minnesota. Data compiled from the U.S. Census Bureau are summarized in **Table 8-6.**

Table 8-6. Socioeconomic Characteristics within the Project Area[50]

Location	2022 Population	White Alone Population	Median Income (2018-2022)	Percent Below Poverty Level	Language Other than English Spoken at Home (2018-2022)
State of Minnesota	5,714,300	82.6%	$84,313	9.6%	12.0%
Wabasha County	21,658	96.8%	$75,063	7.5%	3.1%

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

> "Environmental justice area means an area in Minnesota that, based on the most recent data published by the United States Census Bureau, meets one or more of the following criteria:
>
> (1) 40% or more of the area's total population is nonwhite;
> (2) 35% or more of households in the area have an income that is at or below 200% of the federal poverty level;

[49] NEMA TR-1 includes noise standards for transformers, regulators, and reactors. These standards are outlined in Table 3 of the document titled "Sound Levels for Transformers, Regulators, and Reactors". This table specifies the maximum allowable average decibel (dB) levels based on the kVA rating of the equipment and its cooling type.
[50] https://data.census.gov/.

(3) 40% 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."[51]

Census tracts that intersect with the Project were analyzed for environment justice areas, consistent with this statute. Census tracts are the best approximation of a geographic area where adverse impacts can occur from the Project. The Project Route Width intersects one census tract identified in **Table 8-7** and shown on **Figure 8-1**. Wabasha County was used as a reference population for the census tracts.

Table 8-7. Environmental Justice Communities per Minn. Stat. 216B.1691, subd. 1(e) Criteria[52]

Census Tract	Percent People of Color	Percent Below 200% of Poverty Level	Percent Limited-English Speaking Population (2017-2021)
Census Tract 4902	2.9	16.2	0.3

Dairyland utilized MPCA's "Understanding Environmental Justice in Minnesota" web-based mapping tool by drawing the Project Route Width into the mapping tool to determine whether the Project intersects any census tracts with environmental justice populations based on the definition above. It is important to note that MPCA's web-based tool accounts for a margin of error in determining environmental justice areas of concern.

Based on the data provided in MPCA's web-based mapping tool, the census tract intersected by the Project is not considered an environmental justice community under the definition provided in Minn, Stat. 216B.1691, subd. 1(e). Additionally, the Project does not cross any areas located within "Indian country," as defined in 18 United States Code 1151.

Dairyland also conducted this environmental justice analysis in accordance with the U.S. Environmental Protection Agency (USEPA) Federal Interagency Working Group on Environment Justice (EJ) and National Environmental Policy Act (NEPA) Committee's publication, Promising Practices for EJ Methodologies in NEPA Reviews (Promising Practices).

Using this methodology, the USEPA's Environmental Justice Screening Tool (EJScreen) was used as an initial step to gather information regarding minority and/or low-income populations; potential environmental quality issues; environmental and demographic indicators; and other important factors. The USEPA recommends that screening tools, such as EJScreen, be used for a "screening-level" look and a useful first step in understanding or highlighting locations that may require further review. EJScreen was used to evaluate the Proposed Route plus a 0.25-mile buffer. Using EJScreen, the communities in this are estimated to have 2% people of color and 17% low income.

[51] Although this statute does not prescribe requirements for a Route Permit application, Dairyland employs this methodology here consistent with the methodology used by EERA in a recently issued Environmental Assessment. *See* Docket No. ET2/22-235.

[52] https://mpca.maps.arcgis.com/apps/MapSeries/index.html?appid=f5bf57c8dac24404b7f8ef1717f57d00

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

Table 8-8 identifies the minority populations by race and ethnicity and low-income populations within the State of Minnesota, Wabasha County, and the two U.S. Census block groups within the Census Tract crossed by the Project (refer to **Figure 8-1**). U.S. Census 2022 American Community Survey 5-Year Estimate Data File# B17017 and File# B03002 for the race, ethnicity, and poverty data were analyzed at the block group level. No block groups crossed by the Project are considered environmental justice communities using the USEPA methodology.

Table 8-8. Minority and Low-Income Populations within the Project area (USEPA methodology)[53]

State/County/Census Block Group	% Total Minority [a]	% Below Poverty Level
State of Minnesota	21.7	9.3
Wabasha County	6.0	8.4
Census Tract 4902, Block Group 2	3.4	8.1
Census Tract 4902, Block Group 3	1.9	6.7
[a] "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White.		

8.2.4.1 Impacts and Mitigation

During construction, there may be short-term positive impacts to the nearby communities. Potential increases in local revenue may occur for businesses, such as hotels, grocery stores, gas stations and restaurants to support utility personnel and contractors.

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.

[53] 5-Year Estimates Detailed Tables File# B03002 and File #B17017, https://data.census.gov/

There are no environmental justice communities impacted by the Project, so no environmental justice impacts are anticipated. Because impacts to socioeconomics will be generally short-term and beneficial, no mitigation is proposed.

8.2.5 Zoning and Land Use Compatibility

The Project area consists largely of agricultural and rural development land use patterns. Land use cover along the Proposed Route is primarily agricultural, with some wooded areas west of the U.S. Highway 61 crossing (**Figure 8-2**).

8.2.5.1 Wabasha County Zoning Regulations

Wabasha County is located in southeastern Minnesota. It has approximately 21,000 residents, and comprises 525 square miles organized into seventeen Townships, nine cities, and two villages. The County is bisected by the Zumbro River and bounded on the east by the Mississippi River. The County has highly diverse land cover, but the most predominant land use is agricultural production. The County's Land Use Plan[54] was adopted in 1998 to guide development and management activities within the four geographic areas identified in the plan: the Agricultural Area; Common Interest Areas; the Lower Valley Area; and the Upper Valley Area. The Plan is intended, among other things, to reduce conflict related to non-farm development in agricultural areas, address environmental and natural resource concerns, and emphasize retention of historical and traditional land uses within the County.

Wabasha County has also adopted a Zoning Ordinance that generally applies to all areas falling outside of the boundaries or extra-territorial jurisdiction of incorporated municipalities.[55] Similar to the Land Use Plan, the Zoning Ordinance is intended to provide for orderly development of the County, limit incompatible uses within the County, ensure the County has adequate public facilities, utilities, and transportation, and protect and conserve the natural and scenic resources of the County. The Zoning Ordinance identifies four primary—primarily agricultural—use districts, and three overlay districts. The overlay districts cover uses in floodplains, shoreland, and blufflands. Each of these overlay districts has a particular ordinance governing activities within those districts. The bluffland ordinance is intended to protect the unique and valuable blufflands that are found within the County. The floodplain and shoreland district ordinances are authorized by and derived from Minnesota statutes. Given the abundance of water resources in the County, and the resulting extensive presence of shorelands and floodplains within the County, these ordinances are important to protect both public and private property and minimize losses due to flooding.

The Project corridor runs entirely through the A-1 (Agricultural Protection) and A-2 (Agricultural Fringe) primary zoning districts. It also crosses through both shoreland ("Shoreland Overlay Zone") and floodplain ("General Floodplain District") overlay areas for 2.1 and 1.6 miles, respectively. The substation is located outside of shoreland and floodplain areas. The Project, including the planned substation, has been sited to avoid blufflands. Shoreland and floodplain areas are shown on **Figure 8-3.** The Zoning Ordinance recognizes utilities as an important service within

[54] https://cms9files1.revize.com/wabasha/planning%20and%20zoning/Zoning%20Maps%20and%20Resources/Land%20Use%20Plan.pdf
[55] https://cms9.revize.com/revize/wabasha/departments/planning_and_zoning/permit_applications_and_forms.php#outer-121sub-147

the County, but does not specifically identify utility infrastructure, like transmission lines, as either a permitted or conditional use within any of its districts.

Minn. Stat. § 103F.121 requires each county to develop floodplain zoning ordinances in order to preserve the capacity of floodplains to carry and discharge floods and minimize flood hazards. Similarly, Minn. Stat. §§ 103F.201 *et seq.* requires municipalities to develop shoreland ordinances to preserve the economic and environmental values of shorelands and protect and enhance surface waters. Unlike floodplains and shorelands, blufflands do not have mandated state protection. They are, however, ubiquitous in the County and important for their scenic, historic, and ecological value. The County has therefore elected to enact special restrictions on development in these areas. The County's floodplain and shoreland regulations are contained within the Wabasha County Zoning Ordinance.[56] Despite the presence of these zoning regulations, the Project will not need to obtain any special zoning permits to construct the Project, as such local permits are preempted under state law with issuance of a Route Permit (see Minn. Stat. § 216E.10.1).

8.2.5.2 U.S. Army Corps of Engineers Properties

Early in Project planning, Dairyland identified that several tracts within the area it studied for the initial Project Alignment, prior to the Open Houses held as described in **Section 9.1**, were owned by the USACE, and were recently purchased with the intention of using the land for Mississippi River dredge material beneficial reuse. Dairyland reached out to the USACE in August 2023 and met with USACE staff in November 2023. At the meeting, the USACE explained its goals for the site, which was to use the land to store dredged material from Pool 5 of the Mississippi River and develop a rolling prairie habitat that will eventually be open to the public for recreation purposes (the "Rolling Prairie Property"). A Feasibility Report and Integrated Environmental Assessment was completed in February 2020.[57] The USACE has since drafted a Land Use and Operational Plan as of March 2023.[58] This plan outlines the use for 944 acres of land on the north and south sides of County Road 84 to satisfy dredged material placement needs for the next 100 years.

At the first meeting, USACE staff expressed initial concern with the clearance under the transmission lines and if it would present issues with development of the Rolling Prairie Property. They also indicated that several buildings on one property had been removed and that a public access area has been developed. USACE land, as well as the buildings which have since been removed, are shown on **pages 9 and 10 of Appendix A.2**. As part of the plans, the USACE was considering a "beneficial reuse" area where the public could come in and take sand for beneficial reuse on their own properties.

Dairyland then held its Open Houses as described in **Section 9.1**. Dairyland contacted the USACE in December 2023 after review of Open House comments regarding impacts to residences along County Road 84, along with information obtained from the Wabasha County Highway Department regarding future improvements to the road in this area (see **Section 8.2.7**). Originally, Dairyland

[56] https://cms9.revize.com/revize/wabasha/departments/planning_and_zoning/permit_applications_and_forms.php#outer-121sub-147

[57] https://www.mvp.usace.army.mil/Portals/57/docs/Navigation/DMMP/Pool%205/Pool%205_Final%20DMMP.pdf?ver=YEiOo_bgWZIpoo3yoqu5uQ%3d%3d

[58] U.S. Army Corps of Engineers. Draft Land Use and Operational Plan. Rolling Prairie Property Dredged Material Management Mixed Use Site. Upper Mississippi River Pool 5 DMMP, Wabasha County, Minnesota. Draft Plan – March 2023.

proposed collocating with County Road 84 between 195th Avenue and the first curve to the south on County Road 84. Landowners off County Road 84 near 157th Avenue expressed concern regarding the proximity of the transmission lines to their residences located on opposite sides of the road, and the Wabasha County Highway Department had indicated that the County eventually plans to soften the curves along the road (see correspondence provided in **Appendix B** and discussion in **Section 8.2.7**). Based on these comments, Dairyland was considering revising this portion of the alignment. Dairyland considered a route realignment north of County Road 84 through agricultural land and across the USACE property that was designated for the Rolling Prairie restoration. In addition, Dairyland also was considering a route realignment to the south of County Road 84 that would address landowner and Wabasha County Highway Department concerns, in addition to avoiding McCarthy Lake, a public water basin and wild rice water (see **Section 8.6.4.2**), a wetland mitigation bank, and a BWSR conservation easement (see **Section 8.2.5.3**) located between the Canadian Pacific Railroad and the Old Channel of the Zumbro River (see **pages 8 and 9 of Appendix A.2**). The USACE expressed its concern with the northern route realignment option relative to its plans to develop the Rolling Prairie Property and expressed its support of the southern realignment option. A Proposed Alignment south of County Road 84 would not impact the rolling prairie features and would limit the impacts to an area designated for future parking. Following the meeting, Dairyland advised the USACE in December 2023 that it had incorporated the USACE suggestions into the Proposed Alignment, which is the alignment presented in this Application.

The Project crosses approximately 1.1 miles of USACE land. Dairyland has since corresponded with the USACE regarding the approvals needed for the transmission line. The USACE will issue Dairyland an easement (Lease for Utility System Facilities on Federal Lands and Property) following Dairyland's completion of the necessary federal forms once a route is issued by the Commission. Issuance of this easement will not require a separate formal federal environmental review process. The Project in its present alignment will not be incompatible with the USACE's goals for the Rolling Prairie Property. Communications with USACE are presented in **Appendix B**.

8.2.5.3 Conservation Easements

Between MPs 10.7 and 11.0, the Proposed Route crosses a conservation easement on private land held by the Minnesota Board of Water and Soil Resources (BWSR; see **pages 8 and 9 of Appendix A.2**). However, the Project Alignment and 100-foot-wide ROW do not cross the BWSR easement as it is contained to the parcel to the north. There will be no impacts to the easement during construction or operation.

8.2.5.4 Impacts and Mitigation

The Project as proposed has incorporated the general requirements and design criteria outlined in the shoreland and floodplain ordinances, which do not prohibit the infrastructure proposed by the Project. No local permits will be needed to construct the Project in shoreland and floodplain areas. Impacts to land use as a result of the Project are expected to be minimal, and construction of the line will not change land uses, particularly given that the Project will be collocated with existing road ROW for a majority of its length. Short-term agricultural impacts might occur during

construction, which will be mitigated through restoration and compensatory payments. Minimal impacts to residential land uses are anticipated; therefore, no additional mitigation is proposed.

8.2.6 Cultural Values

Cultural values include those perceived community beliefs or attitudes in a given area, which provide a framework for community unity. The Wabasha County Comprehensive Land Use Plan[59] states that Wabasha County is one of the nine original counties created by the territorial legislature of Minnesota in 1849. Prior to 1826, this area was inhabited by the Mdewakanton Tribe of the Isanti (Santee) Dakota (Sioux Nation), led by Chief Wa-pa-Shaw. Their principal village, Kiyuska, was located in the Mississippi River valley, near present day Winona, Minnesota. Chief Wa-pa-Shaw's nephew, Augustin Rocque, son of Joseph Rocque, a French fur trader, and the sister of Chief Wa-pa-Shaw, was generally regarded as the first white settler in this area although he was of mixed heritage. Between 1825 and 1830, a series of four treaties referred to as the Treaty of Prairie du Chien surrendered Native American claims to land in Western Iowa, Northwestern Missouri, the Des Moines River Valley, and western side of the Mississippi River in Minnesota Territory[60,61].

Today, agriculture is the most predominant land use in Wabasha County. Agricultural activities include dairy farming, row and vegetable crops, fruit trees, pastures and hay, and forestry. Because of the desirable landscape in Wabasha County and its location near Rochester, non-farm residences have been established in historically farmed areas. Since 1940, rural population in Wabasha County has become increasing non-farm, rural residential. Non-farm business owners have outnumbered farm owners since 1972, showing an increase since 1969 while the number of farm owners has slowly decreased.

Several economic development associations are active in Wabasha County, including: several city Chambers of Commerce and the Main Street Wabasha organization; the Wabasha County Community Development Corporation; Economic Development Commissions in the cities of Wabasha and Plainview; and Mississippi Valley Partners, a regional economic development initiative involving businesses and communities surrounding Lake Pepin, including the cities of Wabasha and Lake City.

Regarding natural resources, some of the best tracts of dry prairie, wet meadow, emergent marsh, and floodplain forest in southeastern Minnesota occur in the Weaver Dunes-McCarthy Lakes-Zumbro Bottoms area. The major natural resource features in Wabasha County are the Lower Zumbro and Mississippi Rivers. Steep slopes rising nearly 500 feet from the bottom lands to higher farming areas are characteristic of both the Zumbro and Mississippi Rivers.

Recreation is a significant land use in Wabasha County. Recreational activities center on the Zumbro River, the Mississippi River and MDNR managed lands. Recreational activities include

[59] https://cms9files1.revize.com/wabasha/planning%20and%20zoning/Zoning%20Maps%20and%20Resources/Land%20Use%20Plan.pdf

[60] https://www.wabashacountyhistory.org/history

[61] https://www.wabasha.org/community-resources/about/wabashas-chronological-history-heritage/

fishing, hunting, canoeing, tubing, snowmobiling, walking on trails, bicycling, horseback riding, use of off-road vehicles, and skiing.

8.2.6.1 Impacts and Mitigation

Construction of the proposed Project is not expected to conflict with the cultural values of the area, as the 161-kV currently exists within Wabasha County. Its relocation within Wabasha County will be a new impact in a specific area; however, distribution and transmission lines are common occurrences throughout the County. As described in **Section 4.3**, the existing LQ34 line 161-kV transmission line has been serving the local area since the 1950s. It provides several important reliability purposes including maintaining high voltage connections to substations serving the 69-kV transmission grid that ultimately brings power to the load distribution network in the area. The Project will contribute towards continued reliability for residents and others who utilize energy in the region. Therefore, no mitigation is proposed.

8.2.7 Public Services and Transportation

The Project is located in a principally agricultural and rural residential area. Private landowners in the Project area have their own private wells and individual sewage treatment systems. The residents also have access to other utility services by various providers, including waste collection, natural gas, cable television, electricity, and telephone. Site improvements, such as septic systems and wells, will be identified during survey activities.

Several existing overhead distribution and transmission lines are located in the Project area (see **Appendices A.1 and A.2**). There are no crude oil or interstate natural gas pipelines in the vicinity of the Project. The Proposed Route will follow the path of existing distribution lines maintained by Xcel Energy and Peoples for approximately 5.1 miles, primarily along State Highway 42 (see **Appendix A.2**).

The Proposed Route will parallel and/or intersect with several township, county, and state-managed roads and highways as described in **Table 8-9** and shown in the maps in **Appendix A**.

Table 8-9. Highways or Roads within the Project Area

Highway / Road Name	Jurisdiction	Parallel / Intersects	Traffic Volumes (AADT / 2023) [62]
565th Street	Township	Intersect	Not Available
215th Avenue	Township	Parallel	Not Available
State Highway 42	State	Parallel/Intersect	Not Available
575th Street	Township	Intersect	Not Available
578th Street	Township	Intersect	Not Available
580th Street	Township	Intersect	Not Available
590th Street	Township	Intersect	Not Available
608th Street	Township	Intersect	Not Available
615th Street	Township	Intersect	Not Available
U.S. Highway 61 / Great River Road (Scenic Byway)	State/U.S.	Intersect	4,241 (Seq. 5984)
161st Avenue	Township	Intersect	Not Available

[62] https://www.dot.state.mn.us/traffic/data/tma.html

Highway / Road Name	Jurisdiction	Parallel / Intersects	Traffic Volumes (AADT / 2023) [62]
159th Avenue	Township	Intersect	Not Available
County Road 84	County	Parallel/Intersect	Not Available
145th Avenue	Township	Intersect	Not Available

Dairyland has coordinated with the MRPC regarding the crossing of U.S. Highway 61 (Scenic Byway) (see **Section 8.2.1**), in addition to the MnDOT, and the Wabasha County Highway Department for roads under their jurisdiction.

Dairyland met with MnDOT in October 2023 to present the Project. Notes from that meeting regarding the crossing of U.S. Highway 61 are included in **Section 8.2.1**. MnDOT indicated that the agency plans to repave U.S. Highway 61 in 2029; otherwise, no highway expansion projects are currently planned in the Project area. MnDOT recently completed work at the intersection of State Highway 42 and U.S. Highway 61; repaving was done in this area recently as well. No projects are currently forecast for State Highway 42 at this time. Dairyland and MnDOT staff also discussed crossing angles, footings, sight corners, and other technical issues. MnDOT requested that Dairyland complete its Utility Early Notification Memo form and submit it prior to this Application so that staff may begin to conduct an initial environmental review of the Project. Dairyland submitted this form to MnDOT on March 14, 2024. Communications with MnDOT are presented in **Appendix B**.

Dairyland met with the Wabasha County Highway Department in August 2023, early in Project planning. The Wabasha County Engineer advised that work within any Wabasha County Highway ROW, including crossing or adjacent to and within the County's ROW would require a utility permit from the Wabasha County Highway Department. Dairyland then met with the Wabasha County Highway Department in October 2023 to discuss the County Road 84 alignment. At that time, the initial Project route followed County Road 84 east as it traveled out of the City of Kellogg. The Wabasha County Highway Department described that it planned to eventually soften three 90-degree s-curves along County Road 84. Although there are not currently plans for this work, it could possibly occur within the next 8 to 10 years. The ROW width along County Road 84 is approximately 33 feet (66 feet edge to edge); any improvements made in the future that involve roadway expansion would require pole movement. Considering these restrictions, and alongside coordination with the USACE regarding its development plans for the Rolling Prairie Area (see **Section 8.2.5.2**), and addressing residents' concerns along County Road 84, Dairyland moved the Project alignment to its present position, which avoids the s-curves and future expansion potential along County Road 84. Communications with the Wabasha County Highway Department are presented in **Appendix B**.

The nearest airport to the Project is the Winona Municipal Airport, located approximately 18 miles southeast of the Project. The Red Wing Regional Airport, located in Hager City, Wisconsin, is over 30 miles northwest of the Project.

8.2.7.1 Impacts and Mitigation

Dairyland will coordinate Project construction schedules, including any outages, with Xcel Energy and Peoples distribution services to avoid and/or minimize disruptions to service in the area. Based

on the location of other existing utilities and site improvements that were identified during survey activities, the transmission line will be designed to meet or exceed required clearances and pole locations. No structure locations will be placed on or near existing utilities. Because the majority of the Proposed Alignment will follow existing ROW, no impacts to public services are anticipated and, therefore, no mitigation is proposed. Similarly, because the Project is primarily proposed to be routed near ROW, Dairyland does not anticipate impacts to site improvements such as wells or septic systems; however, this will be confirmed with landowners during the easement acquisition process.

Temporary access for construction of the transmission line would be along the transmission line ROW. Temporary and infrequent traffic impacts associated with equipment/material delivery and worker transportation will occur. Stringing the conductors and shield wire across roads can be accomplished with minimal traffic impacts. Typically, a pulling rope is simply carried across the road, which is then pulled overhead. Temporary structures may be installed inside or outside of road ROW to ensure pulling lines, shield wire, or conductors to have sufficient clearance over roads. Dairyland will work with MnDOT through its application process for a Utility Accommodation Permit in MnDOT ROW and comply with all permit conditions. Applicable utility permits where the line impacts Wabasha County and local township roads will also be obtained and complied with (see **Table 2-1**).

When appropriate, pilot vehicles will accompany the movement of heavy equipment. Traffic control barriers and warning devices will be used when appropriate. All necessary provisions will be made to conform to safety requirements for maintaining the flow of public traffic. Construction operations will be conducted to offer the least possible obstruction and inconvenience to the traveling public. Dairyland 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.

Given that the Project will primarily follow existing utility and road ROW, there will be minimal impacts to other utilities. Dairyland has coordinated with the Wabasha County Highway Department to avoid an area where future curve softening will occur on County Highway 84. Dairyland is not aware of any roadway expansion or repaving projects that will occur at the same time as the Project; therefore, no mitigation measures are proposed. To ensure that any short-term and infrequent traffic impacts are minimized, Dairyland will coordinate with all affected road authorities and, to the extent practicable, schedule large material/equipment deliveries to avoid periods when traffic volumes are high.

Dairyland has initiated consultation with the Federal Aviation Administration (FAA; see **Appendix B**) and will complete a Part 7460 Airport Obstruction Evaluation once a route is determined (see **Table 2-1**). Dairyland does not anticipate any aviation impacts as a result of the Project due to the distance from the nearest airports.

8.3 Public Health and Safety

8.3.1 General Construction Safety

The Project will be designed in compliance with local, state, NESC, and Dairyland standards regarding clearance to the ground, clearance to crossing utilities, strength of materials, and ROW widths. Construction crews and/or contract crews will comply with local, state, and NESC standards regarding installation of facilities and standard construction practices. Dairyland's established safety procedures and industry safety procedures will be followed during and after installation of the transmission line, including clear signage during all construction activities.

8.3.1.1 Impacts and Mitigation

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

8.3.2 Stray Voltage and Induced Voltage

"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 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. Structures and other facilities made of conductive material located in close proximity to electric transmission lines may experience an induced current and voltage due to electric and magnetic field coupling between the facilities.

8.3.2.1 Impacts and Mitigation

If a landowner has stray voltage concerns on their property, Dairyland suggests they contact their electric service provider to discuss the situation with technical staff, including the possibility of an on-site investigation. Additionally, Dairyland will coordinate with local distribution companies to perform pre- and post-construction testing of potentially impacted facilities to ensure no adverse impacts and address property owner concerns.

Induction and its potential impacts can be mitigated through implementation of appropriate design measures and techniques, such as:

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

Dairyland will design and construct the proposed facilities to minimize the potential for induction issues. Peoples and Xcel Energy distribution lines will be buried where collocated to eliminate physical conflicts with the Project.

8.3.3 Electronic Interference

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

Corona formation is a function of the conductor radius, surface condition, line geometry, weather condition, and most importantly, the line's operating voltage. This section summarizes the potential impacts of the Project on electronic communication and communication devices, including radios, televisions, and microwave communication.

Electromagnetic noise from transmission lines may interfere with electronic communications when it is generated at the same frequencies as communication and media signals. This noise could interfere with the reception of these signals depending on the frequency and strength of the signal and distance from the electromagnetic noise source. Corona interference from transmission lines causes the greatest disturbance in a relatively narrow frequency spectrum, in the range of about 0.1 to 50 megahertz (MHz). Because many communication and media signals are transmitted at higher frequencies, impacts to communication signals are limited.

AM radio frequencies are most commonly affected by corona-generated noise. AM radio frequency interference typically occurs immediately under a transmission line and dissipates rapidly within the ROW to either side.

Television broadcast frequencies are typically high enough that they are not affected by corona-generated noise. In particular, digital and satellite television transmissions are not affected by corona-generated noise because they are dependent on packets of binary information transmitted in the Ku band of radio frequencies (12,000-18,000 MHz). Digital and satellite transmissions are more likely to be affected by multi-path reflections (shadowing) generated by nearby towers. In addition, line-of-sight interference from transmission line structures can affect satellite television transmissions. The use of shielded coaxial cable for cable television transmittals generally makes them insusceptible to interference from electromagnetic noise.

Cellular phone signals use an ultra-high frequency, generally around 900 MHz, which is significantly higher than the range of electromagnetic noise generated by transmission line conductors. GPS signals operate at a higher frequency as well, within the range of 1,225 to 1,575 MHz.

Electromagnetic noise from transmission lines is not an issue for microwave communications. However, microwave communications can be physically blocked by taller transmission structures. Microwave beams are transmitted along aerial pathways between microwave communication

towers. Microwave beam pathways can extend as close as 150 feet to the ground. Transmission line structures for this project would be 75 feet to 140 feet tall.

8.3.3.1 Impacts and Mitigation

No impacts to radio, cellular phones, or GPS units are expected from construction or operation of the Project. Because both cellular phone signals and GPS operate at frequencies outside the range of electromagnetic noise generated by transmission line conductors, the risk of interference is negligible.

Electromagnetic interference to digital and satellite television signals as a result of the Project is not anticipated. If electromagnetic interference to these signals were to occur from multi-path reflections or line-of-sight interference, such interference can be mitigated by use of an outdoor antenna to improve digital signals or by moving the affected satellite antenna to a slightly different location. Electromagnetic interference from a spark discharge source due to imperfections on the conductor or associated equipment can be found and corrected.

Because no impacts on radio, television, cellular phones, or GPS units are anticipated from construction or operation of the Project, no mitigation measures are proposed.

8.3.4 Electric and Magnetic Fields

Electricity produces two types of fields, electric and magnetic. These fields are often combined and referred to as EMF.

8.3.4.1 Electric Fields

EF are created wherever there is electricity and when any device or wire is connected to a source of electricity, even when current is not flowing, or if the device is not turned on. Electric fields produced by high-voltage electric transmission lines have little ability to penetrate buildings, or even skin, and are easily shielded by common objects such as trees, fences, and walls.[63]

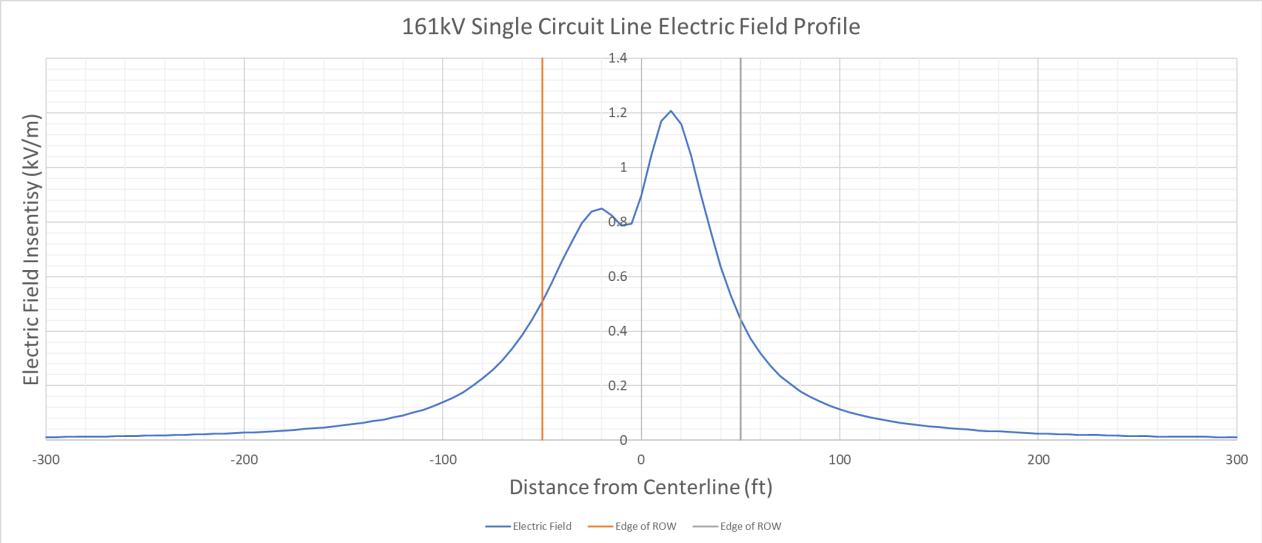
Although there is no state or federal standard for transmission line EF exposures, the EQB developed a standard of a maximum EF limit of 8-kV per meter (kV/m) at one meter (3.28 feet) above ground; the Commission has adopted this standard. Dairyland has calculated the approximate EF for the Project's transmission configuration and estimates the peak magnitude of EF density to be well below the EQB standard at approximately 1.2-kV/m underneath the conductors, one meter above ground. **Table 8-10** summarizes the EFs calculated for the proposed single circuit transmission line. These EF calculations are also shown graphically in **Diagram 8-4**.

[63] https://psc.wi.gov/Documents/Brochures/EMF.pdf. Accessed on August 24, 2023.

Table 8-10. Calculated Electric Fields (kV/M) for Proposed Alignment (One meter (3.28 feet) above ground)

Operating Voltage (kV)	Max Operating Voltage (kV)	ELECTRIC FIELD STRENGTH (kV/m)										
		Lateral Distance to Proposed Alignment (feet)										
		-300	-200	-100	-50	-25	MAX	25	50	100	200	300
161	169	0.01	0.03	0.14	0.51	0.84	1.21	1.05	0.44	0.11	0.03	0.01

Diagram 8-4. 161-kV Single Circuit Line Electric Field Profile



8.3.4.2 Magnetic Fields

Magnetic fields (MF) are created only when there is an electric current, the motion of electric charges (electrons) in a conductor, such as a wire. The magnitude of a MF is proportional to the current flow through an electric line, not the voltage. As the current increases, so does the MF. MFs become weaker rapidly with distance from the source; however, they do pass through most non-metallic materials and are therefore more difficult to shield. In the literature, MF data are presented in either units of Gauss (G) or Tesla (T).

Any device that uses electric current creates a MF. Electric appliances such as computers and refrigerators and the wiring that runs through walls and ceilings in homes produce MFs when current is flowing. **Table 8-11** lists sample ranges of MFs for various appliances and tools. Typical background environmental or ambient MF levels are most often around 1 to 3 milliGauss (mG)[64].

[64] https://psc.wi.gov/Documents/Brochures/EMF.pdf.

Table 8-11. Magnetic Fields of Common Electric Appliances (mG)[65]

Appliance*	Distance from Source	
	6 inches	2 feet
Microwave Ovens	100-300	1-30
Dishwashers	10-100	2-7
Refrigerators	Ambient – 40	Ambient - 10
Fluorescent Lights	20-100	Ambient - 8
Copy Machines	4-200	1-13
Drills	100-200	3-6
Power Saws	50-1,000	1-40
* Different makes and models of appliances, tools, or fixtures will produce different levels of MFs. These are generally-accepted ranges.		

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 ROW. Studies of the health effects from MFs conclude that the evidence of health risk is weak.[66] The general standard is one of prudent avoidance.

Table 8-12 summarizes the MFs calculated for the proposed transmission line configuration with power flow at peak historic loading (current line), average loading (current line) and peak rated loading of proposed new line. The MF calculations are also shown graphically in **Diagram 8-5**. The maximum MF under expected peak rated conditions is 78.83 mG at the edge of ROW, as shown in **Table 8-12**. This is well below the standards set by the state of both Florida and New York.

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

Table 8-12. Calculated Magnetic Fields (mG) for Proposed Alignment Design

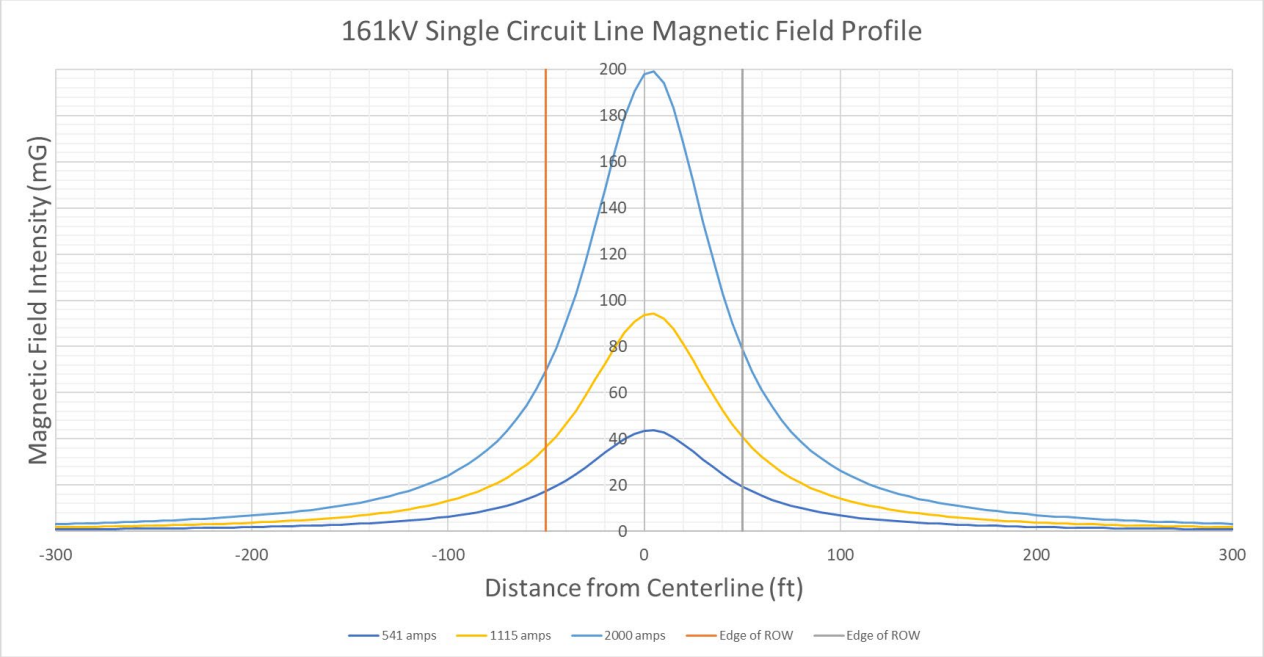
Load Condition	Line Current (Amps)	MAGNETIC FIELD STRENGTH (mG)										
		Lateral Distance to Proposed Alignment (feet)										
		-300	-200	-100	-50	-25	MAX	25	50	100	200	300
Average Historic Load	541	0.83	1.80	6.33	17.32	30.83	43.67	34.62	19.43	6.85	1.88	0.85

[65] https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

[66] www.niehs.nih.gov/health/topics/agents/emf/

Load Condition	Line Current (Amps)	MAGNETIC FIELD STRENGTH (mG)										
		Lateral Distance to Proposed Alignment (feet)										
		-300	-200	-100	-50	-25	MAX	25	50	100	200	300
Peak Historic Load	1115	1.71	3.73	13.16	36.38	65.64	94.17	74.02	40.91	14.23	3.89	1.76
Peak Rated Load	2000	3.08	6.76	24.22	69.66	132.10	199.06	151.31	78.83	26.22	7.06	3.17
Notes: Gray shading indicates edge of ROW.												

Diagram 8-5. 161-kV Single Circuit Line Magnetic Field Profile



8.3.4.3 Implantable Medical Devices

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

Modern "bipolar" cardiac devices are much less susceptible to interactions with EFs. Manufacturers of pacemakers and other IMDs, have indicated that EFs below 6-kV/m are unlikely to cause interactions affecting operation of most of their devices. **Table 8-10** and **Diagram 8-4**

show that the EFs for the Project are well below levels at which modern bipolar devices are susceptible to interaction with the fields.

The older "unipolar" designs of cardiac devices are more susceptible to interference from EFs. Research from the early 1990s indicates that the earliest evidence of interference with these types of IMDs could occur in EFs ranging from 1.2 to 1.7-kV/m. For older style unipolar designs, the EFs do exceed levels that research from the 1990s has indicated may produce interference. However, research conducted in 2005 concluded that the risk of interference to unipolar cardiac devices from high voltage power lines in everyday life is small. In 2007, Minnesota Power and Xcel Energy conducted studies with Medtronic, Inc. under 115-kV, 230-kV, 345-kV, and 500-kV transmission lines to confirm these 2005 findings. The analysis was based on real life public exposure levels under actual transmission lines in Minnesota and found no adverse interaction with pacemakers or IMDs. The analysis concluded that although interference may be possible in unique situations, device interference as a result of typical public exposure would be rare.[67]

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.

8.3.4.4 Health Studies and Potential Health Impacts

More than 25,000 scientific epidemiological, occupational safety, laboratory animal and cellular studies have been published regarding EMF from respected national and international organizations. Overall, most scientists are convinced that the evidence that power line fields cause or contribute to cancer is weak to nonexistent. The biological studies conducted to-date have not been able to establish a cause-and-effect relationship between exposure to MFs and human disease. Scientists have been unable to identify any plausible biological mechanism by which EMF exposure might cause human disease. There is a general consensus within the scientific community that exposure to EMF is not responsible for human disease. [68]

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.[69] Other studies have come to similar decisions.[70]

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

[67] 2007 Minnesota Power Systems Conference Proceedings (University of Minnesota), *Electromagnetic Compatibility of Active Implantable Medical Devices (AIMD) and Their Interaction with High Voltage Power Lines*, at 23.

[68] https://psc.wi.gov/Documents/Brochures/EMF.pdf. Accessed on August 24, 2023.

[69] http://www.niehs.nih.gov/health/topics/agents/emf/

[70] Minnesota Department of Health. 2002. *A White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options;* World Health Organization. 2007. *Environmental Health Criteria Volume No. 238 on Extremely Low Frequency Fields*

exposure and any adverse human health effects."[71] This conclusion was further justified in the Route Permit proceedings for the Brookings Project. In the Brookings Project Route Permit proceedings, Great River Energy and Xcel Energy and one of the intervening parties both provided expert evidence on the potential impacts of ELF-EF and ELF-MF, including the World Health Organization findings. 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."[72] The Commission adopted this finding on July 15, 2010.[73]

8.3.4.5 Impacts and Mitigation

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

8.3.5 Air Quality and Greenhouse Gases

8.3.5.1 Criteria Pollutants

The Clean Air Act (42 United States Code 7401 et seq. as amended in 1977 and 1990) is the principal federal statute governing air pollution. Under the Clean Air Act, the USEPA set National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants considered harmful to public health and the environment: carbon monoxide (CO), ozone, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, particulate matter equal to or less than 10 microns in diameter (PM_{10}), and fine particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$). The NAAQS include primary standards that are designed to protect human health and secondary standards that are intended to protect public welfare, including visibility and damage to crops and vegetation.

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

[71] 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).

[72] *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)

[73] *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)

NAAQS. Wabasha County is designated as in attainment or unclassifiable for the NAAQS (40 CFR Part 81.324).

8.3.5.2 Emissions Related to Construction

During construction, temporary air emissions will occur from the operation of construction equipment, vehicular traffic, and soil disturbance. Construction activities will be performed with standard heavy equipment such as backhoes, cranes, boom trucks, and assorted small vehicles. Dairyland anticipates conducting site preparation activities at the Kellogg Substation site between June and July 2026, and building the Kellogg Substation and 161-kV transmission line between June 2027 – July 2028, as further discussed in **Section 1.5**.

Table 8-13 summarizes the estimated potential emissions of criteria pollutants from construction activities for the Project. Construction emissions are based on typical counts of diesel-fueled construction equipment, expected hours of operation, and estimated vehicle miles traveled. Detailed emission calculations are provided as **Appendix J**.

Table 8-13. Construction Emissions of Criteria Pollutants (tons per year)

Description	NOx	CO	VOC [a]	SO_2	PM_{10}	$PM_{2.5}$
Off-Road Engine Emissions	40.71	8.72	2.86	0.02	1.51	1.51
Unpaved Roads	--	--	--	--	4.73	0.48
Commuters and Delivery Vehicles	19.50	3.79	0.75	0.01	0.59	0.59
Earthmoving	--	--	--	--	12.18	1.29
TOTAL	**60.20**	**12.51**	**3.61**	**0.03**	**19.05**	**3.86**

[a] Volatile organic compounds.

8.3.5.3 Emissions Related to Operation

The only potential air emissions from a transmission line result from corona. 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.

Corona-induced ozone, and nitrogen oxides (NOx) are typically not a concern for power lines like the Project with operating voltages at or below 161-kV because the EF intensity is too low to produce significant corona. Therefore, Dairyland expects ozone and NOx concentrations associated with the Project to be negligible, and well below all federal standards (NO_2 – 100 parts

per billion (ppb) as one-hour average, 53 ppb as annual average; ozone 70 ppb as 8-hour average).[74]

8.3.5.3.1 Impacts and Mitigation

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

- Reduced speed limits on access roads and water or other non-chloride-containing dust suppression applications;
- Water application to the ROW to suppress dust during dry weather, as needed;
- If the ROW is wet during construction activities, vehicle tracking of soil from the ROW will be minimized by using wooden or plastic matting at access points; and
- Street sweeping where soils are tracked onto paved roads in accordance with the MPCA Construction Stormwater General Permit.

At the completion of construction activities, all construction-related air impacts would cease. No impacts to air quality are anticipated due to the operation of the transmission line.

8.3.5.4 Greenhouse Gas Emissions

The State of Minnesota is taking significant action to reduce the amount of greenhouse gas emissions produced in the state. As of 2020, Minnesota has experienced a 23% reduction in greenhouse gas emissions across all industry sectors.[75]

Construction of the transmission line will result in temporary minor greenhouse gas emissions from fuel combustion in construction equipment, commuter vehicles, and delivery trucks. **Table 8-14** summarizes the estimated potential emissions of greenhouse gas from construction activities for the Project. Emissions are based on typical counts of diesel-fueled construction equipment, expected hours of operation, and estimated vehicle miles traveled. Detailed emission calculations are provided as **Appendix J**. At the completion of construction activities, all construction-related air impacts would cease.

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

[75] https://www.pca.state.mn.us/sites/default/files/lraq-2sy23.pdf.

Table 8-14. Preliminary Estimate: Greenhouse Gas Emissions

Description	CO_2 (Short Tons)	CH_4 (Short Tons)	N_2O (Short Tons)	CO_2e (Short Tons)
Off-Road Engine Emissions	2,697.87	0.11	0.02	2,707.20
Commuters and Delivery Vehicles	188.09	0.00	0.00	188.09
TOTAL	**2,885.96**	**0.11**	**0.02**	**2,895.30**

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

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

8.3.5.4.1 Impacts and Mitigation

Dairyland will minimize vehicle emissions by limiting vehicle idling to only times when necessary. Dairyland also encourages workers to carpool to worksites to minimize the number of vehicles on the ROW, which also limits vehicle emissions.

USEPA's Greenhouse Gas Reporting Tool[76] shows emissions within Minnesota totaled 34,929,605 metric tons of carbon dioxide equivalent (CO_2e) (38,502,906 tons) in 2020. Accordingly, the preliminary estimate of Project greenhouse gas emissions identified here would be negligible.

8.3.5.5 Climate Resiliency

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 already is changing and will continue to do so. Noticeable effects into the future include warmer periods during winter and at night, increased precipitation, heavier downpours, increased summer heat, and the potential for longer dry spells.[77]

From 1895 to 2024, Wabasha County has experienced an increase in temperature of 0.18 degrees Fahrenheit (°F) per decade and an increase in precipitation of 0.52 inch per decade.[78]

[76] https://ejscreen.epa.gov/mapper/

[77] https://www.dnr.state.mn.us/climate/climate_change_info/climate-trends.html

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

8.3.5.5.1 Impacts and Mitigation

Climate change could result in an increased risk of flooding in the Project area, increased temperatures, extreme weather events such as high winds, and excessive rainfall. The Project as proposed will be designed to withstand these changes and will increase reliability in the Project area.

8.4 Land-based Economies

8.4.1 Agriculture

According to the 2017 USDA Census of Agriculture, Wabasha County has 809 individual farms with an average farm size of 285 acres and farmland covers approximately 230,800 acres (66%) of the county. The market value of agricultural products sold was over $186 million in 2017.[79]

Agricultural lands are the most common land type within the Proposed Route (**Figure 8-2**). Agricultural lands crossed by the Project consist of properties used for pasture, hay, and cultivated crops. The Project is compatible for future and ongoing use as pasture, hay, or other crop cultivation. The Proposed Alignment will cross about 11.2 miles of agricultural land, which conservatively is 135.8 acres (within the 100-foot ROW).[80] There will be some loss of production where poles are installed within areas used for agricultural use. Accordingly, there will be minor, but largely negligible impacts to pasture, hay, and cultivated lands. There is one organic farm within the Proposed Route near MP 2.9; however, it is not crossed by the Proposed Alignment and will not be affected by the Project.[81, 82]

8.4.1.1 Impacts and Mitigation

Some agricultural land may be temporarily removed from production during transmission line construction. 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. Permanent impacts will occur where transmission structures are placed.

Dairyland will work with landowners to minimize impacts to agricultural activities along the Proposed Alignment and will compensate landowners for any crop damage/loss and soil compaction that may occur during construction. Areas disturbed during construction will be repaired and restored to pre-construction contours as required so that all surfaces blend with the natural terrain and are left in a condition that will facilitate natural revegetation, provide for proper

[79] https://www.nass.usda.gov/Publications/AgCensus/2017/Full_Report/Volume_1,_Chapter_2_County_Level/Minnesota/st27_2_0001_0001.pdf

[80] https://www.usgs.gov/programs/gap-analysis-project/science/land-cover-data-download

[81] https://www.mda.state.mn.us/organic-farm-directory-county

[82] https://organic.ams.usda.gov/integrity/

drainage, and prevent erosion. Dairyland will compensate landowners for areas lost for agricultural use due to pole placement.

Specific mitigation measures to be implemented include:

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

As discussed in **Section 7.2**, ATWS will be needed for the Project. For temporary staging / laydown yards, which will provide space to store material and equipment, and ATWS along the ROW, Dairyland will work with local landowners to lease the space by agreement with the respective landowner(s), remove and properly dispose of all material and debris, and repair all damages and perform restoration, as necessary. It is anticipated that ATWS on property immediately adjacent to the ROW and on private property will be needed, with the exception of limited equipment access and pulling areas.

8.4.2 Forestry

Forested areas are shown in **Figure 8-2**. The Proposed Route does not cross any MDNR fee surface lands that are managed as part of a State Forest. Based on review of forested areas using aerial photographs, Dairyland estimates that it will need to clear approximately 14.4 acres of trees within the 100-foot-wide ROW to construct and operate the Project. The ROW will need to be maintained for the safe and reliable operation of the transmission line and therefore, woody vegetation that is removed or cut back within the 100-foot-wide ROW will not be allowed to re-grow to heights that present a concern for transmission line safety.

8.4.2.1 Impacts and Mitigation

Because the Project will largely be collocated and parallel with existing utility and road ROWs, there will be minimal incremental impacts to forested areas from the construction and maintenance of the Project.

Mitigation measures for potential impacts to forest resources would be as follows:

- Dairyland has attempted to follow forest edges where possible to minimize the potential for habitat fragmentation.
- Compensation for the removal of vegetation in the ROW will be offered to landowners during easement negotiations.
- Landowners will be given the option to keep any portions of the trees (e.g., timber, branches, chips, shreds) cut within the easement area.

Dairyland has also developed a VMP for this Project (**Appendix I**).

8.4.3 Tourism

Tourism is a significant contributor to the economy of Wabasha County. Tourist destinations near the Project include the Richard J. Dorer Memorial Hardwood State Forest, the Zumbro River, the Mississippi River, McCarthy Lake State WMA, Kellogg-Weaver Dunes SNA, the Upper Mississippi River National Wildlife and Fish Refuge, the U.S. Highway 61 Scenic Byway, and others. Popular activities include fishing, boating, swimming, biking, hiking, camping, horseback riding, hunting, nordic and alpine skiing, etc. Further, locals and tourists value this area alike for its scenic nature (see **Section 8.2.1**).

8.4.3.1 Impacts and Mitigation

The Proposed Route avoids impacts to areas in Wabasha County that would be considered tourist destinations, including avoiding impacts to all public lands. The Project would not preclude tourism activities or appreciably diminish the use or experience at tourist destinations. Dairyland has minimized impacts to tree clearing (see **Section 8.4.2**) by selecting a route through areas that have already been predominately cleared. Dairyland will implement the mitigation measures recommended by the MRPC for the U.S. Highway 61 Scenic Byway crossing, as further discussed in **Section 8.2.1**, and has coordinated with USACE to select a route that is compatible with the Rolling Prairie Property, which may be used for future tourism opportunities (see **Section 8.2.5**). Therefore, no additional mitigation measures are proposed.

8.4.4 Mining

There is no mining activity within the Proposed Route or near the Project. Review of the MDNR's Mineral Resource data did not locate any mines within 2 miles of the Project.[83] Several sand and

[83] https://www.dnr.state.mn.us/lands_minerals/gis_data_maps/index.html

gravel quarries are located in Wabasha County; the closest mines to the Project are located in the city of Wabasha.[84] As no impacts to mining are anticipated, no mitigation is proposed.

8.4.5 Recreation

Recreational resources crossed by and near the Proposed Route are shown on **Figure 8-4**. The Project avoids the majority of the major recreational resources in the Project area.

The Project Alignment crosses two sections of the Zumbrowatha Grant-In-Aid snowmobile trail system at MPs 0.2 and 9.7. The Elba Snowbirds manage the trail system. The Project Alignment also crosses USACE interests associated with the Rolling Prairie Property (see **Section 8.2.5.2**) as well as the U.S. Highway 61 Scenic Byway (see **Section 8.2.1**).

The Zumbro River is located approximately 0.3 mile north and east of the Kellogg Substation. Major recreational activities associated with the Zumbro River include swimming, wading, fishing, and kayaking. The Mississippi River is located beyond the Zumbro River, approximately 0.5 mile east of the Kellogg Substation. Major recreational activities associated with the Mississippi River include fishing, boating, and picnicking.

Several MDNR interests are in the Project area but will not be crossed or otherwise impacted by the Project. The Richard J. Dorer Memorial Hardwood Forest, McCarthy Lake WMA and Kellogg-Weaver Dunes SNA are located south of the Project. The state forest, WMA, and SNA offer varied opportunities for hiking, nordic skiing, snowmobiling, and snowshoeing, as well as hunting, fishing, trapping, and wildlife observation. Several Aquatic Management Areas are located in the Project area but are not crossed, offering opportunities for fishing, including trout fishing. Fishing lakes in proximity to the Project area include McCarthy Lake. There are several parks associated with Wabasha County including Carley State Park, Whitewater State Park, the National Eagle Center, and Coffee Mill Ski Area, all of which are avoided by the Project.

8.4.5.1 Impacts and Mitigation

Dairyland has designed the Project to avoid impacts to the recreational opportunities in the Project area. Regarding the snowmobile trail crossings, transmission lines are compatible with snowmobile trails. The Zumbrowatha trail system presently crosses the CapX2020 system in the area of the first crossing, and the second crossing is near Highway 61. Dairyland currently plans to construct the Project from June 2027 – July 2028, which will likely not conflict with the winter use of the trail system. If construction activities will impact any of the snowmobile trails, Dairyland will coordinate with the trail associations regarding notifications and possible temporary trail closures and/or re-routes. Dairyland is minimizing impacts to the U.S. Highway 61 Scenic Byway (see **Section 8.2.1**) and has coordinated the route across USACE interests in the Rolling Prairie Property, which may be used for future recreational opportunities (see **Section 8.2.5**). Therefore, no additional mitigation measures are proposed.

[84] http://www.us-mining.com/minnesota/wabasha-county

8.5 Archaeological and Historic Resources

Based on nineteenth-century General Land Office (GLO) maps and notes on file with the Bureau of Land Management[85], conditions in 1870 were noted as predominately floodplain with many streams and rivers. Aerial photographs from 1939 show that roads had been constructed and farms established, with agricultural fields dominating the landscape, and by 1949 the City of Kellogg had been established. Subsequent historic and modern aerial photographs show that the landscape of the Project area has remained largely the same since that time, with roads being the main addition to the area.

A cultural resource literature review of the Proposed Alignment and a 0.5-mile buffer on either side was conducted by Merjent, Inc. (Merjent). This literature review and Merjent's evaluation of the possible effects of the proposed Project on historic properties in the Project area was provided to the Minnesota State Historic Preservation Office (SHPO) in a letter dated February 6, 2024 (see communications in **Appendix B** and summary of correspondence in **Section 9.2**[86]); SHPO response to this letter is pending. The following summarizes the results of the literature review.

On December 22, 2023, Merjent retrieved cultural resources site files (archaeological sites and historic structures) and on Tuesday January 16, 2024, retrieved previous survey files from the SHPO. Merjent Cultural Resource Specialists reviewed archaeological site files on the Office of the State Archeologist (OSA) online portal, as well as the GLO maps and available historical aerial photography accessed online through the OSA Portal.[87]

One previous past archaeological survey was identified in the area studied by Merjent. The survey overlaps the current Project at the eastern terminus and includes the area that is proposed for the Kellogg Substation. This survey identified and evaluated some sites and determined that they are not eligible for listing on the National Register of Historic Places (NRHP).

Based on OSA and SHPO files, no archaeological sites intersect the Project Alignment. There are seven archaeological sites within 0.5 miles of the Project. All of these sites range from 430 to 2,580 feet from any Project elements and will not be directly impacted due to distance.

- One site is located north of, but does not intersect, the Project Alignment. This site is characterized as a historic artifact scatter and includes some structural ruins. It has been recommended as Not Eligible for inclusion in the NRHP. According to the site form, this site has been heavily disturbed by plowing and the removal of buildings. The USACE recently purchased this property as part of the Rolling Prairie Area (see **Section 8.2.5.2**).

- Two sites are precontact lithic scatters that are located in close proximity to each other. Both have been determined Not Eligible for listing on the NRHP. Nearby is another site which is a precontact artifact scatter that is unevaluated for the NRHP.

[85] https://glorecords.blm.gov/

[86] Dairyland has filed public and non-public versions of correspondence with the SHPO in **Appendix B** because it contains 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).

[87] https://osa.gisdata.mn.gov/OSAportal

- The remaining sites consist of two historic artifact scatters which have been determined Not Eligible for inclusion in the NRHP, and one burial mound which is unevaluated for the NRHP.

Fourteen historic buildings and structures are located within the Study Area, four of which intersect the Project area.

- State Highway 42 has the most significant overlap with the Project Route, as the Project follows parallel to State Highway 42 for a large portion of the route. State Highway 42 was determined Not Eligible for listing on the NRHP in 2022.

- U.S. Highway 61 intersects perpendicularly with the Project. U.S. Highway 61 is a designated Scenic Byway. This property was determined Not Eligible for listing on the NRHP in 2018. Dairyland has met with the MRPC and MnDOT regarding this crossing (see **Section 8.2.1 and Appendix B**) and has included photo simulations of the crossing as **Diagrams 8-1 through 8-3**.

- A previously used portion of U.S. Highway 61 (Old Highway 61) intersects perpendicularly with the Project. It was constructed in 1927 and was later superseded when the present-day U.S. Highway 61 was constructed; it is currently designated 161st Avenue and is a paved, crowned-and-ditched road. There is an existing overhead distribution line along this road. This site has not been evaluated for listing on the NRHP. Due to collocation with the existing distribution line, this Project will not result in an appreciable change in viewshed.

- The St. Paul and Chicago Railway Company/Chicago Milwaukee and St. Paul Railway Company/Chicago Milwaukee St. Paul and Pacific Railroad Company River Division Railroad Corridor Historic District is a linear railroad-related property that extends from St. Paul to La Crescent, Minnesota. Various sections of this railroad were constructed between 1869 and 1876. This linear district is considered eligible for listing on the NRHP. It intersects perpendicularly with the Project. At the point of intersection, multiple overhead distribution lines are visible 0.2 miles or less form the railroad. Due to extant lines near this property, the Project will not result in an appreciable change in viewshed. It is also actively used by the Canadian Pacific Railroad.

The remaining historic buildings and structures include nine farmsteads, one bridge, and one culvert and do not intersect Project components. Some buildings have since been removed for the Upper Mississippi River Pool 5 Dredged Material Management Plan Rolling Prairie Site (see **Section 8.4.5**).

Dairyland requested feedback on the Project from the 11 federally recognized Tribes with geography within Minnesota and the Minnesota Indian Affairs Council in its Project notification letters sent in December 2023. These correspondences are included in **Appendix B**. To date, no Tribe has conveyed concerns regarding the Project. A copy of the literature review was requested and provided to the Tribal Historic Preservation Officer (THPO) of the Shakopee Mdewakanton

Sioux Community on February 7, 2024 (see communications in **Appendix B** and summary of correspondence in **Section 9.2**);

8.5.1.1 Impacts and Mitigation

Seven archaeological sites and fourteen historic buildings and structures were identified during the literature review. There is potential for Historic-era sites within the Project area because the area has been inhabited at least since the 1930s; however, given that the Project is an overhead transmission line project proposed mostly within already disturbed ROWs, there is a low potential for intact historic sites. The Project area could contain pre-contact sites given its location among several water sources. Given that the Project is located in an area with several existing overhead distribution and transmission lines and will be constructed along and within areas of previous disturbance such as existing ROWs, Dairyland is not presently planning to conduct archaeological surveys ahead of construction. Dairyland will continue to communicate with SHPO and THPOs, as requested, regarding the Project (see **Table 2-1**).

Dairyland has developed an Unanticipated Discoveries Plan (UDP) that outlines the procedures to follow, in accordance with state and federal laws, should archaeological materials or human remains be discovered during construction of the Project (see **Appendix K**). If any such discovery occurs, construction work will be stopped and the UDP will be 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.

8.6 Natural Environment

8.6.1 Topography

The Proposed Route travels across varying topography. The western 8.5 miles of the Proposed Route occurs over flat and rolling terrain ranging in elevation from approximately 1,100 to 1,200 feet above mean sea level (amsl). The Proposed Route then decreases in elevation sharply from approximately 1,100 feet to 700 feet amsl from MPs 8.5 to 9.7 as the Proposed Route descends the bluff on the east side of the Mississippi River valley. The remaining portion of the Proposed Route between MPs 9.7 to 13.3 is generally flat with a minor decrease in elevation from 700 feet to 680 feet. Elevations are shown on **Figure 8-5.**

8.6.1.1 Impacts and Mitigation

Construction of the Project will not alter the topography along the Proposed Alignment and associated 100-foot-wide ROW; therefore, no mitigation is proposed.

8.6.2 Geology

The Blufflands subsection of the Ecological Classification indicates that the depth of drift over bedrock varies from 0 to 50 feet. Bedrock can be exposed in river and stream valleys. Sediment thickness varies by landscape position. Large exposures of bedrock occur in the steep ravines. These exposures are primarily Ordovician dolomite, limestone, and sandstone with Cambrian

sandstone, shale, and dolomite exposed along the valley walls of the Mississippi River. Devonian dolomite and limestone are more locally exposed along the western edge of the subsection.[88]

Karst landscapes can develop where limestone and dolostone are at or near the surface. Limestone is composed mostly of the mineral calcite (calcium carbonate); dolostone is composed mostly of the mineral dolomite (calcium magnesium carbonate). Over time, the carbonate minerals in these rocks are dissolved by rain and groundwater, creating karst. In Minnesota, limestone and dolostone underlie the southeastern corner of the state, and erosion has removed most of the glacial cover and exposed the carbonate bedrock.[89] The MDNR has documented regions prone to surface karst feature development across the state; this information is presented for the Project on **Figure 8-6**.[90],[91] MDNR also noted the presence of karst in its early coordination comments regarding the Project (see **Appendix B**).

Karst is characterized by sinkholes, caves, springs, and underground drainage dominated by rapid conduit flow.[92] A field-verified karst feature, such as a sinkhole, is direct evidence that karst processes are active both on the surface and in a karst aquifer in the subsurface. However, the absence of karst features on the land surface does not imply the absence of karst processes on the land surface or karst hydrology in the subsurface.

As shown on **Figure 8-6**, the Project Route is located in karst-prone areas for approximately 8.3 miles, generally between MPs 0.0 to 8.6. Documented sinkholes are located within 1,000 feet of the Project. The closest sinkholes to the Proposed Alignment and associated 100-foot-wide ROW are located approximately 55 feet west of the ROW at MP 2.4 and 860 feet east of the ROW at MP 3.7. Based on the available attribute data, the locations were identified in 1995 and 2001, respectively. Both locations have been filled.[93] Springs are located within the general Project area, but the closest springs are approximately 1.2 miles from the ROW. The Kellogg Substation is not located in a karst-prone area.

8.6.2.1 Impacts and Mitigation

The Project is located within a region prone to surface karst and within 1,000 feet of documented karst features. However, transmission and distribution line projects have been successfully constructed and operated through this area, including the CapX2020 system. To ensure structural stability in this geological setting, Dairyland will perform geotechnical investigations as outlined in **Section 3.2.2**, including development of a Karst Survey Plan and additional coordination with the MDNR. Following completion of the studies, Dairyland will work with the MDNR to develop a Karst Contingency Plan prior to construction that includes actions to mitigate any unexpected voids encountered during construction.

[88] https://www.dnr.state.mn.us/ecs/222Lc/index.html

[89] https://cse.umn.edu/mgs/caves-and-karst

[90] https://gisdata.mn.gov/dataset/geos-surface-karst-feature-devel

[91] https://files.dnr.state.mn.us/waters/groundwater_section/mapping/gw/gw01_report.pdf

[92] https://www.dnr.state.mn.us/waters/groundwater_section/mapping/springs.html

[93] https://gisdata.mn.gov/dataset/geos-karst-feature-inventory-pts

8.6.3 Soils

The Blufflands subsection of the Ecological Classification states that the loess thickness is variable and ranges from 30 feet thick on broad ridgetops to less than a foot on valley walls. The predominant soils are Udalfs, with localized Aquents along the floodplains of major rivers. Cambrian siltstones, sandstones, and shales influence soil properties.[94]

USDA, Natural Resources Conservation Service (NRCS) STATSGO2 data were reviewed to describe soil resources in the Project area. The STATSGO2 Database[95] is also referred to as the Digital General Soil Map of the United States and is a broad-based inventory of soils for use in broad planning. Soils are organized by general association units which are derived from more detailed soil survey maps. The general association units were determined by transecting or sampling areas on the detailed maps and then statistically expanding the data to characterize the whole map unit. Each association unit represents a distinctive pattern of soils, relief, and drainage, and is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils. There are two soil association units that intersect the Proposed Route. These soil associations are listed in **Table 8-15** and shown in **Figure 8-5**.

Table 8-15. Soil Associations in the Project Area

Soil Association[96]	General Description[97]
Port Byron-Garwin (s3642)	**Port Byron-Garwin** association unit is characterized as very deep, well drained to deep poorly drained soils. The soils formed in loess and are found in uplands, terraces, and slightly concave heads of upland drainageways, interfluves on dissected till plains, and treads on stream terraces. Slopes range from 0 to 30%.
Seaton-Palsgrove-New Glarus (s3657)	**Seaton-Palsgrove-New Glarus** association unit is characterized as very deep to deep, well drained soils that formed in dolostone, other limestone, coarse loess, or residuum formed from limestone. The soils are located on ridge tops and side slopes on uplands near the bluffs along the major valleys and on treads and risers on high stream terraces. Slopes range from 0 to 60%.
Seaton-Lamoille-LaCrescent-Elbaville (s3658)	**Seaton-Lamoille-LaCrescent-Elbaville** association unit is characterized as very deep, well drained soils that formed in loess. The soils are located on shoulders, side slopes, foot slopes of dissected uplands near the bluffs along major valleys and on treads and risers on high stream terraces. Slopes range from 0-90%.
Waukegan-Sparta-Sartell-Kasota-Estherville-Dickman (s3590)	**Waukegan-Sparta-Sartell-Kasota-Estherville-Dickman** association unit is characterized as very deep, well to excessively drained soils that formed in glacial outwash plains. The soils are located on concave to convex slopes on glacial outwash plains, valley trains, stream terraces, deltas, kames on moraines, and dune fields. Slopes range from 0 to 70%.
Shiloh-Comfrey (s3716)	**Shiloh-Comfrey** association unit is characterized as very deep, poorly drained, or very poorly drained soils formed in silty or clayey sediments or loess or loamy alluvium on floodplains and alluvial fans. Slopes range from 0 to 2%.

[94] https://www.dnr.state.mn.us/ecs/222Mb/index.html

[95] https://www.nrcs.usda.gov/resources/data-and-reports/description-of-statsgo2-database

[96] https://gisdata.mn.gov/dataset/geos-statsgo2

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

8.6.3.1 Impacts and Mitigation

Potential impacts of construction are compaction of the soil associated with construction equipment traffic and exposing the soils to wind and water erosion. Soil compaction within wetlands would be mitigated by installation of construction mats, and as described in **Section 7.3**, the restoration contractor would take measures to alleviate soil compaction where needed. Erosion and sediment control methods and BMPs will be utilized to minimize runoff during line construction. Such BMPs may include but are not limited to the installation of sediment barriers (silt fence, straw bales, bio-logs), filter socks, mulch, upslope diversions, and slope breakers. As described in **Section 7.3**, disturbed areas will be restored to their original condition to the extent practicable. Dairyland has also developed a VMP for this Project (**Appendix I**).

There should be no long-term impacts to soil resulting from transmission line construction. Permanent impacts to soil would be limited to areas associated with construction of the structures and the Kellogg Substation.

8.6.4 Water Resources

Hydrologic features in the Project area and along the Proposed Route are shown in **Figures 8-7 and 8-8**. Hydrologic features such as wetlands, lakes, and rivers perform several important functions within a landscape, including flood attenuation, groundwater recharge, water quality protection, and wildlife habitat production. The Project lies within the Mississippi River- Winona and Zumbro River watersheds, in the east-central portion of the Lower Mississippi River Basin.[98]

8.6.4.1 Groundwater

The MDNR divides Minnesota into six groundwater provinces. The western segment of the Project, from MPs 0.0 to 8.8, is located in the Karst Province (Province 3), and the eastern segment of the Project, MPs 8.9 to 13.3, is located in the East-central Province (Province 1). The Karst Province is characterized by thin or absent sediment, and therefore aquifers are not as productive, except in major river valleys where sediment thickness is greater. Province 3 is underlain by productive bedrock aquifers; however; those closest to the land surface are often impacted by human activities. The East-central Province 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. This Province is underlain by sedimentary bedrock with good aquifer properties.[99]

The Minnesota Department of Health (MDH) enforces the federal Safe Drinking Water Act including the National Primary Drinking Water Regulations created under the Act.[100] These regulations are legally enforceable standards and treatment techniques that apply to public water systems to protect drinking and source water. As a result, Minnesota adopted the State Wellhead Protection (WHP) Rule 4720.5100-4720.5590 in 1997.[101] The MDH is responsible for administering the State WHP Program. Under the WHP Program, public water systems are required to develop and implement a plan that protects its drinking water source. Wellhead

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

[99] https://www.dnr.state.mn.us/groundwater/provinces/index.html

[100] https://www.health.state.mn.us/communities/environment/water/rules/index.html.

[101] https://www.health.state.mn.us/communities/environment/water/rules/wellhead.html.

Protection Areas (WHPA) are approved surface and subsurface area surrounding a public water supply well or well field that supplies a public water system, through which contaminants are likely to move toward and reach the well or well field.[102] Drinking Water Supply Management Areas (DWSMAs) contain the WHPA but are outlined by clear boundaries, like roads or property lines. The DWSMA is managed in a WHP plan, usually by a city.[103]

The Project Alignment does not cross any DWSMAs or WPAs. The closest DWSMA to the Proposed Alignment is the Kellogg DWSMA, located approximately 770 feet northwest of MPs 9.4 to 9.6 (see **Figure 8-7**).

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.[104] The CWI indicates that there are four wells located within the Proposed Route, none of which are within the proposed 100-foot-wide ROW. The wells are identified in **Table 8-16**.

Table 8-16. CWI Wells within the Proposed Route

Unique ID	Within ROW	Surface Elevation	Well Depth (feet)	Static Water Level (Depth to Water)	Status	Use
160808	N	1205	500	300	Active	Domestic Consumption
432365	N	1180	425	240	Active	Domestic Consumption
570739	N	1145	500	400	Active	Domestic Consumption
674653	N	690	50	N/A	Active	USACE Monitor Well

8.6.4.2 Lakes or Ponds

There are no lakes or ponds[105] crossed by the Proposed Alignment or associated 100-foot-wide ROW; however, there are ponds located within the Proposed Route as shown in **Table 8-17**. In addition, McCarthy Lake is located approximately 240 feet north of the Proposed Alignment and associated ROW near MP 11.0 (**pages 8 and 9 of Appendix A.2**). McCarthy Lake is adjacent to a wetland mitigation bank, which is located to the northeast of the lake. It is also listed as a Public Waters Basin (refer to **Section 8.6.4.4**), a shallow lake by the MDNR[106], and a wild rice water by the MPCA.[107] McCarthy Lake is not identified on the MDNR's statewide wild rice inventory.[108] No other wild rice waters or shallow lakes are crossed by the Proposed Route. The next closest wild rice water and shallow lake are 1.8 and 1.6 miles, respectively, from the Proposed Alignment.

[102] https://gisdata.mn.gov/dataset/water-wellhead-protection-areas.

[103] https://www.health.state.mn.us/communities/environment/water/swp/mapviewer.html.

[104] https://cse.umn.edu/mgs/cwi.

[105] https://gisdata.mn.gov/dataset/water-dnr-hydrography

[106] https://gisdata.mn.gov/dataset/water-shallow-lakes-id-by-wldlif

[107] https://public.tableau.com/app/profile/mpca.data.services/viz/wild_rice_v4/Information

[108] https://files.dnr.state.mn.us/fish_wildlife/wildlife/wildrice/statewide-inventory-wild-rice-waters.pdf

Table 8-17. Lakes/Ponds Within the Proposed Route

Lake/Pond Name	Approximate Milepost	NWI Classification	Length Crossed by ROW (feet)	Appendix A.2 Map Page
Unnamed Pond	6.4	Palustrine Unconsolidated Bed (PUBH)	0	5
Unnamed Pond	7.4	Palustrine Unconsolidated Bed (PUBFh)	0	6
Unnamed Pond	7.9	Palustrine Unconsolidated Bed (PUBFh)	0	10

Sources:
MDNR. 2019. National Wetland Inventory for Minnesota. https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014. Accessed February 2024.
MDNR. 2024. MDNR Hydrography Dataset. https://gisdata.mn.gov/dataset/water-dnr-hydrography. Accessed February 2024.

8.6.4.3 Rivers and Streams

The MDNR Hydrography dataset has mapped 11 rivers and streams that intersect the Proposed Route and Proposed Alignment[109] (**Figure 8-8, Table 8-18**). All but one of the streams are mapped as unnamed, intermittent streams. The remaining stream is located near MP 9.5 and is a perennial stream named Gorman Creek (see page 8 on **Appendix A.2**). It is also a MDNR Public Waters watercourse (refer to **Section 8.6.4.4**). All of the streams are tributaries to the Mississippi River, which is approximately 0.4 miles from the Kellogg Substation.

Table 8-18. Rivers and Streams Within the Proposed Route

River / Stream Name (Kittle Number)	Approximate Milepost	Flow Regime	Agency Designations	Crossed Proposed Alignment (Y/N)	Appendix A.2 Map Page
Unnamed Stream (M-032-031-001)	0.7	Intermittent	NA	Y	1
Unnamed Stream (MAJ-070410210)	1.0	Intermittent	NA	Y	1
Unnamed Stream (MAJ-070413040)	2.6	Intermittent	NA	Y	2
Unnamed Stream (M-034-017-003)	3.2	Intermittent	NA	Y	3
Unnamed Stream (MAJ-07046913)	8.7 9.4	Intermittent	NA	Y (2 crossings)	7, 8
Gorman Creek (M-033)	9.5	Perennial	Public Water, Impaired	Y	8
Old Channel Zumbro River (MAJ-070411303)	11.3 11.4 (2 crossings)	Intermittent	NA	Y (3 crossings)	9
Unnamed Stream (MAJ-07046396)	12.9	Intermittent	NA	Y	10

Source:
MDNR. 2024. MDNR Hydrography Dataset. https://gisdata.mn.gov/dataset/water-dnr-hydrography. Accessed February 2024.

[109] https://gisdata.mn.gov/dataset/water-dnr-hydrography

8.6.4.4 Public Waters

Public Waters are wetlands, water basins and watercourses of significant recreational or natural resource value in Minnesota as defined in Minn. Stat. § 103G.005. The MDNR has regulatory jurisdiction over these waters, which are identified on the MDNR Public Waters Inventory maps.[110]

The Proposed Route and Proposed Alignment intersect one MDNR Public Water at MP 9.5, a watercourse named Gorman Creek (see **page 8 on Appendix A.2**).[111] This crossing was identified by MDNR in its early coordination review comments (see **Appendix B**). Gorman Creek is a tributary to the Zumbro River which ultimately connects to the Mississippi River. One additional public water basin, McCarthy Lake, is adjacent to, but outside the Proposed Route (see **Section 8.6.4.2**). It is approximately 240 feet north of the ROW, near MP 11.0 (**page 9 of Appendix A.2**).

8.6.4.5 Impaired Waters

Section 303(d) of the Federal Clean Water Act requires states to publish, every two years, a list of streams and lakes that are not meeting their designated uses because of various impairments. The list, known as the 303(d) list, is based on violations of water quality standards and listed waters are described as "impaired." In Minnesota, the MPCA has jurisdiction over determining 303(d) waters. The 2022 Impaired Waters[112] and the Draft 2024 Impaired Waters[113] data were evaluated for this Project. The segment of Gorman Creek that crosses the Proposed Route (see **page 8 on Appendix A.2**) is listed under the 2022 data as impaired for Aquatic Macroinvertebrate Bioassessments and is further listed under the draft 2024 data as impaired for Fishes Bioassessments. The next closest impaired water is the Zumbro River. The Zumbro River is approximately 0.3 mile east of the Kellogg Substation and was listed in 2022 and is proposed for relisting in 2024 as impaired for Fecal Coliform, Mercury in Fish Tissue, PCB in Fish Tissue, and Turbidity.

8.6.4.6 Wetlands

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

The USFWS produced maps of NWI wetlands based on aerial photographs and NRCS soil surveys starting in the 1970s. The NWI data were further updated for the state of Minnesota through a multi-agency effort lead by the MDNR and were published in 2019.[114] Wetlands identified by the Minnesota NWI may be inconsistent with current wetland conditions; however, Minnesota NWI data is the most accurate and readily available database of wetland resources within the Project area and were therefore used to identify wetlands occurring within the Proposed Route.

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

[111] https://gisdata.mn.gov/dataset/water-mn-public-waters

[112] https://gisdata.mn.gov/dataset/env-impaired-water-2022

[113] https://gisdata.mn.gov/dataset/env-impaired-water-2024-draft

[114] https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014

The Proposed Route contains a number of discrete wetland communities and wetland complexes. These wetlands are primarily located along the eastern portion of the Project, between MPs 10.7 and 12.8 (see **Figure 8-8**). Wetland Cowardin classifications contained within the Proposed Route include Palustrine Forested (PFO) and Palustrine Emergent (PEM). Wetlands within the Proposed Route and crossed by the Proposed Alignment, along which poles would be installed and within the 100-foot-wide ROW, where vegetation clearing would occur, are identified in **Table 8-19** and are shown on maps in **Appendix A.2**.

Table 8-19. Wetlands Within the Proposed Route

Approximate Milepost Location	NWI Classification	Length Crossed by Proposed Alignment (poles) (feet)	Length Crossed by 100-foot-wide ROW (clearing) (feet)	Appendix A.2 Map Page
3.9	Palustrine Forested Wetland (PFO1Ah)	0	0	3
8.7	Palustrine Emergent Wetland (PEM1Ch)	0	0	7
9.5	Palustrine Emergent Wetland (PEM1A)	0	0	8
10.8-11.0	Palustrine Forested Wetland (PFO1A)	0	1,130	8, 9
10.8-11.2	Palustrine Emergent Wetland (PEM1A/PEM1Af)	0	0	8, 9
11.3-11.4	Palustrine Forested Wetland (PFO1A)	75	325	9
11.4	Palustrine Emergent Wetland (PEM1Af)	0	0	9
11.5	Palustrine Forested Wetland (PFO1A)	0	0	9
11.8	Palustrine Emergent Wetland (PEM1Af)	185	260	9
12.0	Palustrine Emergent Wetland (PEM1Af)	185	215	9
12.8-12.9	Palustrine Emergent / Forested Wetland Complex (PEM1Af/PEM1C/PFO1A) McCarthy Lake MBS	440	460	10
12.9 (north of Proposed Alignment)	Palustrine Emergent Wetland (PEM1A)	0	0	10
12.9 (north of Proposed Alignment)	Palustrine Forested Wetland (PFO1A)	0	0	10

Source: MDNR. 2019. National Wetland Inventory for Minnesota. Updated 5/23/2019. https://gisdata.mn.gov/dataset/water-nat-wetlands-inv-2009-2014

In Minnesota, wetlands are also protected under the Wetland Conservation Act (WCA). In Wabasha County, the Wabasha Soil and Water Conservation District (SWCD) is the LGU for WCA (see communication in **Appendix B**). WCA places special preservation requirements on wetlands that qualify as Rare Natural Communities (RNCs). RNCs may include wetlands NPCs with high conservation status rank (e.g., S1, S2, or S3), or MBS sites with an Outstanding or High

ranking; however, the MDNR ultimately determines whether a plant community constitutes a RNC.[115] Dairyland submitted a Minnesota Conservation Explorer (MCE) online review of the Project on December 13 and 14, 2023, which identified the McCarthy Lake MBS site located between MPs 12.8 and 12.9 as a potential RNC requiring additional consultation with the MDNR (see **Section 8.6.5.1** for additional detail).

The MCE online review also identified a designated calcareous fen[116] in the vicinity of the Project (**Appendix B**). Calcareous fens are a rare and unique type of peat-accumulating wetland with unique vegetation influenced by its calcium-rich (non-acidic) chemistry, low oxygen and relatively cold soil conditions, and upwelling groundwater hydrology.[117] Fens are protected under Minn. Stat. 103G.223, which provides that calcareous fens may not be filled, drained, or otherwise degraded, wholly or partially, by an activity, unless approved by the MDNR through a fen management plan. Based on the review of the MDNR's Calcareous Fen geospatial dataset,[118] one designated fen is located 1.4 miles south of MP 10.8 within the MDNR's McCarthy Lake WMA (**Figure 8-7**). The designated fen is named McCarthy Lake Fen, with the unique fen ID number 31975.

8.6.4.7 Impacts and Mitigation

No impacts to groundwater or groundwater supplies are anticipated as a result of the Project. Dewatering activities are not expected for this Project, and if the need arises, would likely be minor. The MDNR can issue water appropriation authorizations if dewatering should exceed permit thresholds (see **Table 2-1**). Any effects on water tables would be localized and short term and would not affect hydrologic resources.

As described in **Section 8.6.4.6**, McCarthy Fen is located 1.4 miles south of the Proposed Alignment. This feature is located adjacent to U.S. Highway 61, the Canadian Pacific Railway and within 750 feet of the CapX2020 transmission line. Residences and agricultural buildings and structures are also located within 0.5 miles of the fen feature. Review of the CWI Well Log data for domestic consumption wells (**Table 8-16)** indicates that the depth to water level is between 240-400 feet deep; therefore, pole installation would not affect aquifers. Once a final route has been selected, Dairyland will further coordinate with the MDNR to ensure that ground disturbance activities, such as pole placement, do not disrupt potential groundwater hydrology associated with the calcareous fens (see **Table 2-1**).

There are no lakes crossed by the Proposed Alignment and associated 100-foot-wide ROW. Waterbodies crossed by the Proposed Alignment and associated ROW, including the Gorman Creek Public Water (subject to a License to Cross Public Waters from the MDNR; see **Table 2-1**), are spaced such that construction activities related to pole placement will avoid impacts to those water resources and work will occur outside of the Ordinary High Water Level. Dairyland may elect to install temporary bridges across waterways prior to construction along the ROW as described in **Section 7.2.1**. In addition, Dairyland will utilize erosion and sediment control BMPs

[115] https://bwsr.state.mn.us/sites/default/files/2019-01/Wetland_WCA_Rare_Nat_Comm_Tech_Guidance.pdf.
[116] Calcareous fens are protected under Minn. Stat. 103G.223 and Minn. Rules Part 8420.0935.
[117] https://files.dnr.state.mn.us/natural_resources/water/wetlands/calcareous_fen_fact_sheet.pdf
[118] https://gisdata.mn.gov/dataset/biota-nhis-calcareous-fens.

(e.g., silt fencing) to mitigate the potential for sediment to reach any streams or ponds adjacent construction activities. The Project will not contribute to Gorman Creek's impaired listing for Aquatic Macroinvertebrate Bioassessments as no work will occur in the waterbody.

Temporary impacts to wetlands within the 100-foot-wide ROW identified in **Table 8-19** will occur during construction of the transmission line. No wetland impacts will occur during construction of the Kellogg Substation. As discussed in **Section 7.2.1**, construction mats will be installed in wetlands to minimize compaction and impacts to vegetation. Dairyland will avoid placement of ATWS for material storage and staging or stringing setup areas within or adjacent to water resources to the extent practicable. As discussed in **Section 7.3**, wetlands will be restored to pre-construction conditions following completion of construction activities.

As shown in **Table 8-19**, the majority of the wetlands crossed by the Proposed Alignment centerline are less than 300 feet long. Span distances between pole structures will vary between 300 and 1,000 feet (see **Table 3-1** in **Section 3.2.1**), which would allow Dairyland to place most poles outside of the wetland footprints and avoid permanent fill. If, however, the final transmission line design cannot enable the Project to span discrete wetland segments, permanent impacts to wetlands will occur where a structure is located in the wetland. The wetland complex crossed by the Proposed Alignment between MP 12.8 and 12.9 (page 10 in **Appendix A.2)** is listed as an MBS site ranked as "High" and qualifies as a potential RNC (see **Section 8.6.5.1**). No poles will be placed in this wetland.

Vegetation maintenance procedures under transmission lines prohibit the establishment of trees. Existing trees will be removed throughout the entire ROW, including forested wetlands. The ROW will cross approximately 1,700 feet of forested wetlands; these forested wetlands will undergo permanent vegetative changes within the ROW. Dairyland has also developed a VMP for this Project (**Appendix I**).

As described in **Section 2.4** and as shown in **Table 2-1**, Dairyland, in consultation with the USACE, St. Paul District, anticipates seeking coverage under the Utility Regional General Permit for Section 404 wetland impacts once design of the Project is complete. Dairyland has been assigned a Regulatory File Number (No. MVP-2023-01630-RMH) and a USACE Project Manager for this Project (**Appendix B**). The MPCA's has issued Section 401 Water Quality Certification for projects that meet the conditions of the Regional General Permit (see **Table 2-1**). Dairyland will also coordinate with the Wabasha County Soil and Water Conservation District regarding WCA.

8.6.5 Flora and Fauna

8.6.5.1 Flora

Flora can be generally characterized for the Project area using the Ecological Classification System.[119] The system was developed by the MDNR and U.S. Forest Service for ecological mapping and landscape classification. The top three tiers of the system consist of Province,

[119] https://www.dnr.state.mn.us/ecs/index.html

Section, and Subsection. The Project falls in the Eastern Broadleaf Forest Province, Paleozoic Plateau Section, and Blufflands subsection.

The Eastern Broadleaf Forest Province 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." [120]

The Paleozoic Plateau Section is a rugged region of bluffs and valleys that was originally a plateau underlain by flat-lying sedimentary rocks of the Paleozoic Era; however, in the past 10,000 years the landscape has been highly eroded and dissected by tributary streams and rivers to the Mississippi River, such as the Root, Whitewater, Zumbro, and Cannon rivers and their predecessors. The most important factors influencing the pattern of vegetation in the historical landscape were slope, aspect, flooding, and the likelihood of burning. Prairies occupied the flat, fire-prone remnants of the plateau in the western part of the section. Steep slopes in dissected areas protected the landscape from fire, which allowed dry prairies to form on the tops of southwest-facing bluffs and oak woodlands to develop downslope and northward and eastward along the slopes. [121]

The Blufflands subsection further details the flora that is characteristic of the Project area. Pre-settlement vegetation was comprised of tallgrass prairie and bur oak savanna on ridge tops and dry upper slopes. Red oak-white oak-shagbark hickory-basswood forests were present on moister slopes, and red oak-basswood-black walnut forests in protected valleys. Prairie was restricted primarily to broader ridge tops, where fires could spread, but also occurred on steep slopes with south or southwest aspect. The current vegetation and land use is partially made up of cropland (30%) and pasture (20%). The remaining 50% of the subsection is woodland. [122]

Through the MBS, MDNR systematically collects, interprets, and delivers baseline data on the distribution and ecology of rare plants, rare animals, NPC classes, and functional landscapes and designates sites which exhibit these characteristics as SOBS. MBS sites established by the MDNR are then ranked as follows:

- Outstanding: Sites contain the best occurrences of the rarest species, the most outstanding examples of the rarest native plant communities, and/or the largest, most ecologically intact or functional landscapes.

- High: Sites contain very good quality occurrences of the rarest species, high-quality examples of rare native plant communities, and/or important functional landscapes.

- Moderate: Sites contain occurrences of rare species moderately disturbed native plant communities, and/or landscapes that have strong potential for recovery of native plant communities and characteristic ecological processes.

[120] https://www.dnr.state.mn.us/ecs/222/index.html

[121] https://www.dnr.state.mn.us/ecs/222L/index.html

[122] https://www.dnr.state.mn.us/ecs/222Lc/index.html

- Below: Sites lack occurrences of rare species and natural features or do not meet MBS standards for outstanding, high, or moderate rank.

The Proposed Alignment crosses one MBS site known as "McCarthy Lake" (ranked as High) for approximately 440 feet between MPs 12.8 and 12.9 (see **page 10 of Appendix A.2**). Because this is a wetland MBS site, it may qualify as an RNC following review by MDNR. There are no other MBS sites within the Proposed Route. There are no NPCs within the Proposed Route or crossed by the Proposed Alignment.

There are no other designated areas within the Proposed Route or crossed by the Proposed Alignment which are associated with rare flora communities, such as MDNR SNAs, Native Prairies, or Railroad ROW Prairies. Calcareous fens are discussed in **Section 8.6.4.6**. Federal and state-listed species are discussed in **Section 8.6.7**.

8.6.5.2 Fauna

The Project is located in the MDNR Nongame Wildlife – Central Region.[123] The Central Region provides habitat for non-game species such as tundra swans during migratory periods, red-headed woodpeckers, raptors, trumpeter swans, mice, turtles, frogs, and snakes. Additional species that inhabit the Project area include deer, small game, forest upland birds, pheasants, waterfowl, turkey, and doves.

The Proposed Route and Proposed Alignment do not cross any MDNR WMAs.[124] The closest MDNR WMA is the McCarthy Lake WMA, which is located approximately 0.2 miles south of the Proposed Alignment near MP 11.3.

Dairyland reviewed the USFWS National Realty[125] tract data; the Upper Mississippi River National Wildlife and Fish Refuge is located approximately 265 feet to the northeast of the Kellogg Substation. This area is also designated as an IBA. No USFWS administered properties are located in the Proposed Route or are crossed by the Proposed Alignment. Federal and state-listed species are discussed in **Section 8.6.7**.

8.6.5.3 Impacts and Mitigation

Minimal impacts to native vegetation are anticipated. The Proposed Alignment will primarily follow existing road corridors or would be located in agricultural fields, which will minimize impacts to previously undisturbed vegetation in that area As described in **Section 8.4.2**, Dairyland will clear approximately 14.4 acres of trees within the 100-foot-wide ROW associated with the Proposed Alignment. Dairyland has also developed a VMP for this Project (**Appendix I**).

The McCarthy Lake MBS site (MPs 12.8 to 12.9; **page 10 in Appendix A.2**) occurs within PFO and PEM wetlands identified in **Section 8.6.4.7**. The Proposed Alignment would be collocated with County Road 84 at the McCarthy Lake MBS crossing. Temporary impacts to the MBS site

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

[124] https://www.dnr.state.mn.us/maps/compass/index.html

[125] FWS National Realty Tracts | FWS National Realty Tracts | U.S. Fish & Wildlife Service GIS Data (arcgis.com)

will occur during construction activities. To minimize impacts to this MBS site, Dairyland has committed to the following BMPs:

- utilize construction mats to minimize ground disturbance;
- not park equipment, stockpile supplies, or place spoil within the MBS site;
- inspect and clean all equipment prior to bringing it to the site to prevent the introduction and spread of invasive species;
- use effective erosion and sediment control BMPs;
- revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible; and
- use only certified weed-free mulches and seed mixes.

Dairyland's VMP (**Appendix I**) reflects these commitments within this MBS site. Further, Dairyland will avoid placement of pole structures within the MBS site by spanning this area and will minimize forested vegetation clearance by collocating with the road ROW.

There is minimal potential for the displacement of wildlife and loss of habitat from construction of the Project. Wildlife that inhabits natural areas 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 and forested settings and should not incur population level effects due to construction. Impacts and mitigation regarding federal and state-listed species are discussed in **Section 8.6.7.1**.

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

8.6.6 Invasive Species Management

The movement of construction equipment to, from, and between various work sites may introduce and/or spread invasive species. Terrestrial plant invasive and noxious species in Minnesota are regulated by the Minnesota Department of Agriculture (MDA),[126] and aquatic invasive and noxious species are regulated by the MDNR.[127] The MDNR also manages terrestrial plant invasive and noxious species on public lands and at public waters. The MDNR maintains a geospatial

[126] Minn. Stat. § 18.75-18.913

[127] https://www.dnr.state.mn.us/invasives/index.html

dataset of terrestrial invasive and noxious species observations;[128] according to this dataset, wild parsnip (*Pastinaca sativa*), an MDA control species, has been documented at several locations along State Highway 42 and also along County Road 84.

8.6.6.1 Impacts and Mitigation

Dairyland will manage documented occurrences of terrestrial plant invasive and noxious species that are listed as "eradicate"[129] or "control"[130] under the "Prohibited Noxious Weed" category by the MDA. Further, Dairyland will adhere to the requirements set forth by the MDNR Utility License to Cross Public Waters and Natural Heritage Review consultation process. Dairyland proposes to implement the following BMPs during Project construction to minimize the potential for the introduction or spread of terrestrial plant invasive and noxious species:

- Limiting grading and excavation to areas surrounding pole structure foundations, and only as needed along access roads and workspace areas for a level and safe working area.
- Installing construction mats for travel lanes in wetlands and other specific locations as described in **Section 7.2**.
- All disturbed areas will be revegetated using "Noxious Weeds; None Found" seed mixes.
- All disturbed areas will be revegetated using seed mixes labelled "Noxious Weeds; None Found" in accordance with regulations and will utilize yellow tag seed when available.
- Compliance with MPCA Construction Stormwater General Permit, including stabilization requirements, and inspection, maintenance and repair of erosion and sediment control BMPs. Certified weed-free straw or weed-free hay will be used for erosion and sediment control BMPs.
- All construction equipment must be clean prior to entering and before leaving the work site.
- Manual, mechanical, or chemical management of invasive and noxious weed infestations.
- The Construction Field Representative will oversee BMP installation and effectiveness.

Dairyland has also developed a VMP for this Project that will incorporate these BMPs (**Appendix I**). Dairyland will not conduct activities within waterbodies; therefore, no mitigation to manage aquatic invasive and noxious species are proposed.

8.6.7 Rare and Unique Natural Resources

Dairyland's consultant, Merjent, submitted a formal Minnesota Natural Heritage Review Request (2023-00935) on December 13, 2023, through the MDNR's MCE, and provided an updated route on December 14, 2023. The MDNR's December 18, 2023 early coordination letter confirmed this submittal and noted that a manual Natural Heritage review was required by the MDNR due to the presence of rare features and state-listed species within the vicinity of the Project area, and that

[128] https://gisdata.mn.gov/dataset/env-invasive-terrestrial-obs

[129] Prohibited noxious weeds placed on the noxious weed eradicate list are plants that are not currently known to be present in Minnesota or are not widely established. These species must be eradicated (Minnesota Statute §18.771 (b)(1)). This list is available at: https://www.mda.state.mn.us/plants-insects/minnesota-noxious-weed-list.

[130] Prohibited noxious weeds placed on the noxious weed control list are plants that are already established throughout Minnesota or regions of the state. Species on this list must be controlled (Minnesota Statute §18.771 (b)(1)). This list is available at: https://www.mda.state.mn.us/plants-insects/minnesota-noxious-weed-list.

Natural Heritage Review staff would contact Dairyland when the final Natural Heritage Review letter is complete and provide all recommendations and requirements for state-listed species. MDNR's Natural Heritage Review response is still pending as of the date of this Joint Application. Correspondence with the MDNR to-date is included in **Appendix B**.

In addition, Dairyland reviewed the USFWS Information for Planning and Consultation (IPaC) website[131] to obtain a list of federally threatened and endangered species, candidate species, and designated critical habitat that have been previously documented within the vicinity of the Proposed Route.

8.6.7.1 State-Listed Species

In addition to the MCE request above, Merjent consulted the MDNR Natural Heritage Inventory System (NHIS) data through License Agreement LA 1066 on December 14, 2023. MDNR recommends that Project proposers evaluate NHIS records for state-listed species within one mile of Project impacts. Species within one mile of the Project Alignment and associated 100-foot-wide ROW that are listed as special concern, threatened, or endangered are provided in **Table 8-20**. Species and suitable habitat descriptions for the listed threatened or endangered species are provided below, as well as an evaluation whether there is suitable habitat present within the Proposed Route. Species of special concern are considered state-listed but are not legally protected.

Table 8-20. State-Listed Species within One Mile of the Project Alignment

Common Name	Scientific Name	State Status
A Jumping Spider	*Pelegrina arizonensis*	Special Concern
A Jumping Spider	*Phidippus apacheanus*	Special Concern
A Jumping Spider	*Habronattus viridipes*	Special Concern
A Jumping Spider	*Sassacus papenhoei*	Special Concern
American Eel	*Anguilla rostrata*	Special Concern
Bell's Vireo	*Vireo bellii*	Special Concern
Black Sandshell (mussel)	*Ligumia recta*	Special Concern
Blue Sucker	*Cycleptus elongatus*	Special Concern
Cattail Sedge	*Carex typhina*	Special Concern
Creeping Juniper	*Juniperus horizontalis*	Special Concern
Goat's Rue	*Tephrosia virginiana*	Special Concern
Gophersnake	*Pituophis catenifer*	Special Concern
Gray's Sedge	*Carex grayi*	Special Concern
Green Dragon	*Arisaema dracontium*	Special Concern
Kentucky Coffee Tree	*Gymnocladus dioica*	Special Concern
Lake Sturgeon	*Acipenser fulvescens*	Special Concern
Lark Sparrow	*Chondestes grammacus*	Special Concern
Leonard's Skipper	*Hesperia leonardus leonardus*	Special Concern
Mississippi Silvery Minnow	*Hybognathus nuchalis*	Special Concern
Muskingum Sedge	*Carex muskingumensis*	Special Concern

[131] https://ecos.fws.gov/ipac/

Common Name	Scientific Name	State Status
North American Racer	*Coluber constrictor*	Special Concern
Old Field Toadflax	*Nuttallanthus canadensis*	Special Concern
Plains Hog-nosed Snake	*Heterodon nasicus*	Special Concern
Plains Wild Indigo	*Baptisia bracteata var. glabrescens*	Special Concern
Red-shouldered Hawk	*Buteo lineatus*	Special Concern
Regal Fritillary	*Argynnis idalia*	Special Concern
Rhombic Evening Primrose	*Oenothera rhombipetala*	Special Concern
Round Pigtoe (mussel)	*Pleurobema sintoxia*	Special Concern
Swamp White Oak	*Quercus bicolor*	Special Concern
Yellow Pimpernel	*Taenidia integerrima*	Special Concern
Yellow-fruit Sedge	*Carex annectens*	Special Concern
Beach Heather	*Hudsonia tomentosa*	Threatened
Blanding's Turtle	*Emydoidea blandingii*	Threatened
Butterfly (mussel)	*Ellipsaria lineolate*	Threatened
Clasping Milkweed	*Asclepias amplexicaulis*	Threatened
Davis' Sedge	*Carex davisii*	Threatened
Fawnsfoot (mussel)	*Truncilla donaciformis*	Threatened
Monkeyface (mussel)	*Theliderma metanevra*	Threatened
Mucket (mussel)	*Actinonaias ligamentina*	Threatened
Spike (mussel)	*Eurynia dilatate*	Threatened
Timber Rattlesnake	*Crotalus horridus*	Threatened
Wood Turtle	*Glyptemys insculpta*	Threatened
Crystal Darter	*Crystallaria asprella*	Endangered
Ebonyshell (mussel)	*Reginaia ebenus*	Endangered
Pallid Shiner	*Hybopsis amnis*	Endangered
Pistolgrip (mussel)	*Tritogonia verrucosa*	Endangered

Beach Heather

Beach heather is a low mat-forming evergreen shrub, typically about ankle high. In Minnesota, they occur on high and sandy beaches of large lakes, but most often, they are found on active sand dunes that are not directly associated with lakes. If dune blowouts are not kept open by wind, they become overgrown by grasses and other plants, and the beach heather will disappear. On active dunes, beach heather can become nearly buried by blowing sand, but it produces new roots along the buried portions of the stem, allowing it to continue to grow upwards.[132] Suitable habitat for beach heather is not present within the Proposed Route.

Blanding's Turtle

The Blanding's turtle averages 5.9 to 9.8 inches in length and has a domed upper shell with bright yellow chin and throat. These turtles prefer calm, shallow waters, including wetlands associated with rivers and streams with rich aquatic vegetation. Blanding's turtles typically overwinter in

[132] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDCIS03030

muddy bottoms of deep marshes, backwater pools, ponds, and streams. Small, temporary wetlands are frequently used by Blanding's turtles in spring and early summer when these habitats provide basking sites and mating opportunities. Nesting occurs in sparsely vegetated uplands with well-drained, sandy soils.[133] Suitable habitat for the Blanding's turtle is present within the Proposed Route.

Butterfly Mussel

The butterfly mussel has a triangular shell up to 5 inches long. The butterfly mussel usually inhabits areas of large rivers with swift currents in sand or gravel substrates but can be found in reservoirs in some southern states. Butterfly mussels spend most of their lives buried in the bottom sediments of permanent waterbodies, and often live in multi-species communities called mussel beds.[134] Suitable habitat for butterfly mussels is not present within the Proposed Route.

Clasping Milkweed

Clasping milkweed is a perennial plant reaching 1.6 feet in height and has large opposite leathery leaves. In Minnesota, clasping milkweed occurs exclusively in dry, sandy, and sparsely vegetated soil in savannas, upland prairies, and requires full sunlight and minimal competition from other perennials. Clasping milkweed requires that the original open conditions of savannas or upland prairies be maintained or recreated, preferably with a program of controlled burns conducted in early spring before the plants have emerged from winter dormancy.[135] Suitable habitat for the clasping milkweed is not present within the Proposed Route.

Davis' Sedge

Davis' sedge is a grass-like perennial herb of forested floodplains and swamps in the Midwest and east-central states. All Minnesota Davis' sedge populations occur in mature alluvial forests associated with major river valleys of the Mississippi River drainage in the southeastern corner of the state and seems to be restricted to floodplain zones that are inundated by only the highest flood events. Davis' sedge has not been recorded in areas that remain inundated for weeks at a time.[136] Suitable habitat for Davis' sedge is not present within the Proposed Route

Fawnsfoot Mussel

Fawnsfoot is a small mussel with a stout elliptical shell that typically inhabits flowing waters of permanent large rivers or lakes, buried in sediments. In Minnesota, the Fawnsfoot occurs in

[133] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARAAD04010

[134] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV13010.

[135] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDASC02020#:~:text=The%20flowers%20are%20green%2C%20with,the%20axils%20of%20the%20leaves.

[136] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PMCYP033G0.

flowing areas of large rivers in soft or coarse substrate, and they have been found at depths up to 30 feet.[137] Suitable habitat for Fawnsfoot is not present within the Proposed Route.

Monkeyface Mussel

Monkeyface is a mussel with a shell squarish in shape that can reach up to 5 inches long. Monkeyface are typically found in the St. Croix River in stable substrates in water over 6.6 feet deep and are very rarely found in the Mississippi River. They spend most of their lives buried in the bottom sediments of permanent waterbodies, and often live in multi-species communities called mussel beds.[138] Suitable habitat for the Monkeyface is not present within the Proposed Route.

Mucket Mussel

Mucket is a mussel with an oblong shell that can reach up to 6 inches long. The mucket mussel is known to inhabit medium to large rivers, substrates that are most preferred include coarse sand and gravel. They spend most of their lives buried in the bottom sediments of permanent waterbodies, and often live in multi-species communities called mussel beds. Mucket mussels are now common only in the St. Croix River and some of its tributaries and occurs in low densities in the Mississippi River.[139] Suitable habitat for the mucket is not present within the Proposed Route.

Spike Mussel

Spike is a mussel with an elongate shell that can reach up to 6 inches long. Spike mussels are usually found in small to large rivers, but they are also known to inhabit reservoirs and lakes. They are most often found in sand and gravel substrates in depths ranging from 2 to 24 feet and are usually associated with outlet habitats dominated by swift currents. Spike is now common only in the St. Croix River and its tributaries, Rose Creek, and at the outlet of Lake Pepin on the Mississippi River.[140] Suitable habitat is not present within the Proposed Route.

Timber Rattlesnake

The timber rattlesnake is a large snake, averaging 31.5 to 48 inches in length. In Minnesota, the ideal habitat for timber rattlesnakes includes forested bluffs, south-facing rock outcrops, and bluff prairies, particularly in the Mississippi River valley. Bluff prairies located on steep, south or west-facing hillsides, with rock outcroppings and ledges, are essential habitat components because over-wintering dens are often located in these areas. Surrounding forests, prairies, and agricultural lands are used as summer feeding grounds. Two necessary habitat components for this species are open areas for thermoregulation and dens for over-wintering.[141] Suitable ideal habitat for timber

[137] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV45020#:~:text=In%20Minnesota%2C%20the%20Fawnsfoot%20occurs,range%20has%20expanded%20above%20St.

[138] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV39080.

[139] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV01020.

[140] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV14100.

[141] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARADE02040.

rattlesnakes is not present within the Proposed Route; however, suitable summer feeding grounds are present within the Proposed Route.

Wood Turtle

Wood turtle averages 5.5 to 8 inches in length and its shell is comprised of individual plate-like scales. The wood turtle preferring small- to medium-sized, fast-moving rivers and streams with adjacent deciduous and coniferous forests. The substrates of wood turtle streams typically consist of sand or gravel. Wood turtles will occupy adjacent alder thickets, forest, grassland habitat, and agriculture fields for basking and foraging. Sandy, sparsely vegetated areas that are not prone to flooding and have ample exposure to direct sunlight provide important nesting sites.[142] Suitable streams with deciduous and coniferous forests are not present within the Proposed Route; however, agricultural fields that provide suitable habitat for basing and foraging are present within the Proposed Route.

Crystal Darter

Crystal darters can reach up to 6.3 inches long and are pale yellow, slender, and have 4 to 8 dark side bars, often connected to 4 dark saddles across the back. In Minnesota, crystal darters occur in medium to large rivers, usually with clean sand and gravel bottoms and moderate to swift currents.[143] Suitable habitat for the crystal darter is not present within the Proposed Route.

Ebonyshell Mussel

The ebonyshell is a mussel that has a round shell reaching up to 4 inches long. The ebonyshell mussel primarily inhabits large rivers in sand or gravel. Ebonyshells live buried in the bottom sediments of permanent waterbodies, and often live in multi-species communities called mussel beds. In Minnesota, the ebonyshell is presently restricted to the lower St. Croix River above Lakeland and at Prescott.[144] Suitable habitat for the ebonyshell is not present within the Proposed Route.

Pallid Shiner

Pallid Shiner is a small, slender minnow that reaches a maximum total length of about 2.6 inches. Pallid Shiners inhabit large- and medium-sized rivers and occasionally streams, often at the downstream ends of sand and gravel bars. In Minnesota, pallid shiners have been found in the St. Croix and Mississippi Rivers.[145] Suitable habitat for the pallid shiner is not present within the Proposed Route.

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[142] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ARAAD02020.

[143] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=AFCQC01010

[144] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV17060#:~:text=The%20ebonyshell%20was%20originally%20listed,an%20endangered%20species%20in%201996

[145] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=AFCJB15010#:~:text=Conservation%20%2F%20Management,to%20impacts%20from%20human%20activities

Pistolgrip Mussel

Pistolgrip is a mussel with an elongate shell reaching 8 inches long. They spend most of their lives buried in the bottom sediments of permanent waterbodies, and often live in multi-species communities called mussel beds. In Minnesota, the pistolgrip is most often found inhabiting larger rivers in areas with moderate current and gravel substrates, the best remaining populations are in the lower St. Croix River.[146] Suitable habitat for the pistolgrip is not present within the Proposed Route.

8.6.7.2 Federally Listed Species

Based on the official species list provided by the USFWS (**Appendix B**), five species federally listed under Endangered Species Act (ESA), one species proposed for listing, and one candidate species has been previously documented within the vicinity of the Proposed Route (**Table 8-21**). Species and suitable habitat descriptions for the species in **Table 8-21** are provided below, as well as a conclusion whether there is suitable habitat present within the Proposed Route. No federally designated critical habitat is present within the Proposed Route.

Table 8-21. Federally Protected Species within the Proposed Route

Common Name	Scientific Name	Federal Status
Northern long-eared bat	*Myotis septentrionalis*	Endangered
Rusty Patched Bumble Bee	*Bombus affinis*	Endangered
Higgins Eye Pearlymussel	*Lampsilis higginsii*	Endangered
Sheepnose Mussel	*Plethobasus cyphyus*	Endangered
Spectaclecase (mussel)	*Cumberlandia monodonta*	Endangered
Tricolored bat	*Perimyotis subflavus*	Proposed Endangered
Monarch butterfly	*Danaus plexippus*	Candidate

Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are not legally protected under the ESA or in the state of Minnesota. The Bald and Golden Eagle Protection Act (BGEPA), however, protects and conserves bald and golden eagles from take of an individual bird, chick, egg, or nest, including alternate and inactive nests. 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).[147]

Northern Long-eared Bat

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

[146] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=IMBIV44010

[147] https://www.fws.gov/sites/default/files/documents/national-bald-eagle-management-guidelines_0.pdf.

crevices. It has also been found, rarely, roosting in structures such as barns and sheds. In winter, NLEBs use caves and mines as hibernacula.[148] Suitable habitat for the NLEB is present within the Proposed Route.

Rusty Patched Bumble Bee

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

Suitable habitat for the rusty patched bumble bee can be found in grasslands, prairies, marshes, agricultural areas, woodlands, and residential parks and gardens. The species is a generalist forager and utilizes both pollen and nectar from a wide variety of plants. Nests are commonly established underground in abandoned rodent burrows or other cavities; however, the species may also use clumps of grass aboveground. Rusty patched bumble bees may choose sites in sandy, moss-covered soils on northwest slopes, and may be found in interior forest areas; areas with these characteristics near forested edges and open fields may be especially important. They may also use other areas, such as compost piles or mole hills.[149,150] Suitable habitat for the rusty patched bumble bee is present within the Proposed Route.

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

A portion of the Proposed Route between MPs 12.0 to 13.3, including the Kellogg Substation is within a high potential zone for rusty-patched bumble bees.[102] Based on a desktop assessment, the majority of this segment of the Proposed Route is currently in agricultural production, which does not provide suitable habitat for the rusty patched bumblebee. However, the MDNR MBS site between MPs 12.8 and 12.9 (see **Section 8.6.5.2**) is a non-agricultural area within the high potential zone, which may provide suitable habitat for the rusty patched bumble bee.

Higgins Eye Pearlymussel

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

[148] https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis.

[149] https://www.fws.gov/species/rusty-patched-bumble-bee-bombus-affinis.

[150] https://www.fws.gov/sites/default/files/documents/Section%207%20guidance%20for%20rusty%20patched%20bumble%20bee%20%28Bombus%20affinis%29.pdf.

Wisconsin, and the lower Rock River between Illinois and Iowa.[151] Suitable habitat for the Higgin's eye pearlymussel is not present within the Proposed Route.

Sheepnose Mussel

Sheepnose is a freshwater mussel which reaches 5.5 inches in length. Sheepnose are generally found in medium to large stream systems, typically within shallow shoal habitats with moderate to swift currents over mixtures of coarse sand, gravel, and clay. Individuals may occur in aquatic areas ranging from riffles of a few inches in depth to runs that exceed six meters in larger rivers. Sheepnose continues to occupy the Upper Mississippi, Ohio, Tennessee, and Lower Mississippi River basins.[152] Suitable habitat for the sheepnose mussel is not present within the Proposed Route.

Spectaclecase Mussel

Spectaclecase are a large freshwater mussel with an elongated shell that can grow up to 9 inches in length. Spectaclecase mussels are found in large rivers where they live in areas sheltered from the main force of the river current. This species often clusters in firm mud and in sheltered areas, like beneath rock slabs, between boulders and even under tree roots. The spectaclecase's current range includes Alabama, Arkansas, Illinois, Iowa, Kentucky, Minnesota, Missouri, Tennessee, Virginia, West Virginia, and Wisconsin.[153] Suitable habitat for the spectaclecase is not present within the Proposed Route.

Tricolored Bat

The tricolored bat is one of the smallest bats species native to North America. The species overwinters in caves and mines where available. However, throughout much of its range in the southern United States, roadside culverts, tree cavities, and abandoned water wells may also serve as suitable overwintering habitat.

During the active season (generally, April 1 to October 31), the species may be found roosting among leaf clusters (live and dead) on living or recently dead deciduous hardwood trees. Roost choice may also vary by region and this species has been observed roosting in eastern red cedar trees and pine needles, as well as within manufactured structures such as barns and bridges.[154] Suitable habitat for the tricolored bat is present within the vicinity of the Proposed Route.

On September 13, 2022, the USFWS published a proposed rule listing the tricolored bat as federally endangered under the ESA.[155]

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.

[151] https://www.fws.gov/species/higgins-eye-lampsilis-higginsii.

[152] https://www.fws.gov/species/sheepnose-plethobasus-cyphyus

[153] https://www.fws.gov/species/spectaclecase-cumberlandia-monodonta.

[154] https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus.

[155] https://www.fws.gov/press-release/2022-09/proposal-list-tricolored-bat-endangered.

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.[156] Suitable habitat for the monarch butterfly may be present within the Proposed Route.

On December 17, 2020, the USFWS published the result of its 12-month review of the monarch butterfly and determined that listing the species under the ESA was "warranted but precluded," meaning the species meets the criteria for listing as an endangered or threatened species, but the USFWS cannot currently implement the listing because there are other listing actions with a higher priority. The species is now a candidate for listing; however, candidate species are not protected under the ESA.[157] The USFWS has added the monarch to the updated national listing workplan and based on its listing priorities and workload, intends to propose listing the monarch in Fiscal Year 2025, if listing is still warranted at that time, with a possible effective date within 12 months of the proposed rule. The USFWS will also conduct an annual status review to determine if changes in prioritization are necessary. Suitable habitat for the monarch butterfly may be present within the Proposed Route.

Bald Eagles

Bald eagles may occur and nest throughout Minnesota in areas with suitable habitat.[158] Bald eagles commonly nest in trees but may also nest in other tall structures, such as rocky outcrops, cliffs, utility poles, and communication towers. They typically nest near bodies of water. Bald eagle breeding pairs may have more than one nest and may alternate use of these nests from year to year. Bald eagles may roost communally during migration, winter, and summer.[159] Suitable nesting habitat for bald eagles is present within the Proposed Route and within the vicinity of the Proposed Alignment.

8.6.7.3 Impacts and Mitigation

Dairyland will continue to coordinate with the MDNR and USFWS to avoid and minimize Project impacts on sensitive species (also see **Table 2-1**).

The following general measures will be used to help avoid or minimize impacts to rare and unique natural resources during and after the completion of the proposed transmission line:

- BMPs will be used to prevent erosion of the soils in the areas of impact.
- Sound water and soil conservation practices will be implemented during construction and operation of the Project to protect topsoil and adjacent water resources and minimize soil erosion. Practices may include containing excavated material, protecting exposed soil, and stabilizing restored soil.
- Disturbed areas will be re-vegetated with native species and wildlife conservation species, where applicable if the landowner agrees.

[156] https://www.fws.gov/species/monarch-butterfly-danaus-plexippus.

[157] USFWS. Endangered and Threatened Wildlife and Plants; 12-Month Finding for the Monarch Butterfly. 85 Federal Register 81813 (December 17, 2020).

[158] https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=ABNKC10010

[159] Ref. at 158

- Raptor protection measures will be implemented, including following APLIC Avian Safe Design recommendations and placement of bird flight diverters on the line after consultation with the MDNR and/or USFWS.

8.6.7.3.1 State-Listed Threatened and Endangered Species

Suitable habitat for the following state-listed threatened and endangered species is not present within the Proposed Route; therefore, impacts are not anticipated, and no mitigation measures are needed:

- Beach Heather;
- Butterfly mussel;
- Clasping Milkweed;
- Davis' Sedge;
- Fawnsfoot mussel;
- Monkeyface mussel;
- Mucket mussel;
- Spike mussel;
- Crystal Darter;
- Ebonyshell mussel;
- Pallid Shiner; and
- Pistolgrip mussel.

Suitable habitat for the following state-listed threatened and endangered species is present within the Proposed Route:

- Suitable habitat for the Blanding's turtle;
- Suitable feeding grounds for the timber rattlesnake; and
- Suitable basking and foraging habitat for the wood turtle.

MDNR's Natural Heritage Review response is still pending as of the date of this Joint Application Dairyland anticipates that the MDNR's MCE letter will provide requirements and recommendations to avoid and minimize impacts to these species. Once a final route has been selected, Dairyland will work with the MDNR to implement avoidance and conservation measures necessary to minimize impacts to these species.

8.6.7.3.2 Federally Listed Species

Suitable habitat for the following federally endangered mussel species is not present within the Proposed Route; therefore, impacts are not anticipated, and mitigation is not needed:

- Higgin's Eye (Pearlymussel);
- Sheepnose mussel; and
- Spectaclecase mussel.

Suitable habitat for the following federally listed, candidate, and species proposed for listing is present within the Proposed Route.

Northern Long-eared Bat

Based on the USFWS Determination Key (DKey) for the NLEB, in areas with a federal nexus, the Project "may affect, but is not likely to adversely affect*"* the species. With that determination of effect, a "Consistency Letter" (**Appendix B**) was generated. For areas that do not have a federal nexus, the Project is unlikely to result in "unauthorized take" of NLEB. Dairyland will commit to the minimization and avoidance measures outlined in the DKey; therefore, no impacts are anticipated.

Rusty Patched Bumble Bee

A portion of the Proposed Route between MPs 12.0 and 13.3, including the Kellogg Substation is within a high potential zone for rusty-patched bumble bees; however, based on a desktop assessment, the majority of the Proposed Route within this segment is in agricultural production, which does not provide suitable habitat for the rusty patched bumblebee. The Proposed Route does cross a non-agricultural area within the high potential zone between MPs 12.8 and 12.9. This area corresponds with the McCarthy Lake MBS site discussed in **Section 8.6.5.2** (**page 10 in Appendix A.2**) as well as the wetland complex discussed in **Section 8.6.4.6**. Similar to Dairyland's avoidance of that MBS site and wetland, Dairyland will avoid placing structures in the high potential zone location by spanning this area; however, the forested components within the ROW will be permanently converted to herbaceous vegetation. Further, temporary impacts will occur during construction including clearing activities, installation of construction mats, and equipment travel down the ROW. Dairyland has committed to a number of BMPs as outlined in **Section 8.6.5.3**. Therefore, impacts to the rusty patched bumble bee are not anticipated.

Tricolored Bat

Potential impacts to individual tricolored bats may occur if clearing or construction takes place when the species is roosting in its summer habitat, in trees outside of hibernacula. Bats may be injured or killed if occupied trees are cleared during this active window. Tree clearing activities conducted when the species is in hibernation and not present on the landscape will not result in direct impacts to individual bats but could result in indirect impacts due to removal of suitable roosting habitat.[160]

Monarch Butterfly

If the USFWS determines the Monarch Butterfly should be listed and protections for the species coincide with Project planning, permitting, and/or construction, Dairyland will review Project activities for potential impacts to the species and develop appropriate avoidance and mitigation measures.

Constructing within and/or adjacent to an existing utility ROW minimizes impacts to suitable habitat for the Monarch Butterfly.

[160] https://ecos.fws.gov/ServCat/DownloadFile/221212

Bald Eagle

If bald eagle nests are identified within 660 feet of construction activities, during the eagle's active season, Dairyland will coordinate with the USFWS and MDNR regarding potential impacts and to obtain the necessary permits.

8.7 Summary of Potential Environmental Effects

Dairyland analyzed the potential environmental effects of the proposed Project. Generally, Project effects are anticipated to be temporary and/or minor. No homeowners will be displaced by the Project. All land impacted during construction will be restored to the extent possible, and landowners will be compensated for any crop losses due to construction operations or structure and conductor placement.

The peak magnitude of EF associated with the new line (1.2-kV/m) will be significantly less than the maximum EF limit adopted by state regulators (8-kV/m). No stray voltage issues are anticipated. Similarly, Project facilities will comply with applicable noise standards. The Project will parallel existing roads, railroad, and utility ROWs for much of its length. The routing of the Project minimizes potential tree removal but may require the permanent removal of approximately 14.4 acres of trees within its ROW. There are wetlands within the proposed transmission line ROW. Dairyland prefers to span wetlands and all wetlands crossed by the Proposed Alignment could feasibly be spanned as the majority are less than 300 feet in length, and the maximum only 440 feet long. In addition, sometimes stakeholder requests may preclude the design from avoiding some wetlands. Unavoidable impacts include a change in aesthetics, the presence of additional traffic during construction on the local roads, and permanent clearing of forested areas within the 100-foot-wide ROW. The Proposed Route also occurs in karst-prone areas that will require additional geotechnical investigation prior to construction activities. These and other potential environmental effects, as well as applicable avoidance and minimization measures, are described in more detail in **Chapter 6** of this Application.

EERA is responsible for environmental review of the Project and will prepare an EA that analyzes the Project's potential environmental impacts.

8.8 Unavoidable Impacts

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

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

9 AGENCY AND TRIBAL OUTREACH

As described in **Section 1.7**, Dairyland employed various methods to engage and inform the public and federal, state, and local agencies and Tribal Nation representatives regarding the Project.

9.1 Public Outreach

Dairyland hosted two in-person public open houses and an online on-demand open house to gather feedback on the Proposed Route for the Project. Copies of the communications supporting this effort are provided in **Appendix L**.

Dairyland held two public open house events at St. Agnes Catholic Church in the City of Kellogg, Minnesota, on November 9, 2023. Prior to the open houses, Dairyland developed a list of key stakeholders, which included local, regional, and state elected officials, community organizations, agencies, and school districts. A total of 130 letters, including a Project fact sheet with map, were mailed to stakeholders on October 19, 2023. An email was sent to the same list of contacts on November 3, 2023.

Dairyland pulled parcel information and created a mailing list for landowners within the Notice Area (**see Figure 9-1**), a 5-mile buffer zone surrounding the Project Alignment. Dairyland mailed approximately 3,537 postcards to recipients within the Notice Area on October 26, 2023. A printed newspaper advertisement ran in the Wabasha County Herald on October 31 and November 7.

Social media posts and advertisements were used to promote the open houses and online engagement opportunities, engage the communities near the Project area, and drive traffic to the Project website. Social media campaigns included the following: targeted Facebook advertisements (November 2 – 9 to advertise the open houses, and November 12 – 20 to encourage participation in the online open house); post on Dairyland's Facebook page; Twitter/X posts (November 2, 7, and 16); and LinkedIn post (November 6). The open house opportunities were also included on the Dairyland website at https://www.dairylandpower.com/wabasha-relocation-project.

Approximately 60 people signed in at the November 9, 2023 open houses. Some attendees chose not to sign-in and were not included in the sign-in sheets. Dairyland technical representatives provided information about the Project and answered questions and/or responded to comments concerning:

- the reason for the Project;
- the process for permitting;
- tree/vegetation cutting or removal;
- what would be needed for easements;
- how easements are acquired; and
- when the permitting and construction process would occur.

There were no formal presentations; attendees were welcome to come anytime during the meeting times to review and provide feedback on the Proposed Route. Large posters showing the proposed

transmission line alignment and pictures of what the pole structures would look like were also available for review.

Some landowners asked if Dairyland could string the new proposed 161-kV line on existing distribution structures on their property. Some landowners had questions regarding EMF and transmission line safety. Some landowners expressed concern regarding the Project's impact on their property, including their property value, and/or impacts to operations on their property (e.g., location of the Project near existing or planned structures, impacts to farming and dairy operations).

In addition to the in-person open houses, Dairyland hosted an online on-demand open house for the public to learn more about the Project and share their comments. The online open house was available November 2 – 23, 2023. The site hosted the same information that was available at the in-person open house, including all content from the open house boards. It also included an interactive map for participants to add comments and questions to the Proposed Route by dropping a pin at a specific location on the map. The website included ADA compliant accessibilities for those who needed them. A Project email address was set up for landowners, stakeholders, etc. to leave their comments or ask questions about the Project. From November 2 – 23, a total of five emails were sent to connect@dairylandtransmissionproject.com.

Dairyland also implemented its Notice Plan, as approved by the Commission, by mailing a notice letter to local and tribal officials, as well as landowners within a 5-mile notice area. Notice was published in the Star Tribune and the Wabasha County Herald.

The public will be afforded additional opportunities to participate and comment on the Project in accordance with Minnesota laws and regulations. This process is described in **Section 2.3**. The first opportunity for public involvement in the regulatory process is a public information and scoping meeting conducted by Commission staff and EERA staff after the Commission's acceptance of this Application as complete.

The public and interested stakeholders will have the opportunity to review this Application and to submit comments to the Commission about the Project. A copy of the Application will be available on the DOC's energy project website (http://mn.gov/commerce/energyfacilities) and on the Project's website (https://www.dairylandpower.com/wabasha-relocation-project). Additionally, this application will be available for the public to review at:

Plainview Public Library
345 1st Ave NW
Plainview, MN 55964

Public information and scoping meetings will be held in the Project area by Commission and EERA staff after the Commission's acceptance of this Application as complete to answer questions about the Project and to solicit public comments and suggestions for matters to examine during environmental review. After EERA prepares an EA for the Project, public hearings will be held in the Project area, and members of the public will be given an opportunity to ask questions and submit comments. Dairyland will also present further evidence to support the need and route for the Project.

Persons interested in receiving notices and other announcements about the Project's Certificate of Need and Route Permit Application can subscribe to the dockets by visiting https://mn.gov/puc/edockets/, clicking on "Go to eDockets" in the middle of the page, clicking on "eFiling Home/Login" in the left menu, clicking on the "Subscribe to Dockets" button, entering their email address and select "Docket Number" from the "Type of Subscription" dropdown box, then select "[23]" from the first Docket Number drop down box and enter "[504]" in the second box before clicking on the "Add to List" button. You must then click the "Save" button at the bottom of the page to confirm your subscription to the Project's Certificate of Need docket. These same steps can be followed to subscribe to the Project's Route Permit docket (23-388).

Persons wanting to have their name added to the Project mailing list may send an email to eservice.admin@state.mn.us or call (651) 201-2246. Please be sure to note: (1) how you would like to receive notices (regular mail or email); (2) your complete mailing or email address and (3) the docket numbers (ET3/CN-23-504 (Certificate of Need) or ET3/TL-23-388 (Route Permit)).

Contact information for the Minnesota state regulatory staff for this Project are listed below:

Minnesota Public Utilities Commission
Trevor Culbertson
121 7th Place East, Suite 350
St. Paul, MN 55101-2147
(651) 201-2200
(800) 657-3782
trevor.culbertson@state.mn.us
www.mn.gov/puc

Minnesota Department of Commerce – EERA
Jim Sullivan
85 7th Place East, Suite 280
St. Paul, MN 55101-2198
(651) 539-1059
(800) 657-3710
jim.sullivan@state.mn.us
www.mn.gov/commerce/energyfacilities

9.2 Agency and Tribal Outreach

Dairyland began contacting agencies with potential interest in the Project in mid-2023. Then, once the Proposed Alignment was developed after the open houses described in **Section 9.1**, Dairyland sent initial notification letters to federal, Tribal, state, and local agencies listed below on December18, 2023. Copies of these letters, as well as all other correspondence to date, is included in **Appendix B**. Dairyland has incorporated information received during agency consultations into the relevant sections of this Joint Application. Where additional coordination has occurred, Dairyland has summarized that outreach below with references to the section of this Application which provides additional detail.

Federal Agencies

- U.S. Army Corps of Engineers
    - Section 404 Regulatory Division
        - The USACE, St. Paul District, responded to Dairyland's December 2023 notification letter in January 2024 with assignment of a Regulatory File No. (MVP-2023-01630-RMH) and a USACE Project Manager. Communications are included in **Appendix B.** See discussion in **Section 8.6.4.7.**

    - Rivers and Harbors Division
        - Dairyland has been communicating with the USACE, Rivers and Harbors division since October 2023 regarding impacts to USACE-owned tracts obtained to store dredged material from Pool 5 of the Mississippi River and develop the "Rolling Prairie Property." Dairyland has worked with the USACE to develop a route across the USACE properties that is acceptable to the USACE and will not be incompatible with the USACE's goals for the Rolling Prairie Property. Communications are included in **Appendix B.** See discussion in **Section 8.2.5.**

- U.S. Fish and Wildlife Service
    - The USFWS responded to Dairyland's December 2023 project notification letter asking Dairyland to complete an IPaC review and develop an Official Species List. Later, the USFWS inquired about the Project's use of federal funding, to which Dairyland responded that none will be used. Communications are included in **Appendix B.** See discussion in **Section 8.6.7.2.**

- U.S. Department of Agriculture, Natural Resources Conservation

- Federal Aviation Administration
    - Dairyland communicated with the FAA in December 2023 regarding the Project and the Part 7460 Airport Obstruction Evaluation. Communications are included in **Appendix B.** See discussion in **Section 8.2.7.**

Tribal Nations

- Bois Forte Band of Chippewa

- Fond du Lac Band of Lake Superior Chippewa

- Grand Portage Band of Ojibwe

- Leech Lake Band of Ojibwe

- Lower Sioux Indian Community

- Mille Lacs Band of Ojibwe

- Prairie Island Indian Community

- Red Lake Nation

- Shakopee Mdewakanton Sioux Community
    - In December 2023, the THPO requested that Dairyland provide the results of its literature review and Phase IA Cultural Resources Assessment. Dairyland provided

this in February 2024. Communications are included in **Appendix B.** See discussion in **Section 8.5.**

- Upper Sioux Community
- White Earth Nation

Minnesota State Agencies

- Board of Water and Soil Resources
- Department of Agriculture
- Department of Health
- Department of Natural Resources
    - Dairyland initiated communications with the MDNR in October 2023. In December 2023, Dairyland submitted a request for a Natural Heritage Review through MDNR's online MCE program. Results of the MCE automated review include the following topics, which are addressed in the respective section of this Joint Application: tree removal (see **Section 8.4.2**); ecologically significant areas (potential RNCs) including MBS Sites (see **Section 8.6.5.2**), and calcareous fens (see **Section 8.6.4.6**); state-listed endangered, threatened, or special concern species (see **Section 8.6.7.1**); and federally listed species (IPaC review and rusty patched bumblebee high potential zone; see **Section 8.6.7.2**). The MDNR Natural Heritage Review staff is conducting further review; this response has not yet been received. Later in December 2023, MDNR provided the results of an early coordination review. Results of the early coordination review include the following topics, which are addressed in the respective section of this Joint Application: Public Water watercourses (see **Section 8.6.4.4**); MCE NHIS review (see note above); federally listed species (see **Section 8.6.7.2**); collocation (see **Section 3.1.1**); and karst (see **Sections 3.2.2 and 8.6.2**). Communications are included in **Appendix B.**
- Department of Transportation
    - Dairyland met with MnDOT in October 2023 to present the Project. Topics discussed included the U.S. Highway 61 Scenic Byway, potential for highway expansion and paving projects, technical items, and the MnDOT Utility Early Notification Memo. Dairyland submitted the Utility Early Notification Memo to MnDOT in March 2024; MnDOT is presently reviewing the submittal. Communications and meeting minutes are included in **Appendix B**. See discussion in **Section 8.2.7**.
- Minnesota Indian Affairs Council

- Mississippi River Parkway Commission
    - Dairyland has conducted additional coordination with the MRPC regarding the U.S. Highway 61 / Great River Road crossing between November 2023 and March 2024. Following submittal, MRPC indicated it did not have questions or comments on the crossing or visualization, but requested to be updated if there were changes to the Highway 61 / Great River Road crossing. Communications and meeting minutes are included in **Appendix B**. See discussion in **Section 8.2.1**.

- Office of State Archaeologist

- State Historic Preservation Office
    - Dairyland submitted the results of its literature review and Phase IA Cultural Resources Assessment to SHPO in February 2024. Communications are included in **Appendix B.** See discussion in **Section 8.5.**

Local Agencies

- Wabasha County
    - Dairyland communicated with the Wabasha County Highway Department in September and October 2023 regarding work that would be adjacent to or intersect Wabasha County ROW as well as County Road 84 improvements. Dairyland later moved the Project alignment to its present position (the Proposed Alignment filed in this Application), which avoids the s-curves and future expansion potential along County Road 84. Communications and meeting minutes are included in **Appendix B**. See discussion in **Section 8.2.7**.

- Wabasha County Invasive Species Management

- Wabasha County Planning and Zoning
    - Dairyland communicated with the Wabasha County Zoning Administrator in January 2024 regarding the required setback from County Road 84 for the Kellogg Substation. Communications are included in **Appendix B.**

- Wabasha County Soil and Water Conservation District
    - The Wabasha SWCD responded to Dairyland's Project notification letter noting that it is the LGU for WCA in Wabasha County and would like to be apprised of future wetland permitting efforts as well as review plans for forest clearing and vegetative management. Communications are included in **Appendix B**. See discussion in **Section 8.6.4.6**.

10 APPLICATION OF RULE CRITERIA

10.1 Certificate of Need Criteria

Pursuant to Minn. Stat. § 216B.243, the Commission has established criteria under Minn. R. 7849.0120 that it will apply to determine whether an applicant has established that a new proposed HVTL is needed and shall be granted a Certificate of Need. Dairyland has described in this Application the reasons why the Commission should grant a Certificate of Need to build the Project. Those reasons are summarized below.

10.1.1 Denial Would Adversely Affect the Energy Supply

Denial of a Certificate of Need for the Project would adversely affect the future adequacy, reliability, or efficiency of energy supply to the Applicant, its members, and to electric customers in southeastern Minnesota and western Wisconsin. The Project is needed to maintain the reliable service currently provided by the LQ34 161-kV line, including: (1) delivering power to the Rochester-Alma area; (2) maintaining the important reliability connection to local 69-kV facilities; and (3) providing generation outlet. If the Project is not approved, the regional and local transmission systems would suffer negative impacts as would Dairyland's members and their customers.

10.1.2 No Reasonable and Prudent Alternative

As discussed in **Chapter 5**, a more reasonable and prudent alternative was not demonstrated by the study work and analysis conducted by Dairyland. Dairyland evaluated multiple alternatives including: (1) generation, including renewable energy and storage alternatives; (2) demand side management and energy conservation; (3) size alternatives (different voltages or conductor arrays, and double-circuit); (4) alternative endpoint and configurations; and (5) no build alternatives. After evaluating these alternatives, Dairyland concluded that none of these alternatives is a more reasonable and prudent alternative to the Project.

10.1.3 Project will Provide Benefits to Society in a Manner Compatible with Protecting the Environment

The Project will maintain critical transmission reliability for Dairyland's members, local communities, and the broader MISO region. The existing LQ34 161-kV line has served an important role in providing reliable service as part of the local transmission grid since the 1950s. It is used to deliver power in the Rochester-Alma area, provide critical connections to local 69-kV systems that serve area towns, and provide generation outlet to the region. In relocating the existing 161-kV line, Dairyland is promoting the efficient use of transmission ROWs by freeing up the existing circuit on the CapX2020 Project to operate at 345-kV as identified by MISO. Further, Dairyland has proposed routing the Project following existing ROWs for over 71% of its route. In addition, consistent with the Commission's routing criteria, the Project will be routed in a manner compatible with protecting the natural and socioeconomic environment.

10.1.4 Project will Comply with All Applicable Requirements

Dairyland has identified the other permits and approvals that may be required for the Project in **Chapter 2**. Dairyland has demonstrated that it will comply with all applicable requirements and obtain all necessary permits.

10.2 Route Permit Criteria

According to Minn. Stat. § 216E.02, subd. 1, it is the policy of the state of Minnesota to locate HVTLs in an orderly manner that minimizes adverse human and environmental impacts and ensures continuing electric power system reliability and integrity. The Commission must follow the established standards and criteria for issuing Route Permits (Minn. Stat. § 216E.04, subd. 8; Minn. Stat. § 216E.03, subd. 7; and Minn. R. 7850.4000). Following these standards and criteria, the Commission shall issue Route Permits for HVTLs that are consistent with state goals to conserve resources, minimize environmental impacts and impacts to human settlement, minimize land use conflicts, and ensure the state's electric energy security through efficient, cost-effective transmission infrastructure. The Project addresses these criteria:

- The Project is consistent with state goals to conserve resources because 71% of the Project is proposed to be routed along existing road and utility ROWs, thus avoiding, and minimizing potential additional impacts to the extent practicable.

- The Project will minimize environmental impacts because:

    - 71% of the Project is proposed to be routed along existing road ROWs, which will avoid and minimize potential impacts on vegetation and wildlife.

    - Dairyland will conduct geotechnical investigations prior to construction to avoid impacts to karst topography.

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

    - Dairyland will design the final alignment to avoid or span as many wetlands as practicable and will span the MBS site between MPs 12.8 and 12.9.

- Dairyland will implement construction, restoration, and operation and maintenance procedures and BMPs to further avoid and minimize impacts to environmental resources. The Project will minimize impacts on human settlement and other land use conflicts because:

    - It is proposed to generally be routed along road ROWs and/or routed along property boundaries, thus avoiding impacts to new landowners and parcels.

    - Dairyland will develop its final alignment based on landowner and stakeholder input to avoid and minimize impacts to residents and business owners along the final route.

- Disturbed areas will be restored to their original condition to the maximum extent practicable and Dairyland will negotiate compensation with landowners for unavoidable impacts.

- The Project is consistent with state goals to ensure electric energy security because it will help ensure continued reliable and secure electrical service to the existing Wabaco Substation and will accommodate the installation of a new 345-kV circuit on the existing CapX2020 line.

10.3 Conclusion and Request for Commission Approval

For all the reasons set forth in this Application and as supported by the Appendices hereto, Dairyland respectfully request that the Commission issue a Certificate of Need and Route Permit authorizing construction of the Wabasha Relocation Project.

11 GLOSSARY OF TERMS

Term	Definition
°F	degrees Fahrenheit
AC	Alternating-Current
ACSS	Horizontally Bundled Aluminum Conductor Steel Supported
ALJ	Administrative Law Judge
amsl	Above Mean Sea Level
APLIC	Avian Powerline Interaction Committee
ATV	All-Terrain Vehicle
ATWS	additional temporary workspace
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
BWSR	Minnesota Board of Water and Soil Resources
CAGR	Compound Annual Growth Rate
CapX2020 Project	CapX2020 Hampton-Rochester-La Crosse 345-kV Project
CFR	Code of Federal Regulations
CH_4	Methane
CIP	Conservation Improvement Program
CO	carbon monoxide
CO_2	Carbon Dioxide
CO_2e	carbon dioxide equivalent
Commission	Minnesota Public Utilities Commission
CWI	County Well Index
Dairyland, or the Applicant	Dairyland Power Cooperative
dBA	A-Weighted Decibel
DC	Direct-Current
DKey	USFWS Determination Key
DOC	Department of Commerce
DWSMA	Drinking Water Supply Management Area
EA	Environmental Assessment
ECO	Energy Conservation and Optimization Act
EERA	Department of Commerce, Energy Environmental Review and Analysis
EF	Electric fields
EIS	Environmental Impact Statement
EJ	Environment Justice
EJScreen	Environmental Justice Screening Tool
EMF	Electric and Magnetic Fields
EQB	Minnesota Environmental Quality Board
ESA	Endangered Species Act
Exemption Order	Commission Order dated February 13, 2024 approving the Applicant's request to be exempt from certain filing requirements under Minn. R. 7849.
FAA	Federal Aviation Administration

Term	Definition
Freeborn-Mower	Freeborn Mower Electric Cooperative
G	Gauss
GIQ	Generation Interconnection Queue
GLO	General Land Office
GW	Gigawatts
HVDC	High-voltage direct-current
HVTL	High voltage transmission line
IBA	Important Bird Area
IMDs	implantable medical devices
IPaC	USFWS Information, Planning, and Consultation
Joint Application	Joint Certificate of Need and Route Permit Application
kV	Kilovolt
kV/m	kV per meter
L_{10}	Noise level exceeded 10 percent of the time
L_{50}	Noise level exceeded 50 percent of the time.
LGU	Local Governmental Units
LRTP	Long-Range Transmission Plan
LRTP Tranche 1 Portfolio	A portfolio of regionally beneficial projects identified by MISO, the independent not-for-profit system operator for the Midwest, and approved by the MISO Board of Directors in July 2022 in MISO's MTEP21.
MASW	Multichannel Analysis of Surface Waves
MBS	MDNR 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
MiEnergy	MiEnergy Cooperative
Minn. Stat. §	Minnesota Statutes Section
MISO	Midcontinent Independent System Operator, Inc.
MnDOT	Minnesota Department of Transportation
MP	Milepost
MPCA	Minnesota Pollution Control Agency
mph	mile per hour
MRO	Midwest Reliability Organization
MRPC	Minnesota Mississippi River Parkway Commission
MTEP	MISO Transmission Expansion Plan
MTEP21	MISO's 2021 Transmission Expansion Plan
MVA	Megavolt-Ampere

Term	Definition
MVP	MISO Multi-Value Project
MW	Megawatts
MWh	Megawatt-Hour
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NAC	Noise Area Classification
NEMA	National Electrical Manufacturers Association
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NESC	National Electric Safety Code
NHIS	National Heritage Information System
NIEHS	National Institute of Environmental Health Sciences
NLEB	Northern Long-Eared Bat
NO_2	Nitrogen Dioxide
Notice Area	The Notice Area is a 5-mile buffer zone surrounding the Project Alignment.
NOx	nitrogen oxides
NPC	Native Plant Community
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	Noise-sensitive receptor
NWI	National Wetlands Inventory
OSA	Office of the State Archeologist
PEM	Palustrine Emergent
Peoples	People's Energy Cooperative
PFO	Palustrine Forested
PM10	particulate matter equal to or less than 10 microns in diameter
PM2.5	fine particulate matter equal to or less than 2.5 microns in diameter
ppb	Parts Per Billion
Project	Wabasha Relocation Project
Promising Practices	Promising Practices for EJ Methodologies in NEPA Reviews
Proposed Alignment	Proposed Alignment is used to refer to the centerline location of the transmission line and structures. The Proposed Alignment follows an approximately 13.3-mile route starting in the vicinity of Structure X-Q3-75 on Dairyland's LQ34 161-kV transmission line northeast of the Town of Plainview, Minnesota in Wabasha County to the new 4-acre Kellogg Substation. See **Sections 1.4 and 3.1.1**.
Proposed Route or Project Route Width	The Proposed Route is a larger area that is inclusive of the Proposed Alignment and the Kellogg Substation. More information on the Proposed Route can be found in **Section 1.4 and 3.1.3**.
Rejected Route Alternative	A Rejected Route Alternative is a routing segment considered and rejected by the Applicant for the Project (see **Section 6.2**).
RNCs	Rare Natural Communities

Term	Definition
Route Width	The Route Width is a standard 400 feet (200 feet on either side of the Proposed Alignment for most of the Project), increasing in some areas up to 2,300 feet wide to allow for additional route study and the potential need to make minor modifications to the Proposed Alignment in these areas (see **Section 1.4**).
ROW	right-of-way
RUS	Rural Utilities Service
SCADA	Supervisory Data Control and Acquisition
SHPO	State Historic Preservation Office
SMEC	Southern Minnesota Energy Cooperative
SNA	Scientific and Natural Area
SO_2	sulfur dioxide
SOBS	Sites of Biodiversity Significance
SWCD	Soil and Water Conservation District
THPO	Tribal Historic Preservation Officer
TNC	The Nature Conservancy
TWh	Terawatt-Hour
UDP	Unanticipated Discoveries Plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	Volatile Organic Compounds
WCA	Wetland Conservation Act
WHP	Wellhead Protection
WHPA	Wellhead Protection Area
WMA	Wildlife Management Area
Xcel Energy	Northern States Power Company, dba Xcel Energy