Dodge County Wind, LLC's Amended Application to the Minnesota Public Utilities Commission for a Route Permit for a 161 kV High Voltage Transmission Line in Dodge and Mower Counties, Minnesota

MPUC Docket Number: IP6981/TL-20-867

January 14, 2022

Table of Contents

Illustrations

Tables

Figure (in Text)

The following ate Attached as Appendix I, Maps and Figures

Appendices

List of Abbreviations, Acronyms, and Terms and Their Definitions

Abbreviation/ Acronym/Term	Definition
AADT	Annual Average Daily Traffic
AC	alternating current
ACS	American Community Survey
Alternate Route White	Alternate route segment that parallels road right-of-way compared to northernmost portion of the Proposed Alignment that is within private rights-of-ways.
AMSL	above mean sea level
ANSI	American National Standards Institute
APLIC	Avian Power Line Interaction Committee
Applicant or DCW	Dodge County Wind, LLC
AQI	Air Quality Index
ARMER	Allied Radio Matrix for Emergency Response
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practices
CAA	Clean Air Act
CFR	Code of Federal Regulations
clear zone	The total roadside border area starting at the edge of the traveled way available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a nonrecoverable slope, and/or the area at the toe of a nonrecoverable slope available for safe use by an errant vehicle. The desired width depends on the traffic volumes, traffic speeds, and roadside geometry.
Commission	Minnesota Public Utilities Commission
CON	Certificate of Need
CREP	Conservation Reserve Enhancement Program

Abbreviation/ Acronym/Term	Definition
CRP	Conservation Reserve Program
CSAH	County State Aid Highway
CWA	Clean Water Act
dBA	A-weighted decibels
DBS	Direct Broadcast Satellite
DCW	Dodge County Wind, LLC
DCW collector substation	Dodge County Wind collector substation
EF	electric field
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
GAP	Gap Analysis Program
GIS	Geographic Information System
GRE	Great River Energy
HUC	Hydrologic Unit Code
HVTL	high voltage transmission line
Hz	hertz
IEEE	Institute of Electrical and Electronic Engineers
IPaC	Information, Planning, and Consultation System
ISO	International Organization for Standardization
kV	kilovolt

Abbreviation/ Acronym/Term	Definition
kV/m	kilovolt per meter
MBS	Minnesota Biological Survey
MDA	Minnesota Department of Agriculture
MDH	Minnesota Department of Health
MF	magnetic field
mG	milligauss
Minn. R.	Minnesota Administrative Rules
Minn. Stat.	Minnesota Statutes
MNDNR	Minnesota Department of Natural Resources
MnDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MPUC	Minnesota Public Utilities Commission
MSHSN	Minnesota State Historic Sites Network
MSM	Minnesota State Monument
MSRHP	Minnesota State Register of Historic Places
MVA	megavolt-ampere
NAC	Noise Area Classification
NBEMG	National Bald Eagle Management Guidelines
NEER	NextEra Energy Resources, LLC
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NHD	National Hydrography Dataset
NHIS	Natural Heritage Information System

Abbreviation/ Acronym/Term	Definition
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSP	Northern States Power Company
NWI	National Wetlands Inventory
O&M	operations and maintenance
OIS	obstacle identification surfaces
OSA	Office of the State Archaeologist
OSHA	Occupational Safety and Health Administration
Pleasant Valley Substation	Substation owned by GRE where the Proposed Alignment will terminate.
PM	particulate matter
PPA	Power Purchase Agreement
PPSA	Power Plant Siting Act
Project	Dodge County Wind Transmission Line Project
Project Right-of-Way (ROW)	The land interest required within a route for the construction, maintenance, and operation of the proposed high voltage transmission line (Minnesota Rule 7850.1000, subpart 15).
Proposed Alignment	Anticipated location of the structures and transmission line within the right-of-way and Route. It is not the final alignment. The Proposed Alignment is considered the centerline of the Project for review purposes only—the structures and transmission line might ultimately be located elsewhere within the Route.
PWI	Public Water Inventory
Route	Location of a high voltage transmission line between two points. The Route may have a variable width of up to 1.25 miles (Minnesota Statute 216E.01, subdivision 8).

Abbreviation/ Acronym/Term	Definition
ROW	right-of-way
SCIP	Statewide Communication Interoperability Plan
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SNA	Scientific and Natural Areas
SPC	species of special concern
SPCC	Spill Prevention, Control, and Countermeasure
subd.	subdivision
SWPPP	Stormwater Pollution Prevention Plan
TOB	Dodge Center Airport
UADP	Unanticipated Discovery 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
USG	unhealthy for sensitive groups
USGS	U.S. Geological Survey
WMA	Wildlife Management Area
WOTUS	waters of the United States

1.0 Introduction

Dodge County Wind, LLC (DCW or Applicant) submits this amended Application to the Commission for a Route Permit pursuant to Minnesota Statutes (Minn. Stat.) 216E and Minnesota Administrative Rules (Minn. R.) Chapter 7850. The Route Permit Application Completeness Checklist is provided in **Appendix A**. This Application replaces in its entirety the application submitted with the Commission on September 14, 2021 in this proceeding. In addition to this Application for a Route Permit, DCW has also applied to the Commission for a Site Permit for the DCW Wind Project consisting of up to 260 megawatts (MW) of wind-generated energy and an associated Certificate of Need (CON).

DCW requests a Route Permit to construct and operate a 161 kilovolt (kV) transmission line and associated facilities (referred to collectively as the DCW Transmission Line Project, hereafter as the Project) to deliver energy from the DCW Wind Project to the electric grid.[1] The transmission line will be constructed using primarily 161 kV single circuit monopole structures and will be approximately 27 miles long. The Project will also require a collector substation (DCW collector substation) to step up the voltage from the associated wind facility to 161 kV. The Project Route is the location of the transmission line between two points. The Route may have a variable width and will begin at the DCW collector substation, which will be located in Dodge County, Minnesota, and run to the existing Great River Energy (GRE) Pleasant Valley Substation located in Mower County, Minnesota. One relatively short alternate route segment, Alternate Segment White, is also proposed for consideration as part of the Project. The locations of the Route and the alternate route segment are shown in **Figure 1.1**.[2]

The primary guiding factor in the development of the Route was Minn. Stat. § 216E.03, including subdivisions (subd.) 7(b)(8) and (e) related to the evaluation of routes using existing transmission and highway right-of-way (ROW). Therefore, approximately 25 miles of the 27-mile-long transmission line will be located within an existing road or transmission line ROW. Total area of the Project ROW is approximately 454 acres. Approximately 380 acres (84 percent) of the Project ROW would be located within existing road ROW. Approximately 74 acres of Project ROW (16 percent) are proposed outside of existing road ROW. DCW has worked closely with Dodge and Mower counties, townships, other governmental agencies and entities, and landowner participants in the Project to develop a route that considers all factors set forth in Minn. Stat. § 216E.03, subd. 7, and Minn. R. 7850.4100 and minimizes impacts to landowners and the environment. The Applicant identified the Route through a comprehensive review, involving significant study and analysis of engineering options, environmental conditions, and socioeconomic considerations with the objective of minimizing impacts.

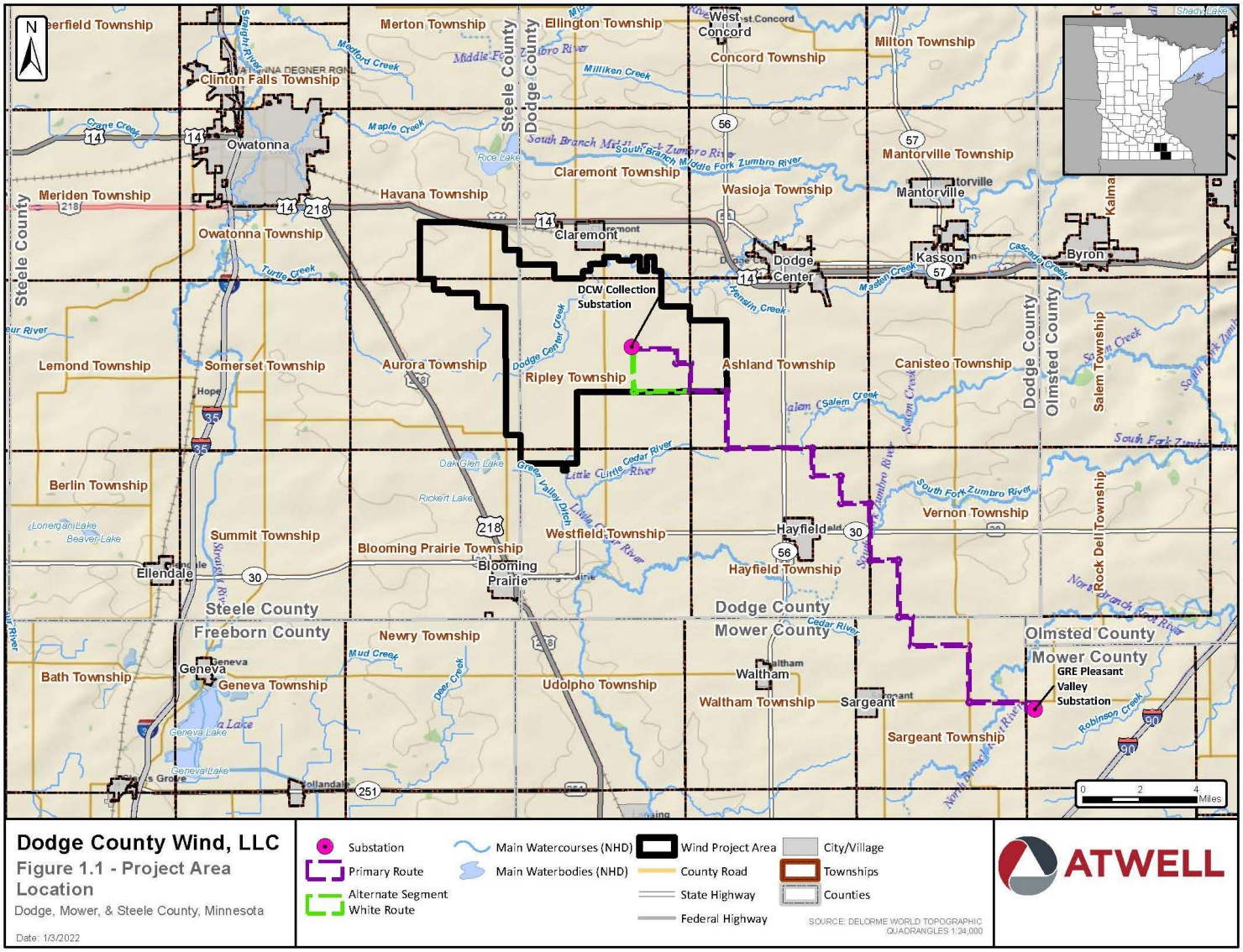
The Project will be interconnected under the Midcontinent Independent System Operator, Inc.'s surplus interconnection service, utilizing the existing interconnection rights held by GRE's Pleasant Valley Station -- a natural gas peaking plant. Use of surplus interconnection service will

[1] DCW is submitting separate amended applications to obtain a site permit for the DCW Wind Project in Docket No. IP6981/WS-20-866 and a certificate of need in Docket No. IP6981/CN-20-865. The Project will not be constructed unless the Commission issues a Site Permit and CON for the DCW Wind Project.

[2] Figure 1.1 is on page 3 of this Application; all other figures are located at the end of the narrative portion of this Application.

avoid the need to fund, build or upgrade transmission infrastructure beyond the point of interconnection.

Figure 1.1: Overview



1.1 Statement of Ownership

The Project will be owned by DCW, which is an indirect wholly owned subsidiary of NextEra Energy Resources, LLC (NEER). As a member of the NEER family of companies, DCW benefits from the project development and technical expertise of its affiliated companies. For example, DCW's NEER affiliates own, operate, and maintain approximately 1,023 substations and 87,929 miles of transmission and distribution lines, allowing DCW to draw from its NEER affiliates' capabilities in transmission project development and ownership.

Although DCW affiliates do not own or have a direct financial interest in any other transmission projects located in Minnesota, DCW affiliates do have financial interests in several wind and solar projects in Minnesota:

- The 110-MW Buffalo Ridge Wind Project (approved by the Commission) in Lincoln County;
- The 109.7-MW Walleye Wind Project (approved by the Commission) in Rock County;
- The 62.3-MW Marshall Solar Energy Project in Lyon County (in operation);
- The 78.8-MW of Minnesota Community Solar Gardens Project in various counties (in operation); and
- The 15-MW Gopher battery storage project in Anoka County (in operation).

If the Commission grants the requested Site Permit, CON, and Route Permit, DCW plans to own, operate, and maintain the facilities and will be responsible for fulfilling all of the conditions set forth in any Site Permit, CON, and Route Permit granted by the Commission.

1.2 Requested Action

This Application is submitted under the Alternative Permitting Process, Minn. Stat. § 216E.04, subd. 2(3), and Minn. R. 7850.2800 to 7850.3900. This statute requires the Applicant to propose a single Route (Minn. R. 7850.3100). The Applicant must also describe any alternative routes that were considered but rejected and provide its reasons for rejecting them. The Proposed Route is discussed below. Alternative routes evaluated are described in **Section 3.0**.

Given the Commission's practice of identifying an "anticipated alignment" in its Route Permit decisions, DCW has developed a Proposed Alignment that minimizes the overall potential impacts of the Project based on the routing factors identified in Minn. Stat. § 216E.03, subd. 7(b), and Minn. R. 7850.4100 (**Appendix I - Figure 1.2**). DCW developed the Proposed Alignment based on the information known at the time of the filing of this Application. After the Commission issues a Route Permit decision, a final alignment will be developed by reviewing the Proposed Alignment with individual landowners and agencies with permitting responsibilities and performing detailed survey and engineering work, site review, and design. The final alignment will be provided to the Commission through the Plan and Profile submission and review process. As part of that submission, DCW will inform the Commission about the locations of any deviations from the Proposed Alignment that occur in the final alignment.

For reasons presented herein, DCW proposes the Route described below for constructing the new 161 kV transmission line to connect the DCW Wind Project to the Pleasant Valley Substation point

of interconnection. DCW respectfully requests that the Commission approve the Proposed Route configured as follows: 450 feet centered on the Proposed Alignment (225 feet on each side) for a majority of the Route, as well as a 450-foot radius at the center points of 18 intersection locations. Exceptions to this include an expanded Route width of 0.25 miles centered on the DCW collector substation and an expanded Route width of 0.5 miles centered on the Pleasant Valley Substation (see **Section 2.2**).

This Application demonstrates that construction of the Project will comply with the applicable standards and criteria set out in Minn. Stat. § 216E.03, subd. 7, and Minn. R. 7850.4100. The Project will support the State's goals to conserve resources and minimize environmental, human settlement, and land use impacts and supports the State's electric energy security through the construction of efficient, cost-effective electric transmission infrastructure.

1.3 Permittee/Project Manager

The permittee for the Project will be:

Dodge County Wind, LLC
700 Universe Blvd
Juno Beach, FL 33408

The authorized representatives for the Applicant are:

Mark Lennox
Project Director
Renewable Development
Dodge County Wind, LLC
700 Universe Blvd
Juno Beach, FL 33408
Mark.Lennox@nexteraenergy.com
561-694-3392

Brian J. Murphy
Managing Attorney
NextEra Energy Resources, LLC
700 Universe Blvd
Juno Beach, FL 33408
Brian.J.Murphy@nee.com
561-694-3814

Mark Lennox
January 14, 2022

1.4 Certificate of Need

Pursuant to Minn. Stat. § 216B.243, a CON is required for a large energy facility as it is defined in Minn. Stat. § 216B.2421: "any electric power generating plant or combination of plants at a single site with a combined capacity of 50,000 kilowatts or more and transmission lines directly associated with the plant that are necessary to interconnect the plant to the transmission system" (Minn. Stat. § 216B.2421, subd. 2(1)). Contemporaneous with the submission of this Route Application, DCW is submitting an amended CON application (DCW CON Application) for a Large Wind Energy Conversion System, which includes as an associated facility this Application's 161 kV transmission line, which is required to interconnect the DCW Wind Project to the transmission grid. The DCW amended CON Application will be filed in Docket No. IP6981/CN-20-865.

As explained in the DCW amened CON Application, DCW has executed a 30-year Power Purchase Agreement (PPA) with GRE for the entire output of the DCW Wind Project. The output of the Project will assist GRE in exceeding the Renewable Energy Standard established in Minn. Stat. § 216B.1691.

1.5 Alternative Permitting Process for Route Permit

The Minnesota Power Plant Siting Act (PPSA) provides that no person may construct a high voltage transmission line (HVTL) without a Route Permit from the Commission (Minn. Stat. § 216E.03, subd. 2). Under the PPSA, an HVTL includes a transmission line that is 100 kV or more and is greater than 1,500 feet in length (Minn. Stat. § 216E.01, subd. 4). The proposed 161 kV transmission line is an HVTL greater than 1,500 feet in length; therefore, a Route Permit is required from the Commission prior to construction.

The 161 kV Project qualifies for review under the Alternative Permitting Process authorized by Minn. Stat. § 216E.04, subd. 2(3), and Minn. R. 7850.2800, subpart 1(C), because the Project is an HVTL between 100 and 200 kV. Accordingly, DCW is following the provisions of the Alternative Permitting Process outlined in Minn. R. 7850.2800 to 7850.3900 for this Project.

1.6 Notice to the Commission

On May 6, 2021, DCW notified the Commission that it planned to file a Route Permit Application for the Project and that it intends to use the Alternative Permitting Process of Minn. R. 7850.2800 to 7850.3900 for the Project (a copy of this notice is included as **Appendix B**). DCW's notice complies with the requirement of Minn. R. 7850.2800, subp. 2, to notify the Commission of this election at least 10 days prior to submitting a Route Permit Application.

Also, over 90 days prior to submitting this Application, DCW provided written notice to local governmental units and offered to schedule a pre-application consultation meeting, per the requirements of Minn. Stat. § 216E.03, subd. 3a and 3b. The notices are provided in **Appendix C.**

2.0 Project Information

2.1 Project Location

The Route for the Dodge County Wind Transmission Line Project (Project) is located in the eastern portion of Dodge County and the northern portion of Mower County in southeastern Minnesota. The Route is located within the townships of Ashland, Hayfield, Ripley, and Vernon in Dodge County and within the townships of Pleasant Valley and Sargeant in Mower County. **Figure 1.1** provides an overview of the Project. **Table 2.1** provides the township names and section numbers traversed by the Route.

Table 2.1
Project Location

County/Township	Township	Range	Sections
Dodge County, Ripley Township	T106N	R18W	13–15, 24, 25
Dodge County, Ashland Township	T106N	R17W	18, 19, 20, 29–35
Dodge County, Hayfield Township	T105N	R17W	1–6, 10–14, 24, 25
Dodge County, Vernon Township	T105N	R16W	7, 18–20, 29, 32
Mower County, Sargeant Township	T104N	R16W	2–5, 8–11, 13–15, 24
Mower County, Pleasant Valley Township	T104N	R15W	18, 19

2.2 Route

Dodge County Wind, LLC (DCW or Applicant), requests a 450-foot-wide Route centered on the Proposed Alignment, with a 450-foot radius at 18 road intersections as shown on **Figure 1.1** and in detail on **Figure 1.2 (Appendix I)**. The Route exits the DCW collector substation and travels east for approximately two miles before turning to follow county and township roads in a southeasterly direction for approximately 22.3 miles before double-circuiting with the existing 161 kV GRE transmission line for approximately 2.5 miles into the existing Pleasant Valley Substation (**Figure 1.1**).

Minnesota Statutes (Minn. Stat.) Chapter 216E directs the Commission to locate transmission lines in a way that ". . . minimize[s] adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring that electric energy needs are met and fulfilled in an orderly and timely fashion." A route may have a variable width of up to 1.25 miles, within which the transmission line, its right-of-way (ROW), and associated facilities can be located (Minn. Stat. § 216E.01, subdivision (subd.) 8 and Minn. Stat. § 216E.02, subd. 1).

A route should be wide enough to provide flexibility for the permittee to work with landowners to address concerns and to address engineering issues that may arise after a Route Permit is issued. Once a route is established by the Commission, the permittee then does more detailed engineering and survey work and obtains input from landowners to establish a final alignment and pole placement.

DCW requests a wider Route in areas surrounding both the Dodge County Wind collector substation (DCW collector substation) and the Great River Energy (GRE) Pleasant Valley Substation:

- DCW requests a 0.25-mile-wide Route, centered on the DCW collector substation, upon exiting the DCW collector substation, starting from approximately 0.7 miles north of 670th Street and extending south approximately 0.2 miles to a point 0.5 miles north of 670th Street. The wider Route (shown on page 1 of **Appendix I - Figure 1.2**) is requested in this area to provide routing flexibility to avoid conflicts with the proposed DCW Wind Project collection system and to allow for the adjustment of the final substation location.
- DCW requests a 0.5-mile-wide Route, centered on the GRE Pleasant Valley Substation. Here, the expanded Route starts approximately 150 feet north of 310th Street and extends south approximately 0.4 miles. The wider Route (shown on page 9 of **Appendix I - Figure 1.2**) is requested in this area to provide routing and substation arrangement flexibility.

2.3 Transmission Line Structures

DCW proposes to use 161 kilovolt (kV) alternating current (AC) single circuit monopole structures for 24.3 miles of the Project and 161 kV AC double circuit monopole structures for the remaining 2.5 miles where the Project will be co-located with the existing Pleasant Valley to Austin Northeast 161 kV transmission line owned by GRE. For the co-location, the DCW line and the structures will be placed within the existing GRE transmission line ROW. Steel structures will be used for the Project and all steel used will be weathering steel. Different structure types will be used as appropriate for specific locations within the Route, as detailed below.

- Primary structure types include the following:
  - Braced Post Vertical Tangent; and
  - Braced Post Delta Tangent.
- Structure types at turns (corners) include the following:
  - Single dead-end;
  - Double dead-end; and
  - Flying-tap.

Technical drawings of the proposed structures are available in **Appendix E** (Transmission Line Pole Structures, pages 33–43**)**. Each of the single-circuit structures will generally include three conductors, insulators, a neutral overhead wire and will be self-supporting, while turning structure will also have guy-wires or concrete piers stabilizing the poles to the ground. Double-circuit structures will generally include six conductors, insulators, a neutral overhead wire and will be self-supporting, while turning structure will also have guy-wires or concrete piers stabilizing the poles to the ground.

Transmission line span lengths will vary to accommodate a number of design factors, including permissions for the conductor and line to overhang private easements adjacent to road ROW, as

well as avoidance of natural resources. Proposed span lengths for the transmission line are not anticipated to exceed 900 feet. The average span will be approximately 500 to 800 feet.

Proposed heights depend on terrain, span length, structure configuration, and other crossings or constraints. Final pole heights will be determined during detailed design to maintain all required clearances. The proposed pole height is not expected to exceed 160 feet above the ground. The average pole height will be 80 to 140 feet above ground line.

Tangent structures will be directly embedded, unless embedment is deemed not feasible during detailed design. If it is not feasible to embed a pole into the ground, concrete piers may be used. Foundations for the single circuit structures will range between 2 and 7 feet in diameter. Foundations for the double circuit structures will range from 3 to 8 feet in diameter. Typical tangent structures will be vertically configured with a shield wire arm and braced post insulators oriented toward the adjacent roadway. Shield wire and conductors will not overhang the roadway during at-rest (no wind) conditions. However, these structures may extend over the roadway under blowout conditions (*i.e.*, wind). Conductor overhang positions during at-rest and wind conditions are shown in **Appendix E** (Pole Spotting Plans, pages 9 through 11).

Structures used at turns (corners) will be direct embedded and guyed where feasible, utilizing anchors to support loading of the line. If guying is not feasible due to environmental conditions, terrain, or other restrictions, self-supporting structures on concrete piers will be necessary. The specific design requirements for each structure will be confirmed once detailed survey work, soil sampling, and final route design have been completed. The proposed 161 kV transmission line will be designed to meet all relevant local and state codes, North American Electric Reliability Corporation Reliability Standards, the National Electric Safety Code (NESC), the Minnesota Administrative Rules (Minn. R.) 8820.9920, and the Minnesota Department of Transportation (MnDOT) Utility Accommodation and Coordination Manual (2019).

Table 2.2 provides a summary of the technical information for the conductor alternatives that DCW is proposing to use for the Project.

Table 2.2
Summary of Transmission Line Conductor Alternatives

Conductor Alternative	Type	Size (kcmil)[1]	Stranding (aluminum/ steel)	Diameter (inches)	Approximate Capacity (amps)
Single Bittern	ACSR	1272	45/7	1.345	1301
Twisted Pair "TP" Grosbeak	ACSR	12722	26/7[2]	1.6212	1399
Single Drake	ACSS	795	26/7	1.107	1592

[1] kcmil = thousands of circular mils.
[2] Represents an equivalent size or diameter-based TP geometry.

Table 2.3 provides a summary of the technical information for the family of structures that DCW is seeking to use for the Project. More precise representations of the structures identified in **Table 2.3** are provided in **Appendix D** (Transmission Line Pole Structures, pages 33–43). **Illustration 1** (see below) depicts a 161 kV steel monopole structure in a single circuit delta configuration, and **Illustration 2** depicts a 161 kV steel monopole structure in a single circuit vertical configuration. **Illustration 3** is a representative photograph of a 161 kV steel monopole structure in a delta configuration double circuit configuration. DCW will design the Project to meet all applicable state and local regulations and NESC requirements.

Table 2.3
Summary of Transmission Line Pole Structures

Line Type	Structure Type	Structure Material	ROW Width (feet)	Structure Height above Ground (feet)	Structure Base Diameter (feet)	Excavation Diameter (feet)	Span between Structures (feet)
Single Circuit 161 kV	Tangent Single Pole Braced Post Delta (0°–3°)	Steel	Varies	90–130	2 to 4	3 to 5	400 - 900
	Tangent Single Pole Braced Post Vertical (0°–3°)			90–130	2 to 4	3 to 5	
	Self-Support Light Angle (3°–15°)			90–130	3 to 5	4 to 7	
	Self-Support Medium Angle (15°–30°)			90–130	4 to 6	5 to 8	
	Guyed Dead-end (30°–100°)			100–140	2 to 4	3 to 6	
	Self-Support Dead-end (30°–100°)			100–140	5 to 7	7 to 9	
	Tangent Single Pole Braced Vertical with			120–140	3 to 4	4 to 5	

Line Type	Structure Type	Structure Material	ROW Width (feet)	Structure Height above Ground (feet)	Structure Base Diameter (feet)	Excavation Diameter (feet)	Span between Structures (feet)
Double Circuit 161 kV	Underbuild (0°–3°)						
	Tangent Single Pole Braced Post Vertical (0°–2°)			80–120	3 to 4	4 to 5	
	Self-Support Light Angle (2°–8°)		Up to 100	90–120	3 to 5	4 to 7	
	Self-Support Medium Angle (8°–45°)			90–120	4 to 7	5 to 9	
	Self-Support Dead-end (45°–135°)			70–100	6 to 8	8 to 10	

Illustration 1: Representative 161 kV Delta Configuration Single Circuit Structure Sample Photograph

Illustration 2: Representative 161 kV Vertical Configuration Single Circuit Structure Sample Photograph

Illustration 3: Representative 161 kV Delta Configuration Double Circuit Structure Sample Photograph

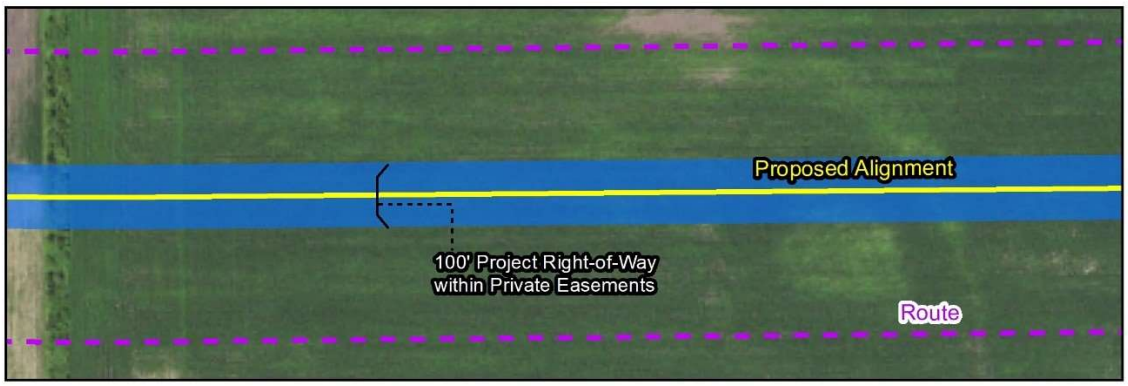
2.4 Project Right-of-Way

DCW anticipates constructing the new 161 kV transmission line with a ROW width of 100, 116, 140, or 150 feet, depending upon the available land rights and existing public road ROW along each portion of the route. The Project ROW is adapted at road intersections (turns) to accommodate the different turning structure configurations discussed in section 2.3. The single dead-end structure configuration does not alter the width of the Project ROW and is the option shown in the Proposed Alignment. The double dead-end structure configuration widens the Project ROW by 70 feet. At these locations, the maximum ROW width is 186, 210, or 220 feet. The flying-tap configuration extends the length of the Project ROW by 350 feet on all sides of road intersections but does not increase the width of the Project ROW. As discussed in more detail in Section 2.4.1, DCW will design the new line using structures and span lengths to meet ROW requirements that allow for safe operation and maintenance of the Project. Each Project ROW segment is broken out below.

2.4.1 Private Easement

Where the Project exits the DCW Collector Substation and is located in private easements (approximately 2 miles of the Proposed Alignment), the Project ROW is 100 feet wide (50 feet on each side of the Proposed Alignment) (Illustration 4).

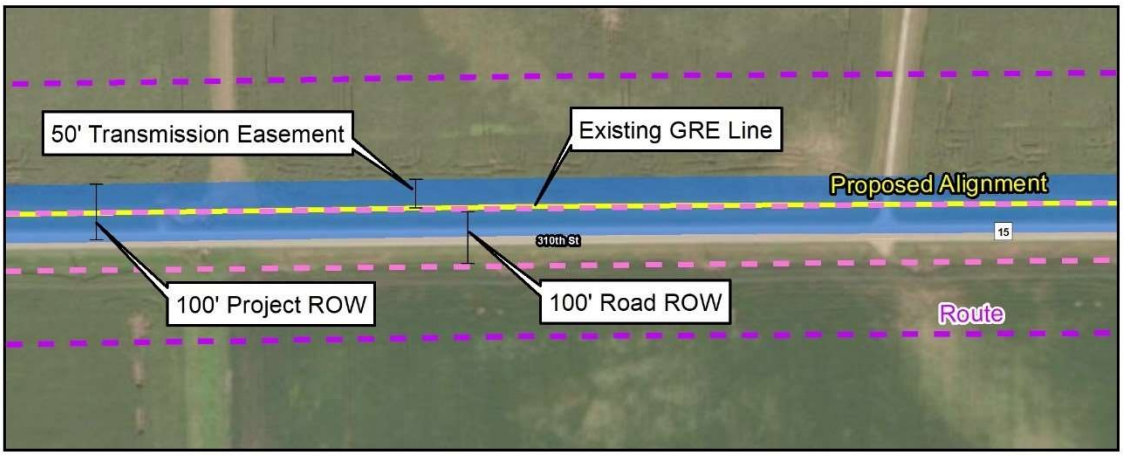
Illustration 4: Project ROW within Private Easement



2.4.2 GRE Line Co-location

The Project ROW is 100 feet wide where the Project is double circuited with the existing GRE ROW (approximately 2.5 miles of the Proposed Alignment). The Proposed Alignment is within private easements owned by GRE, and the Project ROW is approximately 50 feet on each side of the alignment, with approximately 50 feet on private easements and 50 feet within road ROW (Illustration 5).

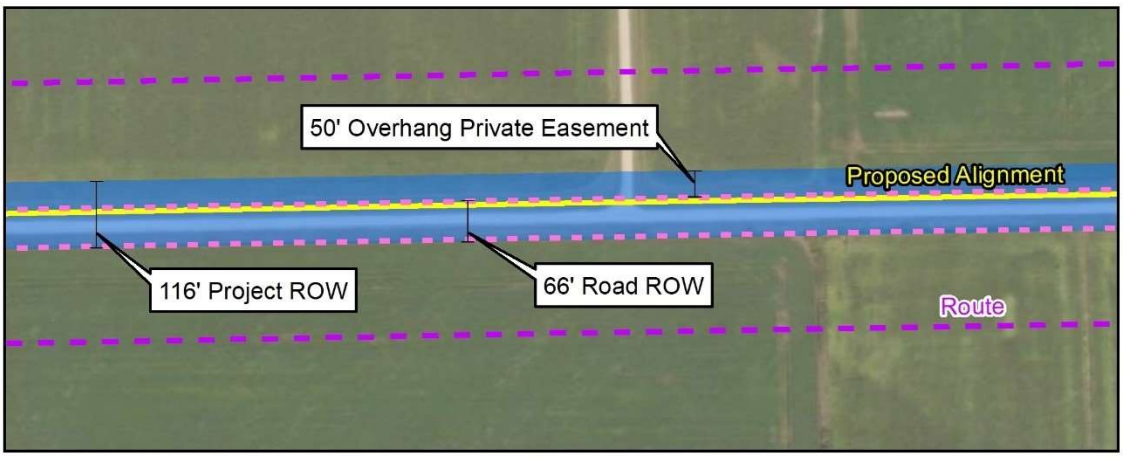
Illustration 5: Project ROW within GRE Line Co-location



2.4.3 Road ROW of 66-foot Width

Where portions of the Project follow roads with 66-foot-wide ROW (approximately 14 miles of the Proposed Alignment), the Project ROW is 116 feet. The Proposed Alignment is approximately two feet within the outer edge of road ROW. Here, the Project ROW would extend 64 feet outward from the center of the pole along the roadside (entirely within existing road ROW) and 52 feet outward from the center of the pole away from the road toward the private overhang easement (2 feet of road ROW plus 50 feet of private ROW) (Illustration 6). In this illustration, it is assumed that the adjacent private parcel landowner has agreed to participate in the project with an overhang agreement.[3]

Illustration 6: Project ROW within Road ROW of 66-foot Width

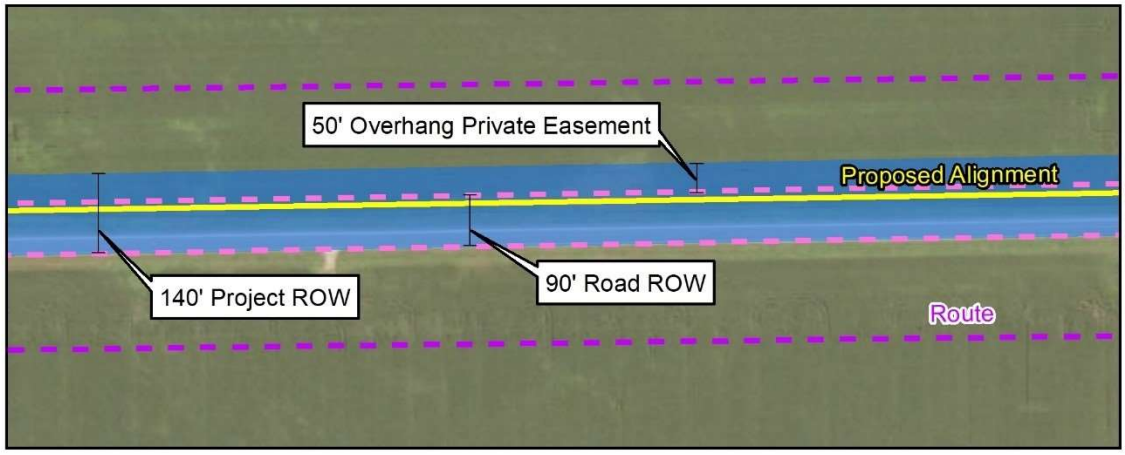


[3] Appendix E (Page 21) illustrates a proposed Project ROW cross section in 66-foot-wide road ROW with no private overhang easement.

2.4.4 Road ROW of 90-foot Width

Where portions of the Project follow roads with 90-foot-wide ROW (approximately 2 miles of the Proposed Alignment), the Project ROW is 140 feet. The Proposed Alignment is approximately two feet within the outer edge of road ROW. Here, the Project ROW would extend 88 feet outward from the center of the pole along the roadside (entirely within existing road ROW) and 52 feet outward from the center of the pole away from the road (2 feet of road ROW plus 50 feet of private ROW) (Illustration 7).

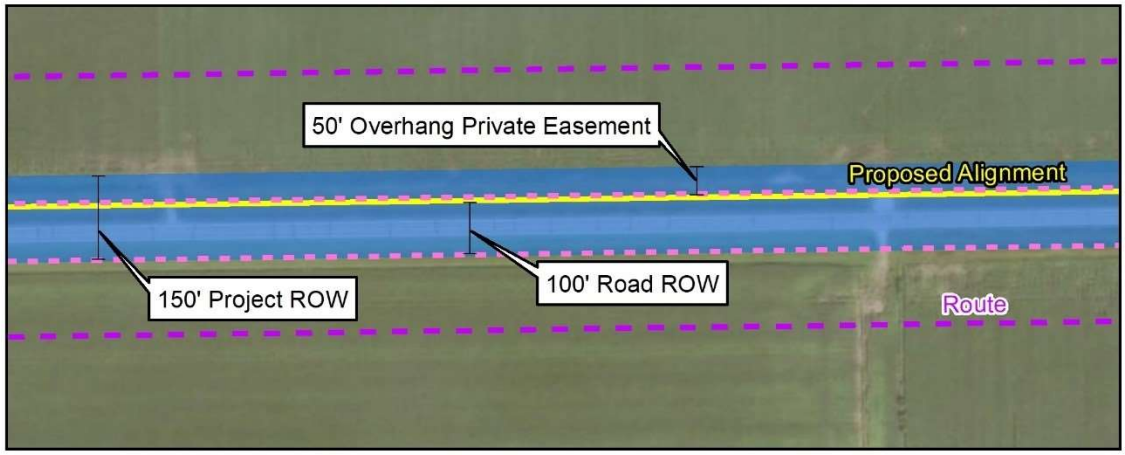
Illustration 7: Project ROW within Road ROW of 90-foot Width



2.4.5 Road ROW of 100-foot Width

Where portions of the Project follow roads with 100-foot-wide ROW (approximately 7 miles of the Proposed Alignment), the Project ROW is 150 feet. The Proposed Alignment is approximately two feet within the outer edge of road ROW. Here, the Project ROW would extend 98 feet outward from the center of the pole along the roadside (entirely within existing road ROW) and 52 feet outward from the center of the pole away from the road (2 feet of road ROW plus 50 feet of private ROW) (Illustration 8).

Illustration 8: Project ROW within Road ROW of 100-foot Width



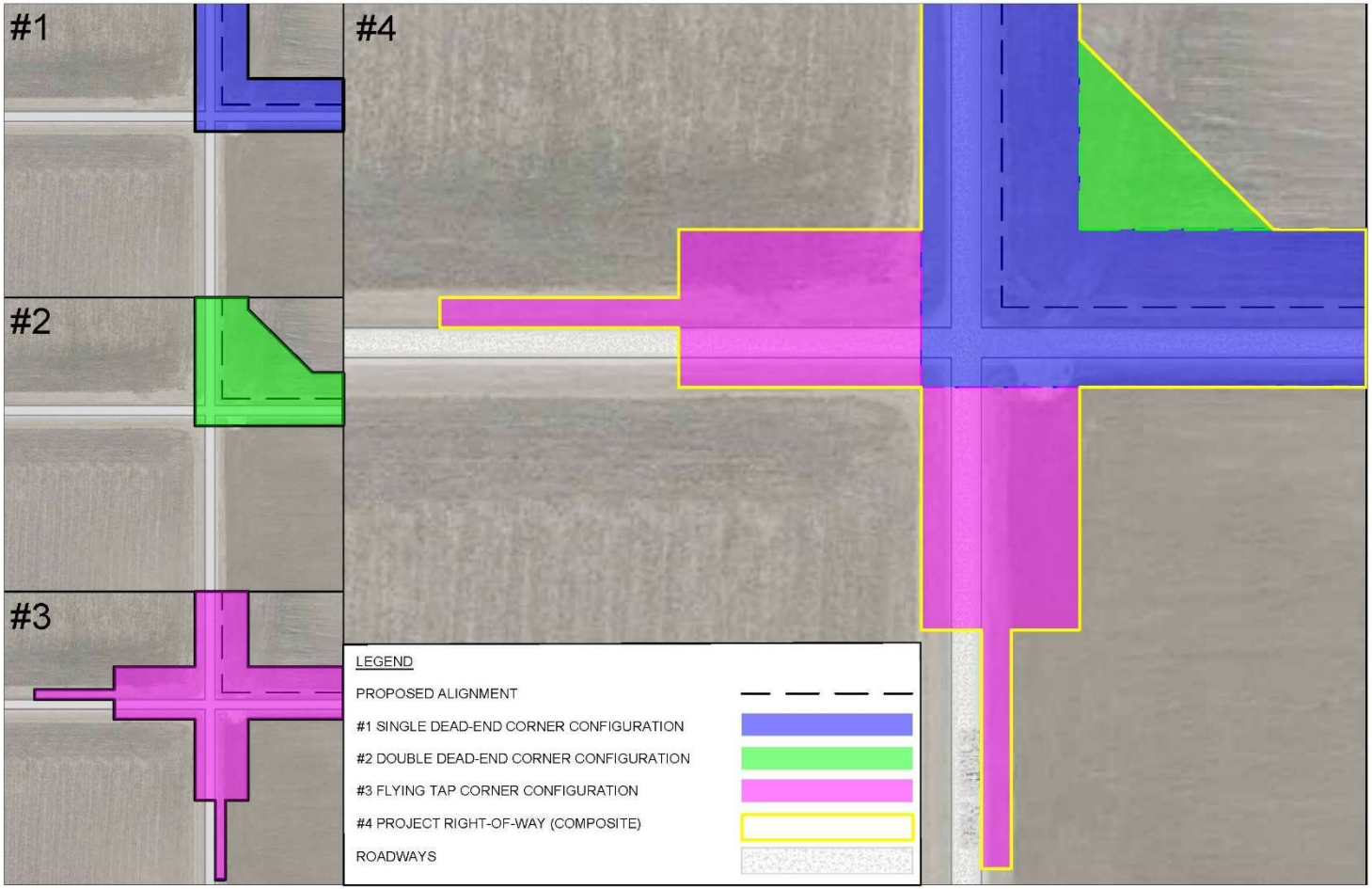
2.4.6 Project ROW at Road Intersections

At intersections where the Route turns, the Project ROW was developed by overlaying the impacts for three different turning structure configurations and represents the largest impact scenario. The resulting overlay is a conservative (largest) estimate of impact area as only one turning structure configuration will be constructed at each intersection. The three design options include the following:

- Single dead-end structure configuration:
  - This option does not extend Project ROW, nor does it require additional private easements. This option is shown within the Proposed Alignment.
- Double dead-end structure configuration:
  - This option widens Project ROW away from the road by a maximum of 70 feet, creating a Project ROW of 186, 210, or 220 feet. This option is determined by drawing a 45-degree angle between points on the Proposed Alignment that are 200 feet from the edge of the travel lanes creating a right angle with a base at the turning point of the Proposed Alignment. The Project ROW increases along the diagonal edge of the triangle until a maximum extension of 70 feet is reached at the midpoint of the hypotenuse (the altitude of the triangle). This option requires extended public road ROW or additional private easements within the area covered by the Project ROW.
- Flying-tap configuration:
  - This option lengthens Project ROW 350 feet past all sides of road intersections. There is no change to the maximum width of Project ROW within this configuration. Project ROW is reduced to 25 feet wide for the final 150-foot length to provide room for guy wires. This option does not require additional private easements.

A conceptual illustration of how the different design configurations were combined to create a composite Project ROW at intersections is provided in **Illustration 9** and **Appendix E** (Corner Configurations and Project ROW, pages 12 through 19). The ROW Typicals section in **Appendix E** (pages 20 through 34) provides additional detail regarding the various Project ROW design concepts.)

Illustration 9: Project ROW at Intersections



2.4.7 Placement of Structures in ROW

MnDOT, Dodge County, and Mower County utilize Minn. R. 8820.9920 and the MnDOT Utility Accommodation and Coordination Manual (2019) as guidance for safe placement of utilities in road ROWs. Thus, use of road ROW will comply with Minn. R. 8820.9920 and the MnDOT Utility Accommodation and Coordination Manual (2019) as well as with stated preferences from Dodge County Highway Department and Mower County Public Works regarding structure positions within road ROW and offsets from road intersections as discussed in **Section 4.1.1**.

The Federal Highway Administration states that clear zones are designed to "increase the likelihood that a roadway departure results in a safe recovery rather than a crash and mitigate the severity of crashes that do occur" (USDOT 2021). The Code of Federal Regulations (23 C.F.R. § 645.207) defines the clear zone as "the total roadside border area starting at the edge of the traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a nonrecoverable slope, and/or the area at the toe of a non-recoverable slope available for safe use by an errant vehicle." Minn. R. 8820.9920 standardizes the required clear zone width at different volumes and speeds of traffic. Clear zones range between 7 and 15 feet for roads on the DCW Route. For all roads along the Proposed Route, regardless of the status of overhang agreements, structures will be placed outside of clear zones consistent with Minn. R. 8820.9920 and in compliance with utility permits anticipated to be issued from Dodge County Highway Department, Mower County Public Works, and MnDOT prior to construction.

It is a routine occurrence for electric utilities to place transmission lines both directly overhead roadways or close enough next to roadways that conductor lines are expected to be temporarily blown over the roadway during windy conditions. To ensure that conductors are maintained at a minimum safe clearance from vehicles on roadways, the National Electric Safety Code (NESC) regulates the above ground clearance for electric lines adjacent to, crossing, or overhanging roads. The NESC requires that a 161 kV electric line maintain a minimum safety clearance of 21.2 feet above a roadway, designed to accommodate vehicles up to 14 feet tall. This minimum clearance is applicable in all temperature and wind ranges including those that would cause temporary "blowout conditions." DCW will exceed the NESC requirement utilizing a minimum clearance threshold of 25.4 feet. The larger clearance threshold is designed to accommodate oversized vehicles, such as large farm equipment or combines, up to 18.2 feet. Except for crossing locations, the conductor line will not hang over roadways during normal conditions.

2.5 Proposed Alignment

DCW proposes to locate the Proposed Alignment primarily in existing road ROW. The use of road ROW for the placement of transmission lines is consistent with Minn. Stat. § 216E.03, subd. 7(b)(8) and (e).[4] Siting criteria for placing structures within existing road ROW are discussed in **Section 3.1**. Additionally, at the request of Dodge County, the Minnesota State Attorney General issued an Opinion on July 25, 2018, concluding that DCW has the authority to utilize road ROW

[4] The Commission is required to evaluate "potential routes that **would use** or parallel existing railroad and **highway rights-of-way**" under Minn. Stat. § 216E.03, subd. 7(b)(8) (emphasis added). Under Minn. Stat. § 216E.03, subd. 7(e), the Commission "must make specific findings that it has considered locating a route for a high-voltage transmission line on an existing high-voltage transmission 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."

for the entirety of the potential route for the Project. Specifically, the Opinion concludes that Minn. Stat. § 223.37 (2017) "includes any company that provides power as an entity with access to the public right-of-way and does not limit such access granted to public utilities as defined in Minn. Stat. 216.02." DCW confirmed through its ongoing outreach activities with Dodge and Mower counties that, consistent with the Minnesota State Attorney General's Opinion, both counties support the use of county road ROW for the Project. A copy of the Opinion is included in **Appendix F**.

Roads paralleled and/or crossed by the Proposed Alignment are generally rural two-lane asphalt paved, or graveled, roads. The Proposed Alignment would cross two MnDOT state highways: Trunk Highway 56 and Trunk Highway 30. Where the Proposed Alignment crosses the MnDOT highways, no transmission pole structures will be located inside MnDOT ROW and the transmission line conductor will span the MnDOT ROW.

Distribution located along the Proposed Alignment includes lines managed by Xcel Energy, Freeborn Mower Electric Cooperative, Peoples Energy Cooperative, and Steele-Waseca Cooperative. Coordination with distribution utilities is underway to confirm where the distribution may be buried, relocated, or underbuilt on the proposed DCW transmission line structures. Coordination with Community Utility Company and Northern Natural Gas is also underway to address the crossing of natural gas pipelines along the Proposed Alignment.

2.6 Substations

As part of DCW's Site Permit Application under Docket No. IP6981/WS-20-866, DCW is proposing to construct a new collector substation approximately six miles southwest of the City of Dodge Center, Minnesota. DCW has an option agreement with a landowner to purchase up to 10 acres where DCW proposes to construct the new DCW collector substation. The DCW collector substation graveled footprint is anticipated to be no larger than two acres. More detailed design engineering will confirm the size based on equipment needs. Preliminary schematics and photographs representative of the proposed DCW collector substation are provided in **Appendix E**.

The DCW collector substation will step up the 34.5 kV collection system to 161 kV. The new DCW collector substation will include 161 kV busses, two generator step-up unit transformers, circuit breakers, reactive equipment, steel structures, a control building, metering units, and air-break disconnect switches. Typical utility-grade ceramic/porcelain or composite/polymer insulators designed and constructed in accordance with American National Standards Institute C29 will be utilized on the systems.

The Project will interconnect to the existing GRE Pleasant Valley Substation due to its relatively proximate location to the DCW collector substation and its available transmission capacity. The existing GRE Pleasant Valley Substation site can accommodate the new 161 kV line and associated substation equipment. Minor modifications to the GRE Pleasant Valley Substation may be made; however, the required improvements at this substation will be the responsibility of GRE and are not part of the proposed Project. Interconnection at the GRE Pleasant Valley Substation and the use of surplus interconnection provides for optimization of existing transmission infrastructure as no interconnection system upgrades or associated system upgrade costs would be required.

The GRE Pleasant Valley Substation is adjacent to the Pleasant Valley Plant, which is a natural gas–fired combustion turbine power plant used to generate energy only at times of highest (peak) demand, creating a surplus of interconnection capacity at the site. By utilizing the existing surplus, DCW avoids associated system upgrades and supports the efficient use of the transmission system. Pursuing surplus interconnection capacity also allows DCW to avoid Midcontinent Independent System Operator queue uncertainty. A Generator Interconnection Agreement for the full output from DCW is anticipated to be executed by the second quarter of 2022.

2.7 Project Schedule

DCW anticipates project construction will begin in spring 2023 with service for the proposed facilities to begin by the end of 2023. A summary of the Project's estimated permitting, construction, and in-service schedule is provided in **Table 2.4**. This schedule may be revised and is based on information available at the date of this filing and planning assumptions that balance the timing of implementation with the availability of construction crews, materials, and other practical considerations.

Table 2.4
Estimated Project Schedule

Activity	Estimated Completion
Certificate of Need Order	January 2023
Route Permit Order	January 2023
Site Permit Order	January 2023
Environmental Permits Received	Q2 2023
Other Permits/Approvals Received	Q2 2023
Land Acquisition	Q4 2022
Commencement of Construction	Q2 2023
Duration of Construction	Q2 2023 to Q4 2023
In-Service Date	No later than Q4 2023

Milestones Related to Schedule: Transmission Pole Ordering

Transmission poles will need be ordered at least 18 months ahead of the In-Service Date. In order to maintain a 2023 In-Service Date to meet GRE's need for energy driven by their sale of their Coal Creek Station coal plant in North Dakota and shift toward carbon-free energy generation, DCW must start construction by summer 2023. To order the correct transmission poles, DCW must have transmission route confidence by June 2022 to complete the pole design, order the poles, and fabricate the steel poles, and, thereafter, construct the Project prior to the end of 2023.

2.8 Project Costs

The estimated cost of the Project ranges between approximately $35 million and $45 million and includes the cost of development, permitting, installation, land acquisition, procurement of equipment and services, and other miscellaneous costs. Current cost estimates may vary by ± 35 percent due to the early stage of the Project and its size. Final costs are dependent on a variety of factors including, but not limited to, the approved route (*e.g.*, structure type, line length, land cost), construction timing, and cost of materials and labor. **Table 2.5** shows a breakdown of estimated project costs.

Table 2.5
Estimated Project Costs

Project Item	Cost
Land Acquisition and Permitting	$2 – $5 MM
Design, Procurement, and Construction	$32 – $39 MM
Post-construction Close-out, Permit Compliance	$1 MM
TOTAL	$35 – $45 MM

If the Commission grants the necessary approvals, DCW will construct, operate, and maintain the proposed 161 kV transmission line and the DCW Wind Project. Operation and Maintenance (O&M) costs of the transmission line will be minimal for the first several years following construction as the line will be new. Estimated annual O&M costs for the Project will likely be approximately $3,300 per mile. This estimate is based on required O&M tasks for a 161 kV transmission line, which include tower maintenance, vegetation management, and inspections. This estimate also integrates information from other recent O&M cost estimates for similar transmission lines. The primary cost associated with the O&M of a transmission line is the cost of inspections. Annual O&M costs for transmission lines in Minnesota and the surrounding states vary depending upon the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used, and the age of the transmission line.

Substations also require a certain amount of maintenance to keep them functioning in accordance with accepted operating parameters, including NEER procedures and the NESC. Transformers, circuit breakers, control buildings, batteries, relay equipment, and other substation equipment need to be serviced periodically to maintain operability. The substation will be fenced and kept free of vegetation, and proper drainage will be maintained. As applicable, the transmission line and substation also will be required to comply with the North American Electric Reliability Corporation's Reliability Standards.

2.9 Design Options to Accommodate Future Expansion

The Project is a radial transmission line specifically designed to deliver energy from the DCW Wind Project to the electric grid. Therefore, the Project is not designed to accommodate future expansion, as may be the case with a network or looped transmission line.

3.0 Route Selection Process

Dodge County Wind, LLC (DCW or Applicant), conducted a comprehensive evaluation process to determine the most appropriate route for the DCW Transmission Line Project (Project). Potential routing constraints and opportunities within a routing study area (**Appendix I - Figure 3.1)** connecting the proposed Dodge County Wind collector substation (DCW collector substation) to the existing Great River Energy (GRE) Pleasant Valley Substation were investigated (**Appendix I - Figure 3.2)**. DCW used available Geographic Information Systems (GIS) data and information from ongoing outreach efforts with Dodge and Mower counties, respective townships, and other governmental agencies and entities to identify prospective route segments (individual components that compose a complete route) that would eventually become the Route for the Project. In addition, as described in **Section 2** of this Application, DCW proposes to utilize road right-of-way (ROW) for the Project to the extent practicable. The use of road ROW is consistent with Minnesota Statutes (Minn. Stat.) § 216E.03, subdivision (subd.) 7(b)(8) and (e), as such use can reduce potential impacts to sensitive resources encountered by "greenfield" or new transmission line routes through undeveloped areas.

DCW employed a multi-step route development and evaluation process to determine the Route. These analyses began by identifying a preliminary route network within the routing study area in order to connect the termini locations. The development of potential routes for the Project also included consideration of regulatory requirements and factors listed in Minnesota Administrative Rules (Minn. R.) 7850.4100 and Minn. Stat. § 216E.03.

DCW developed the Route by first establishing a routing study area (see **Appendix I - Figure 3.1**) that included sufficient area in which to develop a robust route network with a focus on developing the Project primarily in road ROW, while simultaneously avoiding municipal areas in the routing study area such as Hayfield, Waltham, Sargeant, and Vernon. Next, DCW used publicly available GIS data and information obtained from outreach efforts with Dodge County, Mower County, and additional project stakeholders (*e.g.,* townships, Minnesota Department of Transportation (MnDOT), and Dodge Center Airport) to identify potential routing constraints such as sensitive environmental resources, cultural and archaeological sites, residences, public spaces/facilities, airspace obstacle clearance areas, and other factors that could influence the potential location of the Project within the routing study area. Using this information, DCW conducted a desktop review of the existing environmental, social, and land use characteristics of the routing study area to identify routing constraints and determine the appropriate route segments from which to build a complete route network connecting the project termini.

Following an assessment of this information, DCW then developed a preliminary route network for the Project comprising approximately 70,000 potential routes (see **Appendix I - Figure 3.2**). These potential routes were assessed against 13 criteria developed for the Project, consistent with factors listed in Minn. R. 7850.4100 and Minn. Stat. § 216E.03 (see **Section 3.1** for a more detailed discussion of the criteria used to compare the potential routes). Using statistical analyses, DCW compared the approximately 70,000 routes to determine which were the most impactful. If routes, or groups of routes, were shown to have more overall impacts or conflicts when compared to comparable routes in different locations, the routes with more impacts were removed from the analyses. This reduced the number of routes to a more manageable number while preserving the routes with the lowest overall impacts and fewest conflicts for further analysis by DCW.

DCW continued to analyze and compare the remaining potential routes for possible constraints, sensitive resources, and potential routing opportunities, including those that correspond to Minnesota statutes and rules for designating sites and routes (*e.g.,* Minn. Stat. § 216E.03, subd. 7; Minn. R. 7850.1900, subpart 3, Minn. R. 7850.4000, and Minn. R. 7850.4100). Following this comparison and removal of the routes with the most impacts and conflicts, DCW developed a smaller, secondary route network comprising 20 routes. DCW then analyzed and compared the remaining 20 routes against the same 13 criteria utilized for the larger initial route network, again consistent with the above Minnesota statutes and rules.

As the result of guidance from MnDOT regarding utility accommodation on trunk highway ROW policy, DCW removed from consideration routes that paralleled and utilized MnDOT trunk highway ROW. This is further described in **Section 4.1.1.** DCW reviewed and assessed previously identified route segments in these areas for constructability and suitability. DCW focused on identifying a route, and subsequently a Proposed Alignment, that would accommodate the MnDOT guidance as well as the various routing factors identified in **Sections 3.1** and **3.2**. The overall effort described above ultimately resulted in the Route, Proposed Alignment, and one alternative segment, Alternate Segment White, presented in this Application. **Figure 1.1** depicts the location of the Proposed Alignment and Alternate Segment White. **Section 2.5** describes the Proposed Alignment and Alternate Segment White in more detail. Route selection criteria and additional detail on the process of selecting the Route are provided below.

3.1 Guiding Factors for Route Selection

3.1.1 Use of Existing ROW as a Guiding Factor

The primary guiding factor in the development of the Route and Proposed Alignment for the DCW Project was utilizing existing ROW, given the preference in Minn. Stat. § 216E.03, subd. 7(b)(8) and (e), to locate in or parallel to existing railroad or highway ROW. Following the selection of the termini points for the Project, DCW investigated the existing linear corridors in the vicinity of the Project. Potential linear corridors, including existing transportation corridors, pipelines, field and division lines of agricultural lands, HVTLs, and railroads were evaluated for the Anticipated Alignment as summarized in **Section 3.1.2**.

Utilizing existing ROW as a primary guiding factor for route development and selection, DCW developed a Proposed Alignment for the proposed transmission line, contained within a proposed 450-foot-wide Route (with the exception of the two substation locations and turning structures, which include greater route widths to allow for additional flexibility in siting the Project) that minimizes overall potential impacts to the factors listed below and found in Minn. R. 7850.4100.

As discussed in **Section 2.4**, a majority of the Proposed Alignment would be located within an existing ROW. Existing railroad or highway ROW will not be used in two areas along the Project Route:

(1) within the DCW Wind Project area; and

(2) where the Project will be co-located with the GRE Pleasant Valley to Austin Northeast transmission line. Where the Proposed Alignment extends through the DCW Wind Project area, the transmission line would be located on existing secured, voluntary private transmission easements along property boundaries, field edges, and section lines.

As described further in **Section 4.1.1**, DCW conducted various outreach efforts with both Dodge and Mower counties to review the potential use of county road ROW for the Project. DCW continues outreach with staff from the Dodge County Highway Department, Mower County Public Works, and MnDOT to further refine the Proposed Alignment.

3.1.2 Additional Guiding Factors for Route Selection

Minn. Stat. § 216E.03, subd. 7(a), provides that the Commission's route permit determinations 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. Additionally, subd. 7(e) of the same section requires the Commission to make specific findings that it has considered locating a new transmission line on an existing transmission line route or parallel with existing road ROW and, to the extent those are not used for the route, the Commission must state the reasons. In addition to utilizing road ROW, a portion of the Proposed Alignment utilizes the existing GRE Pleasant Valley to Austin Northeast transmission line ROW.

In addition to the statutory criteria mentioned above, Minn. Stat. § 216E.03 and Minn. R. 7850.4100 direct the Commission to consider the following 13 relevant factors when determining whether to issue a Route Permit for a high voltage transmission line:

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 transportation, pipeline, and electrical transmission systems or ROWs;

J. Electrical system reliability;

K. Costs of constructing, operating, and maintaining the facility that are dependent on design and route;

L. Adverse human and natural environmental effects that cannot be avoided; and

M. Irreversible and irretrievable commitments of resources.

In addition to taking into consideration the factors listed above, DCW considered additional guiding factors for the development of potential routes for the Project. These additional guiding factors were based on discussions with local government units, agency and public officials, and landowners within the routing study area. These discussions resulted in a more site-specific list of factors that helped guide the development of the Route and Proposed Alignment in this Application. The following additional criteria were used to further assess and refine potential routes between the two project termini within the routing study area:

- Avoid local Wildlife Management Areas (WMA) including the Vernon WMA, South Fork Zumbro River WMA, Tri-Cooperative WMA, and the Bud Jensen WMA;
- Avoid conservation easements;
- Minimize route segments within Dodge County 100-year floodplain areas;
- Avoid local mapped sinkholes and karst areas;
- Minimize route segments near streams and rivers;
- Maximize distance from or span local archaeological and historic resource sites;
- Maximize distance from radio towers and wind farm turbines;
- Maximize distance from residences;
- Avoid terrain that makes construction and maintenance of a transmission line more difficult;
- Minimize multiple crossings of roadway within short distances;
- Minimize repeated crossings of waterways; and,
- Minimize woodland clearing.

3.2 Routing Criteria

As described in **Section 3.0**, following the development of the preliminary route network totaling approximately 70,000 potential routes, DCW analyzed, compared, and ranked the preliminary routes. DCW used 13 routing criteria developed for the Project that are consistent with Minn. Stat. § 216E.03 and Minn. R. 7850.4100. These routing criteria were developed using information provided through the various outreach activities DCW undertook with Dodge and Mower counties, representatives of the various townships, and other entities as well as the professional judgment of the DCW team. The routing criteria are objectively measurable characteristics of a route segment that can be used to compare the potential impacts of one potential route to the impacts of another route. After the preliminary routes were narrowed down to the secondary routes, further analysis was conducted using the same criteria to compare the 20 secondary routes for the Project (**Appendix I - Figure 3.3**). The routing criteria were divided into three categories—engineering, environmental and land use, and social considerations—and are summarized in the following sections.

3.2.1 Engineering Criteria

1. Total length (miles): Total length indicates the overall extent of the Project and its presence in the landscape and generally reflects potential construction costs.

2. Angles greater than 30 degrees (number): Angles exceeding 30 degrees require a larger, more visible, and costly structure that may increase the area of land disturbance during construction and operations.
3. Length not along existing transmission lines (miles): The purpose of this criterion was to determine the length of transmission line that would need to be built within new ROW rather than confining the Project to areas of existing transmission line ROW.
4. Roads crossed (number): Indicates the total roads crossed by the route.

3.2.2 Environmental and Land Use Criteria

1. Wetlands within the Project ROW (acres): Indicates the acreage of wetlands that would potentially be affected within the proposed transmission line ROW. Wetlands were measured from National Wetlands Inventory maps produced by the U.S. Fish and Wildlife Service. Areas of open water associated with stream, river, or lake crossings were included in wetland totals.
2. Woodland within the Project ROW (acres): Indicates the ROW acreage vegetated with woodland that would be potentially removed by clearing. These data were derived from the U.S. Geological Survey National Land Cover Dataset.
3. Public Watercourse crossings (number): Quantifies the number of perennial or intermittent river, stream, or creek crossings for each proposed route. Stream crossings also indicate potentially rough or uneven terrain, which could increase construction complexity and cost. Data from the Minnesota Department of Natural Resources Public Waters Basin and Watercourse Delineations Dataset were used.
4. Length through prime farmland (miles): Indicates the total length of each route that is designated by the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) as prime farmland. This soil classification dataset was obtained from the USDA NRCS Soil Survey Geographic data.

3.2.3 Social Issues Criteria

1. Residences within 75 feet (number): Residences between 0 and 75 feet of the route centerline.
2. Residences within 76 and 150 feet (number): Residences between 76 and 150 feet of the route centerline.
3. Residences within 151 and 300 feet (number): Residences between 151 and 300 feet of the route centerline.
4. Federal Communications Commission (FCC) towers within 1,000 feet (number): Quantifies the number of FCC towers between 0 and 1,000 feet of the route centerline.
5. Archaeological sites within Project ROW (number): Quantifies the number of identified archaeological sites within the Project ROW for each route. The sites investigated include archaeological sites listed on the National Register of Historic Places as well as other recorded sites. Data was obtained from the Minnesota State Historic Preservation Office.

3.3 Statistical Analysis of Routes

With the large number of potential routes analyzed for the Project and the various units of measurement of the routing criteria used to assess the routes, it was not possible to manually conduct a route-by-route comparison to identify a single route that would minimize overall potential impacts. Therefore, a statistical z-score analysis was used as a tool to manage and organize the preliminary and secondary route networks, to screen the route alternatives, and identify a smaller, more manageable number of routes warranting further investigation and comparison. The z-score statistical tool allowed for the different variable units (number, miles, and acres) of the route analysis criteria to be compared directly against each other so that a reduced number of routes with lower impacts could be identified and further studied based on individual analysis data in order to determine the best route.

A z-score determines the mean value within a set of data and compares the value of each individual parameter in the set to the mean. A z-score for each potential route was calculated against each of the 13 routing criteria specified in Minn. R. 7850.4100. The first step in calculating a z-score for a given criterion was to total the criterion's raw scores for all of the routes. This total was used to calculate a mean value for the criterion. A degree of difference (standard deviation) was then calculated for that criterion for each route by determining how far each route value deviates from the mean value. For example, the length of each route was summed, and a mean value was calculated for the entire set of routes. The length for each route was then compared to this mean value. If a particular route length was equal to the mean value, then the assigned z-score was zero. If the route length was greater than the mean value (above average value), then the z-score was a positive value for that route. The more the individual route value exceeded the mean, the higher the positive z-score. Similarly, if the route length was less than the mean value (below average value), the z-score was a negative value for that route. The farther the route value was below the mean, the lower the negative z-score.

The following statistical methodology was applied to both the preliminary route network and the secondary route network. The routing evaluation criteria data for the Proposed Alignment are summarized in **Table 3.1**.

Table 3.1
Proposed Alignment Data

Evaluation Criteria	Analysis Data
Total length (miles)	26.8
Angles greater than 30 degrees (number)	20
Length Not Along Existing Transmission Lines (miles)	24.3
Roads Crossed (number)	33
National Wetlands Inventory Wetlands within Project ROW (acres)	3.2
Woodlands within Project ROW (acres)	0.02
Public Watercourse Crossings (number)	6
Prime Farmland within Project ROW (acres)	452.8

Evaluation Criteria	Analysis Data
Residences within 75 feet (number)	0
Residences between 76 and 150 feet (number)	8
Residences between 151 and 300 feet (number)	12
Federal Communications Commission Towers within 1,000 feet (number)	0
Archaeological Sites in Project ROW (number)	0

In addition to what ultimately was designated the Proposed Alignment, two additional routes were considered but removed from further consideration as potential routes for the Project. A description of these two routes is provided in the following section.

3.4 Alternative Routes Considered and Dismissed or Rejected

DCW conducted both qualitative and quantitative analysis to identify the Proposed Alignment for the Project. As part of the qualitative analysis, DCW identified two alternative routes that were reviewed and analyzed but rejected for reasons described below. These two route options were identified in an effort to address consistency with Minn. Stat. § 216E.03, subd. 7(b)(8) and (e) and are depicted in **Appendix I - Figure 3.4**. A third alternate segment, Alternate Segment Orange, was also considered during project planning but was later rejected. Below is a discussion of the two alternative routes that were reviewed qualitatively and subsequently dismissed and a discussion of Alternate Segment Orange (also depicted on **Appendix I - Figure 3.4)**.

Unlike the Proposed Alignment, these two qualitatively evaluated routes utilized a portion of existing private easements that were secured by DCW during a previous iteration of the DCW Project (associated with MPUC Docket Number: IP6981/TL-17-308) in which the point of interconnection was the Byron Substation to the northeast of the collector substation. At the time of that application, Dodge County expressed concern regarding whether DCW has the legal right to place transmission infrastructure in its ROW. As mentioned in **Section 2.5**, the Minnesota Attorney General Opinion concluded that DCW is authorized to use county ROW. Therefore, while the use of route work from the previous iteration of the DCW Project was considered, it was rejected since the point of interconnection is materially different directionally, there is a clear understanding between Dodge County and DCW that the Project may route within or parallel to county ROW, and for the additional reasons provided next.

3.4.1 Byron to Pleasant Valley Co-Location Route

The first of the two rejected route options would have co-located, or paralleled, a portion of the existing 345 kilovolt (kV) Byron to Pleasant Valley transmission line owned by Northern States Power Company (NSP). This route is located east of the DCW Proposed Alignment and extends north from the Pleasant Valley Substation toward Byron, Minnesota (see **Appendix I - Figure 3.4**). DCW evaluated connecting to this existing transmission line via use of secured private easements that were obtained as part of a previous iteration of the DCW Project (MPUC Docket Number: IP6981/TL-17-308). This private easement route extends eastward from the DCW collector substation via a mix of private land and road ROW to a point just over the Dodge County line in Olmstead County, where it would have connected with the existing NSP 345 kV Byron to

Pleasant Valley transmission line. DCW met with NSP Energy to investigate the potential to co-locate with the Byron to Pleasant Valley transmission line or use a shared or parallel ROW for the Project. During these discussions, it was determined that NSP's easements required landowner consent for any co-location of other entities along the transmission line. After receiving this information, DCW conducted an extensive outreach program with the landowners along the portion of the Byron to Pleasant Valley transmission line to inform them that DCW was intending to parallel or co-locate with the NSP line for the Project. During this outreach, DCW determined that the overwhelming majority of landowners were not interested in participating in the DCW Project. It is DCW's understanding that much of NSP's Byron to Pleasant Valley transmission line was permitted and approved through the state's condemnation process, and many of the landowners objected to further participation with another transmission line project as a result. Without these landowners participation, DCW could not co-locate within, or parallel, the existing NSP ROW. The option to co-locate or parallel the NSP Byron to Pleasant Valley transmission line was therefore removed from further consideration for the Project.

3.4.2 Hybrid Route

The other alternative route DCW evaluated to connect the two project termini was to utilize a hybrid approach, or a combination approach using private easements and road ROW. This hybrid route is shown in **Appendix I - Figure 3.4** and would have used existing private easements obtained during the previous DCW Project effort (MPUC Docket Number: IP6981/TL-17-308) for the portion of the route that would extend eastward from the DCW collector substation. For the north–south portion of the hybrid route, road ROW would have been used to connect to the Pleasant Valley Substation. This option utilized existing secured private easements combined with use of road ROW, which would be consistent with Minn. Stat. § 216E.03, subd. 7(b)(8) and (e). However, this route had more anticipated impacts than other routes evaluated. The hybrid route had seven homes between 76 feet and 150 feet of its centerline, which is the same as the Proposed Alignment. The hybrid route also had greater impacts to other resources as it would require more road crossings, more forest removal, and more watercourse crossings. Also, the hybrid route had more wetlands and archaeological sites than the Proposed Alignment. Based on these potential impacts, the hybrid route was dismissed from further consideration.

3.4.3 Alternate Segment Orange

In addition to the two routes considered but dismissed above, DCW also considered an alternate route segment, Alternate Segment Orange (see **Appendix I - Figure 3.4**). Mower County had previously asked DCW to avoid siting the transmission line in areas such as 660th Avenue where the county was considering roadway expansion. Since that time, Mower County indicated that there were no plans for expansion in the near future, and, therefore, 660th Avenue no longer necessitated avoidance. As such, the preferred 660th Avenue was kept in the Proposed Alignment, and Alternate Segment Orange was dismissed from further consideration. This segment was approximately 3 miles in length and extended from 330th Street to the south along the west side of 650th Avenue and then crossed to the east side of 650th Avenue and continued south to 310th Street, where it turned and extended east along the north side of 310th Street to join the Proposed Alignment.

3.5 Project Notice Area

Following the removal of routes that were considered but rejected and the assessment of the remaining 20 routes, DCW developed a Project Notice Area that encapsulated the best performing route segments for the Proposed Alignment. The Project Notice Area is 22 miles long and covers approximately 104 square miles, and ranges in width between approximately 4.5 and 9.3 miles. As provided in **Appendix C**, notification letters were sent to local government units within this Project Notice Area on December 14, 2020. **Appendix I - Figure 3.5** depicts the Project Notice Area.

The Project Notice Area developed for the DCW Project encompasses the Proposed Alignment and one alternate route segment (Alternate Segment White) and also allows for potential additional route alternatives should future constraints be identified in ongoing discussions with project stakeholders. The Project Notice Area allows for an adequate number of distinct route alternatives for the Project without including areas that did not support reasonable route alternatives. Although some areas outside of the Project Notice Area had available locations within the road ROW without residential proximity, they did not provide adequate connections to nearby potential segments with similar routing traits.

DCW continues to work with project stakeholders within the Project Notice Area to refine the Proposed Alignment, where applicable, with consideration given to the potential impact on the routing criteria enumerated in Minn. Stat. § 216E.03, subd. 7, and Minn. R. 7850.4100.

3.6 Selection of the Proposed Alignment

Following the assessment of the secondary route network and a constructability review by the DCW team, a Proposed Alignment was selected for the Project. The Proposed Alignment minimizes anticipated impacts in the routing study area while maximizing the use of existing road and transmission ROW. Additional modifications to the Proposed Alignment may be made as a result of coordination with Dodge County, Mower County, MnDOT, townships, landowners, or other stakeholders, or should additional sensitive resources be identified during subsequent field survey efforts. Any modifications proposed by landowners and/or stakeholders will be assessed against comparable impacts of the Proposed Alignment in relation to the factors listed in Minn. R. 7850.4100. DCW anticipates that the Proposed Alignment will continue to be within the designated Route, which ensures the overall impacts of a final alignment will be comparable to the Proposed Alignment relative to the factors listed in Minn. R. 7850.4100.

Table 3.2 summarizes by length the existing utility, field division and survey lines, and transportation corridors paralleled by the Proposed Alignment.

Table 3.2
Summary of Length of Existing Linear Features Paralleled by the Proposed Alignment

Length (miles)	T-line (miles)	Road (miles)	Rail (miles)	Pipeline (miles)	Field, Division, Survey Lines (miles)	None (miles)	Total Paralleled Length (miles)	% of Length Paralleling Linear Features
26.8	2.5	24.3	0	0	26.2	0.4	26.4	98.5

3.7 Proposed Route Description

When approved and permitted, the Project Route will be the location of the DCW transmission line. The Route may have a variable width of up to 1.25 miles per Minn. Stat. 216E.01, subd. 8. The Proposed Alignment is considered the centerline or "anchor" of the Proposed Route.

As shown on **Appendix I - Figure 1.2**, in Dodge County the Proposed Route originates at the DCW collector substation, located in Section 15 of Ripley Township. It extends south of the substation approximately 315 feet within private easement before turning east. The Proposed Route then extends approximately 1.5 miles within private easement to the east through Sections 13, 14, and 15 in Ripley Township, crossing 140th and 150th Avenues (both roads are located in Ripley Township). It then travels south for approximately 0.5 miles within private easement before turning east for another 0.5 miles and parallels 670th Street (Dodge County) within the road ROW. The Proposed Route crosses 160th Avenue (Dodge County State Aid Highway (CSAH)) into Section 18 of Ashland Township before turning south, crossing 670th Street (Ashland Township road east of 160th Avenue) into Section 19 of Ashland Township, and continuing south along the east side of 160th Avenue for approximately 1.0 mile in road ROW.

From this point, the Proposed Route turns east and parallels the north side of 680th Street (Dodge CSAH) in the road ROW for approximately 1.3 miles. It then extends south and parallels the west side of 170th Avenue (Ashland Township road) for approximately 2.0 miles in road ROW through Sections 30 and 31. The Proposed Route then extends east, crossing 170th Avenue into Section 32 of Ashland Township, and parallels the north side of 700th Street (Ashland Township road) for approximately 2.2 miles in road ROW through Sections 33 and 34 of Ashland Township. It then crosses 180th Avenue (Ashland Township road) and Trunk Highway 56 (MnDOT road). The Proposed Route then crosses to the south side of 700th Street (Dodge County road east of Trunk Highway 56) at a southeast angle into Section 3 of Hayfield Township. It then continues east in road ROW for approximately 0.8 miles, crossing to the east side of 200th Avenue (Hayfield Township road) and into Section 2 of Hayfield Township. It then extends south along the east side of 200th Street for another 1.0 mile in road ROW.

The Proposed Route turns east and travels along the north side of 710th Street (Dodge CSAH) for approximately 0.6 miles in road ROW. It then crosses at a southeast angle to the south side of 710th Street into Section 11 of Hayfield Township and continues east for approximately 0.3 miles in road ROW. It then turns south and parallels the west side of 210th Avenue (Hayfield Township road) in road ROW for approximately 1.0 mile. At this point, the Proposed Alignment turns east,

crosses 210th Avenue into Section 12 of Hayfield Township, and parallels the north side of 720th Street (Hayfield Township road) for approximately 1.0 mile in road ROW. It then crosses 220th Avenue (Dodge CSAH) into Section 7 of Vernon Township. The Proposed Route then turns south, crosses 720th Street, and parallels the east side of 220th Avenue in road ROW through Sections 18 and 19 of Vernon Township for approximately 2.0 miles. From this point, the Proposed Route turns east and extends along the north side of 740th Street (Vernon Township road) for approximately 1.0 mile in road ROW before crossing to the east side of 230th Avenue (Vernon Township road) into Section 20 of Vernon Township. Paralleling the east side of 230th Avenue, the Proposed Alignment extends south for approximately 2.0 miles in road ROW through Sections 20, 29, and 32 of Vernon Township and crosses 740th Street and 750th Street (Vernon Township road). It then turns east along the north side of Dodge Mower Road (Dodge CSAH) and extends east for approximately 0.4 miles in road ROW and then turns south before ending at the Dodge County line and 640th Avenue (Sargeant Township road).

The Proposed Route enters Mower County and continues south for approximately 0.9 miles along the east side of 640th Avenue (Sargeant Township road) in road ROW in Section 4 of Sargeant Township **(**see **Appendix I - Figure 1.2)**. At this point, it turns and extends east for approximately 0.2 miles in road ROW before crossing to the south side of 330th Street (Sargeant Township road). The Proposed Route extends along the south side of 330th Street in road ROW for approximately 0.7 miles through Section 4, crossing 650th Avenue (Sargeant Township road) and continuing eastward for another 1.0 mile in road ROW through Section 3 of Sargeant Township. It crosses 660th Avenue (Mower CSAH), turns south, and parallels the east side of 660th Avenue for approximately 2.0 miles in road ROW through Sections 11 and 14 of Sargeant Township.

The Proposed Route then turns east and parallels the north side of 310th Street (Mower CSAH) for approximately 2.0 miles, co-located on new transmission line structures with the existing GRE Pleasant Valley to Austin Northeast 161 kV transmission line ROW along 310th Street. At the northwest corner of the intersection of 310th Street and 680th Avenue (Pleasant Valley township road), the Proposed Route extends diagonally across 310th Street and 680th Avenue for approximately 0.07 miles in the existing GRE Pleasant Valley to Austin Northeast 161 kV transmission line ROW to the southeast corner of the intersection and into Section 19 of Pleasant Valley Township. It then turns, extends east, and parallels the south side of 310th Street in existing transmission line ROW for approximately 0.1 mile before extending at a southeast angle for approximately 0.07 miles. At this point, the Proposed Route turns south and extends for approximately 0.2 miles in Section 19, terminating at the existing GRE Pleasant Valley Substation.

3.7.1 Alternate Segment

One alternative segment to the Proposed Route is included in the Project. Alternate Segment White presents an alternative to the use of voluntary private easements associated with the DCW Wind Project facility adjacent to the DCW collector substation. Alternate Segment White is approximately 3.5 miles long and extends from the DCW collector substation south along the west side of 140th Avenue (see **Figure 1.1**) and then crosses to the east side of 140th Avenue before turning and extending east along the north side of 680th Street. Here, Alternate Segment White terminates and joins the Proposed Alignment. This alternative was developed to utilize road ROW, consistent with Minn. Stat. 216E.03, subd. 7(e), which prioritizes route alternatives that parallel existing infrastructure such as roadways.

4.0 ROW Acquisition, Construction, Restoration, and Maintenance Procedures

4.1 ROW Acquisition

4.1.1 Road ROW Consultations with Dodge County, Mower County, Townships, and Minnesota Department of Transportation

Minnesota Statute § 222.37 (2017) allows "any water, power, telegraph, telephone, pneumatic tube, pipeline, community antenna television, cable communications or electric light, heat, power company, or fire department" to "use public roads for the purpose of construction, using, operating, and maintaining lines, subways, canals, conduits, hydrants, or dry hydrants, for their business." Prior to construction, Dodge County Wind, LLC (DCW or Applicant), will secure necessary utility permits from the Dodge County Highway Department, Mower County Public Works, and the Minnesota Department of Transportation (MnDOT) for the construction and operation of the portions of the Dodge County Wind Transmission Line Project (Project) that are within road right-of-way (ROW). DCW has conducted various outreach activities with Dodge and Mower counties, applicable townships, and MnDOT. DCW reached out to those entities to identify state and county policies, regulations, and preferences regarding the use of road ROW for the Project for those areas in which DCW proposed to use road ROW. DCW commits that no transmission line conductors will overhang the roadway during at-rest (no wind) conditions, with the exception of those locations where the transmission line crosses the roadway.

In January 2017, DCW contacted Dodge County to discuss the use of road ROW. Since then, DCW has conducted 20 in-person meetings and conference calls with the Dodge County Roads Engineer, the Dodge County Commission, and Dodge County Highway Department staff regarding the Project. Dodge County staff provided guidance to DCW on potential issues and considerations with the use of road ROW, such as the need to coordinate with affected townships (including the development of any required Township Agreements for road ROW use), the need to identify necessary culvert replacements, the need to assess drainage structures within the road ROW, and DCW's responsibility to update bridge load ratings, where necessary. Dodge County staff also indicated that DCW would be required to provide a Development Agreement, Road Use and Repair Agreement, and a Drainage Agreement for the Project once detailed engineering and design are completed. DCW will continue to work with Dodge County engineers to determine the appropriate location for the Project in Dodge County road ROW. With respect to the townships in Dodge County, DCW has consulted with Ripley, Ashland, and Hayfield townships on specific segments of road ROW where the Proposed Alignment is proposed in locations under township authority.

The Dodge County Highway Department is responsible for roads in Dodge County. Specific discussions were held with the Dodge County Highway Department in October 2020. DCW asked the Dodge County Highway Department to review the Route for safety considerations along the proposed roads. The Dodge County Highway Department indicated that there were no planned expansions or safety concerns specific to the proposed roads. On a follow-up conference call in December 2020, the County Engineer specified that traffic visibility was the primary consideration and requested pole structures be placed as far to the edge of the road ROW as feasible and 100 feet from the center point of Dodge County road intersections. In February 2021, DCW reviewed typical configurations of possible turning structures with the Dodge County Highway Department, including single dead-end structures, double dead-end structures, and flying-tap configurations.

The discussion included the potential use of flying-tap and 45-degree configurations, which could be utilized to accommodate the requested 100-foot setback from intersection center points; however, it was noted that flying-tap configurations require more structures in total. Self-supporting turning poles could require fewer structures but would have to be within the requested 100-foot setback from intersection center points. After reviewing the possible configurations, the Dodge County Highway Department confirmed that they preferred flying-tap configurations to self-supporting structures because of the visibility benefit of using flying-tap configurations. In May 2021, the Dodge County Highway Department reconfirmed the preference for flying-tap configurations over self-supporting poles and requested the intersections be equipped with mirrors to help with visibility. DCW agreed that the final design for transmission poles near road intersections will comply with the Dodge County Highway Department's stated preferences. In August 2021, the Dodge County Highway Department noted that they will require DCW to apply for a Utility Permit to grant access for operations and maintenance (O&M) during the life of the Project. The Dodge County Highway Department will continue to be responsible for regular vegetation management, and DCW would be responsible for all maintenance for the transmission line in excess of the standard vegetation maintenance program performed by the County.

Mower County Public Works is responsible for roads in Mower County. In July 2020, DCW contacted Mower County to discuss the use of road ROW. DCW conducted conference calls with Mower County Public Works as well as Mower County Zoning; during those calls Mower County staff provided guidance to DCW on potential road ROW expansion plans. Mower County staff also indicated that DCW would be required to provide a Development Agreement, Road Use and Repair Agreement, and a Drainage Agreement for the Project once detailed engineering and design are completed. In November 2020, the Mower County Public Works Department reviewed the Project and associated county roads. In December 2020, Mower County Public Works mentioned that they might be looking at expanding 660th Avenue, a road along the Proposed Alignment. During a follow-up virtual meeting in February 2021, Mower County Public Works noted a preference for pole structures to be placed strictly within road ROW. DCW confirmed that all pole structures for the single circuit portion of the Project within Mower County were proposed to be within road ROW, as far from the road and close to the edge of ROW as feasible. In May 2021, Mower County Public Works confirmed that there were no expansion plans for 660th Avenue in the project vicinity and that they had no concerns regarding the selection of any of the roads along the Proposed Alignment. Possible turning configurations were shared with Mower County Public Works staff members, who indicated that self-supporting turning structures would be acceptable.

Sargeant Township officials were shown typical configurations of possible turning structures in March 2021. Sargeant Township Officials noted that when overhang is not available for 45-degree turning configurations, self-supporting structures within 100 feet of road intersections would be acceptable. Access for O&M of the route would be granted through a Utility Permit.

Since May of 2018, DCW has been in contact with MnDOT staff regarding the use of state highway road ROW. DCW proposes to cross MnDOT Trunk Highway 56 and Trunk Highway 30. As detailed engineering plans have not been completed, MnDOT staff provided guidance for the crossing of these two state highway ROWs for the Project and regarding MnDOT accommodation policy.

The Proposed Alignment has been provided to and reviewed by MnDOT. A coordination meeting with MnDOT regarding project design and the crossing of Trunk Highway 30 occurred on April

22, 2021. On October 6, 2021, MnDOT filed a letter in the Application docket (IP6981/TL-20-867) clarifying MnDOT Utility Accommodation on Trunk Highway Right of Way policy. MnDOT and DCW continued coordination regarding the application of MnDOT policy in October and November 2021. In November 2021, DCW provided the Proposed Alignment to MnDOT that eliminated paralleling any MNDOT highway, but, also, indicated DCW will cross MnDOT Trunk Highway 56 and Trunk Highway 30. MnDOT reviewed and remarked that the type of crossings proposed by DCW seemed consistent with the Utility Accommodation Policy and agreed to work with DCW to review the proposed design of the highway ROW crossings once pole locations are finalized. DCW will submit an Application for Utility Accommodation on Trunk Highway Right of Way (Form 2525) to MnDOT to obtain permits for the project transmission line crossings. MnDOT issues utility accommodation permits after the issuance of a Route Permit by the Commission and requires direct consultation with District 6 staff prior to the issuance of any approvals. The MnDOT Utility Accommodation application process is required before starting work to install or maintain utilities crossing trunk highway ROW. MnDOT may consider future highway characteristics and usage in their review of the Project during review of the Utility Accommodation application. After the Utility Accommodation ROW permit is issued, MnDOT may require adjustment or relocation of permitted facilities for highway maintenance and construction. MnDOT policy states that "all costs related to constructing, maintaining, altering, and relocating the facility is the responsibility of the utility owner, unless state law otherwise provides"(MnDOT 2019). As refinement to pole placement continues throughout the approval and construction processes, DCW will continue to work with Dodge County, Mower County, applicable townships, and MnDOT to coordinate the placement of structures in ROW.

Desktop and field evaluations, together with the ongoing coordination with the Dodge County Highway Department, Mower County Public Works, and MnDOT, confirmed the viability of the existing ROWs for project development. When field work and surveys are conducted in road ROW, appropriate Work-in-ROW permits will be obtained from Dodge and Mower counties. In addition, DCW's evaluations identified existing structures and resources within the Proposed Alignment that necessitate design considerations and coordination. For example, existing distribution and utility infrastructure were identified for co-location, crossing, or avoidance. DCW consulted with the electric distribution and utility owners to coordinate proposed new DCW infrastructure with existing facilities. In appropriate locations, utility crossing agreements are being sought by DCW. DCW also identified any visually obvious underground encumbrances requiring avoidance or relocation and compared that information with available underground Geographic Information Systems data. Evaluations also identified natural resources such as wetlands, sensitive species habitats, and trees that could be avoided via infrastructure placement or by transmission line spanning. As detailed in **Section 5**, coordination with various agencies and entities regarding environmental features within the Project ROW is ongoing.

4.1.2 Private Easement Evaluation and Acquisition

4.1.2.1 Transmission Line Easement Evaluation

The typical ROW evaluation process employed by DCW to secure private transmission easements with landowners includes title examination, initial owner contacts, survey work, document preparation, easement negotiation, and transaction execution. Transmission easements provide consent to construct and operate on-the-ground and aboveground infrastructure including poles, guy wires, and the transmission line conductor. Private landowner transmission easement

agreements have been secured along the approximately 2.1 miles of the Proposed Alignment, adjacent to the DCW collector substation in Ripley Township, where poles are planned outside of existing road ROW. Along the double circuit co-location with the existing GRE Pleasant Valley to Northeast transmission line, GRE has existing easements in place that will be utilized by DCW in coordination with GRE.

4.1.2.2 Overhang Easement Evaluation

Overhang easements follow the same typical ROW evaluation process; however, they differ from transmission easements in that they provide consent only for installation and operation of aboveground infrastructure. DCW is securing overhang easements with landowners that are adjacent to the portions of the Proposed Alignment along road ROW. Overhang easements increase design flexibility as they allow for longer span lengths (*i.e.,* fewer poles) and also provide an increased number of design options for turning structure types at intersections. For all areas where the Proposed Alignment is within road ROW, the Project ROW includes the width of the underlying roadway and a 50-foot-wide area to accommodate the potential for adjacent landowner overhang easements. In general, a wider transmission line ROW allows for longer line spans (*i.e.*, fewer poles) between transmission line structures. Longer spans result in wider overhang of conductors during blowout (*i.e.*, gusty wind conditions) but allows for more space between structures and fewer structures along the route as a whole. Generally, using fewer structures can result in fewer environmental and visual impacts and can reduce costs. The relationships between pole spacing and various Project ROW widths are illustrated in technical drawings provided in **Appendix E**.

Where landowners agree, and overhang easements are obtained, all poles and infrastructure would remain in the road ROW, but the transmission line conductors and wire would potentially overhang onto the private easements during windy conditions. **Appendix E** provides cross-section illustrations of how the Project would be situated within the various road ROW widths where private overhang easements are obtained.

As of the time of this Application DCW has executed options for overhang easements for approximately 12 miles of the 24.7 miles of the Proposed Alignment within public road ROW. DCW continues to contact and coordinate with landowners to execute additional options for overhang easements and expects these activities will continue until the end of 2022. In areas where overhang easements are not secured, DCW proposes to construct and operate the Project wholly within the available road ROW. In these locations, conductor and wire overhang will not occur on private properties adjacent to the road ROW at rest or under any weather conditions. While overhang easements provide pole spacing flexibility, they are not necessary for the safe operation of the transmission line. Generally, the transmission line can be safely operated and maintained in a road with ROW as narrow as 50 feet. DCW has verified through desktop and field surveys that the transmission line can be placed safely in all road ROWs along the Proposed Alignment, including the narrowest roads that have a 66-foot-wide ROW. **Appendix E** (Right of Way Typicals, pages 20 through 34) provides cross-section illustrations of how the Project would be situated within the various road ROW widths along the Proposed Alignment for typical design and overhang accommodation when no adjacent landowner overhang easements have been secured.

4.1.2.3 Easement Acquisition

When negotiating easements, DCW works extensively with landowners to identify the preferred location for the Project in landowners' parcels, including adjusting the location of the Project ROW to account for vegetation preferences, outbuildings, and the following of fence lines and crop lines, where feasible. The following paragraphs describe the process used by DCW during the easement acquisition process, which generally follows the same process for both transmission easements and overhang easements.

Prior to contacting individual landowners, DCW conducted title searches on targeted parcels to identify all persons and entities that have recorded interests in the affected real estate. A title company is engaged to complete the public records search on targeted parcels. DCW produces a title report for each parcel to document the legal description and the owners of record, and to report information regarding easements, liens, restrictions, encumbrances, and other conditions of record. During the identification of landowners, a DCW ROW agent contacts each landowner or the landowner's representative. At the initial meeting, the ROW agent describes the Project and the proposed impact to the landowner's property. During these discussions, DCW's agent also reviews specific landowner issues or concerns regarding the construction, operation, and maintenance of the Project on their property.

The ROW agent requests the landowner's permission for survey crews to enter the property to conduct any necessary preliminary surveys and examinations. Surveys are conducted to establish ROW corridors, natural and artificial features, and associated elevations, which are used during detailed engineering of the transmission line. Soil borings may be taken by an independent geotechnical testing company to assess soil conditions and determine appropriate foundation design. During or before initial contact with a landowner after a Route Permit has been issued by the Commission, DCW will provide landowners with a copy of the Route Permit and any other materials the Commission determines are necessary.

The ROW agent also discusses where the structure(s) and/or overhang, as appropriate, may be located on the landowner's property (including an estimate of potential span distances and the approximate number of poles on the parcel), as well as the specific boundaries of the easement area. If requested or allowed by the landowner, DCW also stakes the proposed transmission line's location. The ROW agent then collects area land value data to determine the amount of just compensation to be offered for the rights to build, operate, and maintain the transmission facilities and/or overhang within the easement area and retain reasonable access to the easement area. The agent also provides the landowner with a map of the transmission line route across or adjacent to the landowner's parcel and negotiates with the landowner regarding compensation for the transmission line or overhang easement. An appraisal may be obtained to resolve any complicated valuation issues. The landowner is allowed a reasonable amount of time to consider the offer and to present any information that the owner believes is relevant to determining the property's value. The ROW agent will prepare the documents required to complete each transaction, which may include an easement and subordination agreements.

4.2 Construction Procedures

4.2.1 General Construction

Construction on the Project will begin after: (1) soil conditions are established; (2) final design for the Project has been completed; (3) the necessary transmission easements, overhang easements, and ROW are acquired; and (4) applicable federal, state, and local approvals have been obtained. DCW will work with an experienced contractor to construct the transmission line. Also, DCW will employ standard construction and mitigation practices developed from affiliates of DCW with extensive project management experience as well as industry-specific best management practices (BMPs). The proposed project BMPs are discussed in the Impacts and Mitigation subsections of **Section 5** for each individual resource (*e.g.*, soils, groundwater, wetlands) analyzed for this Project. DCW will also comply with all applicable federal, state, and local permit requirements.

To minimize project impacts, DCW will develop and implement construction and mitigation practices based on the Project's needs. These practices and activities may include, but are not limited to, safety and storm water pollution prevention planning, agricultural mitigation planning, traffic control planning and construction access, staging, transmission line structure erection, conductor stringing, restoration, and maintenance and inspection. In some cases, project construction activities, such as scheduling, may be modified to minimize impacts to sensitive environmental resources. In addition, any contractors or subcontractors involved in construction of the Project will be instructed on the protection of archaeological, cultural, and ecological resources, as well as all applicable permit requirements. DCW construction contractors will also be informed of federal, state, and local laws regarding antiquities, fossils, plants, and wildlife (including collection and removal).

Affected landowners will be contacted and notified of the start of construction and provided with details regarding construction activities. If temporary removal or relocation of gates or fencing is necessary, installation of temporary or permanent gates will be coordinated with the landowner. Depending on the timing of project construction, the ROW agent will work with the property owner for early harvest of crops, where possible, with compensation to be paid for any actual crop losses or in accordance with the landowner easement agreement. During the construction process, it may be necessary for the property owner to remove or relocate equipment and livestock from the ROW. Compensation related to these activities will be discussed with the landowner during easement negotiations.

For sections of the line proposed within road ROW, notification and coordination with the MnDOT, Dodge County Highway Department, Mower County Public Works, townships, and any impacted utilities will occur as required prior to the start of construction of those segments to confirm that all applicable utility accommodation policies and procedures are followed. DCW will coordinate construction activities with the Dodge County Highway Department, Mower County Public Works, and MnDOT so that a traffic management plan can be developed and implemented. The traffic management plan will be applied to specific roadways or areas where specific setbacks or mitigation measures, including signage, flagging, physical barriers, temporary lane closures, and temporary road closures, are necessary to comply with all applicable transportation safety requirements. Implementation of construction access and traffic control plans will also be necessary to ensure safety during construction activities within the road ROW. Poles within the road ROW will maintain clear zone requirements from the travel lanes consistent with Minnesota

Rule (Minn. R.) 8820.9920 and in compliance with utility permits anticipated to be issued from the Dodge County Highway Department, Mower County Public Works, and MnDOT prior to construction. Existing underground utilities will be located and staked through the call-before-you-dig process with Gopher State One Call.

DCW will use many different types of construction equipment to complete the Project. Initially, chain saws, mowers, cranes, bucket trucks, tractors, dump trucks, pickup trucks, flatbed trucks, backhoes, and bulldozers will be used where needed to clear vegetation from the Project ROW and staging areas. After vegetation clearing, typical construction equipment used on the Project might consist of digger-derrick line trucks, track-mounted drill rigs, dump trucks, front-end loaders, bucket trucks, bulldozers, flatbed tractor-trailers, pickup trucks, concrete trucks, and various trailers. Many types of excavation equipment are set on wheel- or track-driven vehicles, depending on terrain and soil conditions. Steel structures generally are transported on tractor-trailers.

4.2.2 Construction Sequence

Construction of the Project will follow a typical sequence of construction, including: (1) surveying the route centerline; (2) determining applicable construction access; (3) installing storm water pollution prevention mitigation; (4) implementing the traffic control plan; (5) clearing, grubbing, and grading the ROW; (6) delivering materials; installing foundations; (7) assembling, erecting, and setting structures; (8) installing ground rods; and installing insulators, shield wires, and conductors. Construction will be followed by cleanup and site reclamation. Various phases of construction are outlined in greater detail below. The construction phases discussed in the following sections can occur at different locations throughout the construction process, and, in many cases, simultaneously at different locations throughout the Project.

4.2.3 Surveying and Staging

The first phase of construction activities on the Project will involve survey staking of the transmission line centerline, pole locations, environmental constraints, property boundaries, temporary construction easements, and ROW boundaries. Storm water pollution prevention mitigation measures are then installed. Staging areas will be established along the Project ROW. Staging areas are used as delivery locations for the contractor's equipment and materials necessary to construct the new project facilities. The materials, equipment, structures, and contractor's vehicles would be stored at these staging areas until they are needed. The staging areas for the Project will be near the transmission line to facilitate ease of access, ensure security of the items, and support the safe and efficient storage of supplies. Temporary laydown areas and other temporary construction easements have been identified as part of the Project ROW to provide additional space for storage and other construction-related activities such as facilitating access and transmission line pulling.

The Project ROW includes temporary areas for line pulling and a laydown area of approximately 15 acres for construction material and equipment laydown that would be used for the duration of construction activities (see **Appendix I - Figure 1.2**). The construction laydown area has been located on private agricultural land in order to reduce the potential for impacts on sensitive resources. Material for the Project will be placed on pallets or cribbing within the designated

laydown or staging areas. Temporary staging and laydown areas will be returned to pre-construction condition upon completion of the Project.

4.2.4 Clearing

Following surveying and staging activities, DCW will install the necessary preliminary access roads and matting. As the majority of the Proposed Alignment is located within existing road and transmission ROW, vegetation clearing is expected to be minimal for the Project. Trees in the Route have been identified and mapped by DCW. As a result of DCW's route development criteria to avoid areas with significant vegetation, there are few trees within the Route. As the Project ROW largely overlaps with existing ROW, there are very few areas of trees (approximately 4.6 acres) within the Project ROW that may require removal or trimming. Prior to construction, DCW will secure necessary utility permits from the Dodge County Highway Department, Mower County Public Works, and MnDOT for the construction and operation of the portions of the Project that are within road ROW. The utility permits will articulate the vegetation maintenance responsibilities that the authorities and DCW will have within road ROWs. Based on ongoing coordination with the Dodge County Highway Department, Mower County Public Works, and MnDOT, DCW anticipates that the roadway authorities will continue to manage vegetation within the road ROW and DCW will be permitted to clear and/or remove additional vegetation within road ROW as necessary for successful construction and operation of the Project. DCW will seek landowner agreements to remove or trim trees outside of existing road and transmission ROW that are in danger of encroaching or falling into the energized transmission line (*i.e.*, hazard trees).

DCW will remove or trim trees, as necessary, and will clear and grub other vegetation to ensure that any remaining vegetation meets appropriate standards, as discussed further below. Vegetation clearing will also facilitate access to the construction site(s). Some low-growing brush or specific tree species may be allowed at the outer limits of the Project ROW depending on the height of the vegetation. Taller trees within the Project ROW that might compromise the safe and reliable operation of the Project will be removed. Existing low-growing vegetation that will not pose a risk to the Project or impede construction or maintenance may remain in the easement area.

Clearing of ROW and vegetation management will be in accordance with utility permits required for the Project, the associated MnDOT Utility Accommodation and Coordination Manual (MnDOT 2019) standards, and with NextEra Energy Resources, LLC's (NEER) transmission line vegetation management program terms. Maintenance of vegetation in the Project ROW will be done in accordance with the NEER Vegetation Management Operations Manual. The manual outlines how DCW will manage vegetation and is based on established national standards defined by the American National Standards Institute (ANSI). Operations to maintain the safe and reliable distances to vegetation are defined and then calculated using ANSI A300 (Part 1) 2017 Pruning for Tree Care Operations (ANSI 2017) and ANSI Z133.1-2017 Safety Requirements Table 2 (Clearance 1) and Table 1 (Minimum Approach Distance) (ANSI 2017).

Initial clearing of ROW must meet necessary clearances. In special circumstances, tree trimming agreements may be possible to minimize tree removal based on negotiations with individual landowners. Materials resulting from vegetation clearing will be: (1) chipped on site and spread on the Project ROW if allowed by utility permits; (2) stacked outside of the ROW on private properties when desired by, and in coordination with, the property owner; (3) removed and disposed of as agreed with the property owner during easement negotiations; or (4) removed and

disposed of as agreed with the Dodge County Highway Department, Mower County Public Works, and MnDOT. Surveyors will stake the final construction corridor within the approved ROW and the pole locations of the approved alignment after the vegetation has been removed in preparation for the construction crew.

4.2.5 Construction in Environmentally Sensitive Areas

To the extent feasible, DCW has designed and will continue to design the Project to avoid construction in environmentally sensitive areas. When avoidance is not feasible, DCW will comply with all applicable permit requirements for construction within environmentally sensitive areas. In certain locations, environmentally sensitive areas, such as wetlands, stream crossings, and sensitive vegetation areas may require additional permits and special construction techniques. For example, construction mats may be placed in wet or soft soil locations and in narrow ditches to minimize disturbance. BMPs for the Project may include containing excavated material, protecting exposed soil, and stabilizing restored soil. Impacts will be minimized through construction BMPs (see **Section 5.0** for more information on proposed BMPs and mitigation measures in environmentally sensitive areas).

4.2.6 Access Road Construction

To assist with the necessary access to the Project, the construction crew may install temporary culverts, matting, and access roads. Implementation of these measures may be necessary to maintain adequate access and drainage throughout construction. Access to the Project ROW is typically made directly from existing roads or paths that run parallel or perpendicular to the proposed transmission line. In some situations, private roads or existing paths may be used. Permission from the property owner, the Dodge County Highway Department, Mower County Public Works, and MnDOT will be obtained prior to accessing areas, as appropriate. Where necessary to accommodate the heavy equipment used in construction, including cranes, concrete trucks, and drilling equipment, existing access roads may be upgraded, or new access may be constructed. New access may also be constructed when no current access is available, or when the existing access is inadequate to cross roadway ditches or safely access portions of the transmission line. DCW will coordinate these activities with the affected property owner(s) and/or the Dodge County Highway Department, Mower County Public Works, and MnDOT.

Once the ROW is cleared and graded, access roads or work pads will be installed as needed to support the heavy equipment necessary for foundation installation, pole framing erection, and wire stringing. These access roads and work pads are generally temporary and require minimal grading and filling for the safe movement of vehicles, equipment, and materials. Transmission line structures are designed for installation at existing grades; however, some sloped work areas may need to be graded or filled in order to establish a more level work surface for structure installation. It is anticipated that only minimal grading will be needed because the Proposed Alignment has very little significant elevation change. For ROW on private easements and with permission of the landowner, it is preferable to leave the leveled areas and working pads in place for future maintenance activities. If permission is not granted by the landowner, the site will be graded back as close as possible to its original condition; all fill, including temporary culverts and road approaches, will be removed from the site; and disturbed areas will be returned to pre-construction conditions. For road ROW, all restoration activities will be coordinated with MnDOT and county highway departments.

4.2.7 Transmission Construction

As the majority of the Proposed Alignment is located within existing road and transmission line ROW, as discussed in **Section 4.2.1**, transmission line vegetation and ROW clearing are expected to be minimal for the Project. DCW will obtain permits from Dodge County, Mower County and MnDOT to clear and/or remove vegetation within road ROW as necessary for successful construction and operation of the Project. In areas of difficult terrain, work sites at structure locations may require more extensive leveling using bulldozers or front-end loaders to provide for the safe operation of equipment. Blading and leveling would occur, and soil removed during leveling of structure sites will be segregated (*i.e.*, topsoil from subsoil) and stockpiled nearby.

After the structure sites are stabilized, the structure foundations will be installed. These foundations may consist of concrete caissons, or the structures may be direct buried into augured holes. Caissons will be used for heavily loaded structures where guying is not feasible, such as a self-supporting angle structure or self-supporting dead-end structure. Tangent steel pole structures are anticipated to be directly buried and would not require a caisson foundation. Foundations for direct embed steel pole structures would require excavating or auguring a hole approximately 15 to 30 feet deep and approximately 3 to 6 feet in diameter. Structures with caissons would require a hole approximately 20 to 50 feet deep and approximately 5 to 10 feet in diameter. Exact excavation dimensions will depend upon the actual structure geometry, investigated soil conditions, and required foundation loading.

Once the foundations are ready, the structures, insulators, grounding, transmission hardware, and required construction equipment will be sent from the staging areas to the appropriate staked structure location. The structures would typically be laid on the ground within the Project ROW until set. Steel braced posts and/or insulator assemblies would be attached directly to the structures while on the ground. Mast arms would be attached to the top of the structure for the shield wires. Additional hardware and pulling blocks would then be attached to the insulators. Steel structures will then be lifted, placed in the excavated hole, or placed and secured on the concrete foundation by a crane or similar heavy-lift equipment. The holes will be backfilled with select aggregate or concrete. Concrete trucks will deliver the concrete from a local batch plant. Excess soil will be offered to the landowner for disposal on the structure site or other location on the property within reasonable proximity to the construction site. If on-site disposal of excess soil is not permitted, such soil will be completely removed from the site. For sections in road ROW, excess soil will be managed per agreement with MnDOT, townships, or county highway departments.

Structures at turns may be guyed, if feasible. Guy wires would be anchored using helical anchors, cross-plate/disk anchors, rock anchors, or other suitable alternatives depending on the soil conditions encountered.

Once structures, foundations, and required guys/anchors are in place, conductors are installed by establishing stringing setup areas. Conductor setup areas will be located approximately every two miles and will provide suitable space for the required conductor reels and construction equipment. Temporary guard or clearance structures will be installed as needed over existing transmission, distribution, or communication lines, streets, roads, highways, railways, or other obstructions after any necessary notifications are made and the required permits obtained. Conductors will not obstruct traffic or contact existing energized conductors or other cables due to the use of guard structures, particularly when working in or parallel to the road ROW.

Once the steel pole structures have been erected, either a helicopter will fly along or ground crews will drive along the Project ROW, securing the conductor pulling line through stringing blocks suspended from the insulators on the poles. The pulling line will be used to pull the conductor through each block and later to achieve the required tension. Finally, the conductor will be clipped in using bucket trucks or helicopters once final sag is established. The shield wire will be installed in a similar manner.

Following construction, soil stockpiles will be used for revegetation purposes and/or may be provided to the landowner for their use. Disturbed ground will be regraded to as close to pre-construction condition as appropriate for stabilization. Disturbed areas will then be revegetated and will be the responsibility of DCW as part of the construction Stormwater Pollution Prevention Plan (SWPPP). On private lands in agricultural areas, lands will be released for tillage, and in non-agricultural areas, a seed mix of native plant species appropriate to the region will be developed in coordination with the local Natural Resources Conservation Service (NRCS). In road ROW, areas will be reseeded using a seed mix specified by the Dodge County Highway Department and Mower County Public Works, with guidance from MnDOT. In the portion of the Project that will be co-located with the existing GRE transmission line, areas will be reseeded using a seed mix specified by GRE, the landowner, and Mower County Public Works.

4.2.8 Substation Construction

DCW will also construct the DCW collector substation. DCW has an option to purchase up to 10 acres to construct the DCW collector substation on existing agricultural land. The graveled footprint of the DCW collector substation is anticipated to be no larger than two acres. Additional detailed design engineering will confirm the exact collector substation size based on equipment needs. The general construction sequence for the substation is outlined below.

Following survey and staking of the DCW substation location, installation of erosion control BMPs may include straw wattles, silt fencing, erosion control blankets or mats, seeding, and use of hydro-mulch. Culverts in adjacent road drainages will be installed as needed. No extensive woodland or vegetation clearing is anticipated. The substation site will be graded and fenced. Concrete pads and footings for equipment will be installed. Aggregate will be spread throughout the fenced area. Equipment will be delivered to the site and generally stored inside the fenced area, although some materials may need to be stored on the property outside the fence due to size or safety considerations. Equipment such as circuit breakers, bus work, capacitors, and dead-ends will be assembled and installed. Transformers will be delivered to the site and installed. The substation control house and supervisory control and data acquisition equipment will be installed. Upon completion of construction activities, disturbed areas will be revegetated, and erosion control measures will be removed.

4.3 Restoration Procedures

Following the construction activities, temporary road improvements and temporary culverts will be removed and restored. For any section of state, county, or township road used, the roadway will be restored to its pre-construction state or as negotiated in road use agreements. This may consist of regrading, repaving, enhancing the shoulder of the road, or enhancing the segment of roadway in a manner agreed upon by the Applicant and the Dodge County Highway Department, Mower County Public Works, and MnDOT.

Areas temporarily disturbed by construction activities will be regraded to original contours. Excavated subsoils will be used as backfill and to support the construction of access roads, and the remaining soil will be spread over temporary construction areas. Where excavated soil is spread and grading occurs, stored topsoil will be placed atop the excavated soils and the areas will be revegetated, as required.

Restored temporary construction areas will be reseeded unless the area is tillable agricultural field. In coordination with the landowner, areas within tillable agricultural fields that the landowner wants to return to agricultural use will be restored by the Applicant and then returned to agricultural use by the landowner. For non-agricultural areas, on private lands, a seed mix of native plant species appropriate to the region will be developed in coordination with the NRCS. In road ROW, areas will be reseeded using a seed mix specified by the Dodge County Highway Department, Mower County Public Works, and MnDOT. In the portion of the Project that will be co-located with the existing GRE transmission line, areas will be reseeded using a seed mix specified by GRE. Reseeded areas will be monitored by DCW, in compliance with the project SWPPP, to confirm successful revegetation. Stormwater BMPs, such as silt fence and straw wattle, will not be removed until cover by seeded species is established. If the area is in tillable agricultural field, a temporary cover crop may be planted, based on landowner preferences, to minimize soil loss due to erosion (see **Section 4.3** for additional BMPs related to site restoration for the Proposed Alignment).

DCW will contact each property owner and the Dodge County Highway Department, Mower County Public Works, and MnDOT after construction is completed to address any damage resulting from project construction that has not been previously addressed. If damage has occurred to crops, fences, or private property, DCW will fairly compensate the landowner for the damages sustained in accordance with the easement agreement with the landowner. In road ROW, damages sustained during construction will be addressed in accordance with road use agreements that will be established with Dodge and Mower counties in advance of construction. In certain situations, DCW may engage an outside contractor to restore the damaged property to its original condition to the extent practicable. DCW will also coordinate with MnDOT and the county highway departments to confirm that restoration activities within the road ROW have been completed in compliance with applicable permits and authorizations.

4.4 Maintenance Procedures—Overview

Affiliates of NEER, like DCW, utilize NEER's existing transmission field operations organization that is responsible for maintaining approximately 11,359 miles of transmission lines and transmission voltage generation ties up to 500 kV across all North American Electric Reliability Corporation (NERC) regions in the United States. These facilities are planned, maintained, and operated in compliance with applicable NERC Reliability Standards. The operations organization manages compliance with transmission line maintenance standards. DCW will use these experts to develop and implement procedures for the maintenance of the Project. The attributes of the DCW maintenance procedures will be informed by NEER affiliates that already have:

- Well-established O&M practices and standardized processes, which are already being used to operate high voltage transmission facilities;

- Access to over 766 power system professionals, including technicians and other staff, with expertise in all aspects of transmission and substation equipment installation, maintenance, and repair;
- Experience from O&M power delivery assets in all NERC regions at voltages up to 500 kV;
- An excellent record of transmission and substation reliability built on robust design and O&M programs that incorporate condition assessment, diagnostics, and asset management for effective and efficient investment of resources and capital;
- Experience addressing a wide variety of operating challenges including hurricanes, tornadoes, and other high wind conditions; dust contamination; avian interaction; and lightning. For example, outages are followed up by an Event Response Process in which NEER affiliates use diagnostic techniques to identify the root cause of a problem to prevent reoccurrence; and
- Solutions to transmission O&M problems that include new designs, new conditions assessment processes, and/or new products. NEER affiliates also often work directly with equipment manufacturers to develop these solutions in order to continually improve the reliability of its transmission systems.

Consistent with the applicable NERC Reliability Standards and NEER's maintenance procedures, regular maintenance of the Project will include vegetation monitoring and management, transmission line visual inspection, detailed climbing inspection, special assessments of the line, and general facilities/grounds upkeep. These and other proposed maintenance activities are discussed below in greater detail for the Project.

4.4.1 Ownership and Operations and Maintenance for the Great River Energy Shared Facilities

DCW and GRE will execute an agreement clarifying ownership and O&M tasks on the 2.5 miles of shared pole structures. GRE will own the pole structures and will hold primary responsibility for maintenance of the poles and of the ROW. DCW will install the new poles and both conductor lines, maintain ownership of its conductor lines, and will hold primary responsibility for maintenance of those lines. Both DCW and GRE will be allowed access to perform any services required during emergency conditions.

4.4.2 Dodge County Wind Maintenance Procedures

Regular maintenance and inspections will be performed during the life of the Project. Access to the Project ROW is required periodically to perform inspections, conduct maintenance, and make repairs. Generally, DCW will inspect the transmission line annually. Inspections will be limited to the ROW and areas where obstructions or terrain may require off-ROW access. If problems are found during inspections, repairs will be performed, and the landowner will be compensated for any resulting impact.

The ROW will be managed to remove vegetation that interferes with the O&M of the Project. As discussed in **Section 4.2**, prior to construction, DCW will secure necessary utility permits from the Dodge County Highway Department, Mower County Public Works, and MnDOT for construction and operation of the Project. These utility permits will articulate the vegetation

maintenance responsibilities that the road authority and DCW will have within road ROWs. Based on ongoing coordination with the Dodge County Highway Department, Mower County Public Works, and MnDOT, DCW anticipates that the roadway authorities will continue to manage vegetation within the road ROW and DCW will be permitted to clear and/or remove additional vegetation within road ROW as necessary for successful construction and operation of the Project. Native shrubs that will not interfere with the safe operation of the Project will be allowed to reestablish in the ROW. DCW's maintenance practices provide for the inspection of the transmission line annually to determine whether clearing is required.

Clearing practices include a combination of mechanical and hand clearing methods, along with herbicide application, where allowed, to remove or control vegetation growth. DCW will attempt to limit the spread of noxious and invasive weeds by cleaning construction equipment before it enters the construction work area and by using only invasive-free mulches, topsoil, and seed mixes. All herbicides used by DCW will be approved by the U.S. Environmental Protection Agency and the Minnesota Department of Agriculture (MDA), and those allowed by the Dodge County Highway Department, Mower County Public Works, and MnDOT will be used within road ROW. These herbicides are applied by commercial pesticide applicators that are licensed by the MDA.

Transmission lines are automatically taken out of service by the operation of protective relaying equipment when a fault is sensed on the system. Such interruptions are usually only momentary. Scheduled maintenance outages are also infrequent. As a result, the average annual availability of transmission infrastructure is very high, in excess of 99 percent. The principal O&M cost for transmission facilities is the cost of inspections. At the end of the Project's useful life, it will be decommissioned according to the Decommissioning Plan (see **Appendix D**).

5.0 Environmental Information: Transmission Line

This section describes the current environmental setting and human use of the Dodge County Wind, LLC (DCW or Applicant), Transmission Line Project (Project) area in terms of natural resources, human settlement, economics, and archaeological/historical resources. Potential impacts to these resources from the construction and operation of the Project are described and quantified, and potential mitigations for these impacts are discussed. When location information is relevant in this section, the analyses conceptually move from the DCW collector substation at the north end of the Project toward the Great River Energy (GRE) Pleasant Valley Substation interconnection at the south end of the Project.

DCW analyzed potential impacts to human and environmental resources based on specific impact assessment areas appropriate to each resource analyzed. These assessment areas (the Route, the Project right-of-way (ROW), and the Proposed Alignment) are the physical locations within which the Project may exert influence or impacts on a specific resource. In the interest of thorough environmental review, the analysis often integrates multiple impact areas as appropriate for each resource; the relevant assessment areas used to analyze each resource are presented in **Table 5.1**.

These impact assessment areas, and how they were developed, are discussed in detail in **Section 2** and defined in the List of Abbreviations, Acronyms, and Terms and Definitions, and are redefined again here for ease of reference.

- **Route:** Location of a high voltage transmission line between two points. The Route proposed by DCW is 450 feet wide centered on the Proposed Alignment, with a 450-foot radius at 18 road intersections. DCW requests a wider Route in areas surrounding both the DCW collector substation and the GRE Pleasant Valley Substation.
- **Project ROW:** The land interest required within a route for the construction, maintenance, and operation of the proposed high voltage transmission line. This includes the Project ROW as described in section 2.4, as well as temporary areas for line pulling and a laydown area of approximately 15 acres for construction material and equipment laydown that would be used for the duration of construction activities. The Project ROW presented herein is for Application review purposes—the Project ROW may ultimately be located elsewhere within the approved Route.
- **Proposed Alignment:** Anticipated location of the structures and transmission line within the ROW and Route. It is not the final alignment. The Proposed Alignment is considered the centerline of the Project for review purposes only—the structures and transmission line might ultimately be located elsewhere within the Route.

As discussed in **Section 2.5**, one alternate segment is being considered. If chosen for construction, Alternate Segment White would replace Segment A of the Proposed Alignment (as shown in **Appendix I - Figure 5.1**). Environmental information, estimated impacts, and potential mitigation along Alternate Segment White are compared to the same information for the corresponding Proposed Alignment Segment A in **Section 5.8**. Unless specifically addressed in **Section 5.8**, there is no difference in resources, impacts, or potential mitigation between the Proposed Alignment Segment A and the corresponding Alternate Segment White.

Table 5.1
Impact Assessment Areas

Type of Resource	Specific Resource/ Potential Impact to Resource	Impact Assessment Area
Environmental Setting	Land Cover, Geology and Soils	Project ROW
Human Settlement	Public Health and Safety	Route
	Electric and Magnetic Fields	Project ROW
	Residential and Non-Residential Buildings, Displacement, Sound	Proposed Alignment and Project ROW
	Radio, Television, Cellular Device, and GPS Interference, Socioeconomics, Cultural Values, Public Services	Route
	Aesthetics, Transportation	Proposed Alignment and Route
	Recreation	Route
Land-Based Economies	Agriculture	Project ROW
	Forestry and Mining	Route
	Tourism	1-mile buffer centered on Proposed Alignment
Archaeological and Historic Resources	-	Proposed Alignment, Route
Natural Environment	Air Quality	Project ROW
	Surface Water	Proposed Alignment, Route
	Groundwater	Route
	Floodplains	Project ROW
	Wetlands, Flora, Native Plant Communities	Project ROW
	Sites of Biodiversity Significance, Native Plant Communities	Route
	Fauna	Proposed Alignment, Project ROW
Rare and Unique Features	Threatened and Endangered Species, Natural Resource Sites	Project ROW and 1-mile buffer centered on Route

Impacts to surface resources will result from construction activities of the Project. These areas will be rehabilitated after construction and are therefore discussed as temporary. Permanent impacts will result from the location of transmission line support structures (poles and turn-support structures) as well as ongoing O&M activities. Because the precise locations of the support structures have not yet been determined, this impact analysis does not evaluate pole location impacts and instead uses the entire Project ROW as the location of temporary and permanent impacts. This type of impact analysis is used to ensure that no actual temporary or permanent impacts would exceed the estimated impacts. It is likely that the actual surface impacts will be considerably smaller or reduced from those estimated below.

5.1 Environmental Setting

The Route is in southeastern Minnesota within Dodge and Mower counties, approximately 11 miles west of Rochester and 45 miles south of Minneapolis. Approximately 92 percent (24.7 miles) of the Proposed Alignment would be located within an existing ROW. The general topography of the Route is described as undulating, rolling relief with approximate elevations between 1,276 and 1,368 feet above mean sea level (AMSL). The Route follows relatively flat terrain, threading between the upper watershed of several creeks and rivers (**Appendix I - Figure 5.2**).

The Route is dominated by cropland and rural farmsteads surrounding small towns. Due to siting primarily within existing ROW, mostly adjacent to agricultural fields, the dominant land cover types within the Project ROW are developed open space and cultivated crops. Developed open space is primarily managed roadside vegetation (approximately 45 percent), and cultivated crop areas are being actively tilled or are planted in annual crops (approximately 43 percent) (MRLC 2019), as summarized in **Table 5.2.**

According to the Minnesota Department of Natural Resources (MNDNR) Ecological Classification System, the Route is located within the Eastern Broadleaf Forest Province, a transition zone between the western prairies and eastern mixed conifer/deciduous forest (MNDNR 2021a). This Province is further divided into Sections and Subsections. The entire route lies within the Minnesota and Northeast Iowa Morainal Section (222M), which is characterized by deciduous forest, woodland, and prairie in a hummocky morainal landscape, and the Oak Savanna Subsection (222Me). This area was historically covered by bur oak savanna, patches of tallgrass prairie, and maple-basswood forest on gently rolling hills (MNDNR 2021a); however, the majority of this area is now farmed.

Predominant features along the Route include farms and rural residences; croplands; several snowmobile trails; the North Branch of the Root River, Sargeant Creek, and South Fork of the Zumbro River; five MNDNR public watercourse crossings; existing powerlines; and one Site of Biodiversity Significance (ranked as “Below”). No Wildlife Management Areas (WMAs), native plant communities, or other protected areas are located within the Route. Aerial interpretation of natural vegetation areas intersecting the Project ROW indicates that few deciduous woodland areas are present; those present consist of isolated wooded areas associated with homesteads or small riparian corridors. The Proposed Alignment parallels the edge of several of these wooded areas, as the Route is primarily confined to existing ROW.

5.1.1 Land Cover

Because the Project is predominately planned within existing ROW adjacent to agricultural fields, the dominant land cover types within the Project ROW are developed open space (approximately 45 percent), which includes managed roadside vegetation, and cultivated crops (approximately 43 percent) (MRLC 2019), as summarized in **Table 5.2** and illustrated in **Appendix I - Figure 5.3.** (Note: although difficult to view at the scale of **Appendix I - Figure 5.3**, narrow bands of developed open space land cover parallel most of the roads shown.) The developed, low-intensity land use category, which includes smaller roadsides, accounts for approximately 8 percent of the Project ROW area. Hay fields/pasture lands and herbaceous vegetation combined occupy approximately 3 percent of the Project ROW. Developed medium and high intensities, and deciduous forest, combined, comprise less than 1 percent of the Project ROW.

Table 5.2
Land Cover within the Project Right-of-Way

Land Cover Categories in Project ROW	Area (acres)	Percent of Total
Developed, Open Space	206.2	45.4
Cultivated Crops	196.7	43.3
Developed, Low Intensity	36.5	8.0
Hay/Pasture	7.2	1.6
Herbaceous Vegetation	6.0	1.3
Developed, Medium Intensity	1.8	0.4
Developed, High Intensity	0.1	<0.1
Deciduous Forest	0.02	<0.1
Total	**454.5**	**100**

[1] Subject to rounding.

No Conservation Reserve Enhancement Program (CREP) parcels are identified within the Route. Digital data for Conservation Reserve Program (CRP) lands were unavailable at the time of this writing. CRP and CREP lands are administered by the U.S. Department of Agriculture (USDA) Farm Service Agency.

Minnesota classifies 39 distinct agroecoregions based on a specific combination of soil type, landscape, climatic features, and land use. Agroecoregions are landscape units with relatively uniform crop productivity, climate, geologic parent material, soil drainage, and slope characteristics. According to the Minnesota Department of Agriculture (MDA), the Route is located within the Level Plains, Undulating Plains, and Alluvium and Outwash agroecoregions (MDA 2016). The Level Plains agroecoregion comprises fine-textured, poorly drained soils with row crop production on relatively flat topography. The Undulating Plains agroecoregion comprises well-drained, fine-textured soils developed on moderately steep slopes with a mixture of row crops and livestock/dairy production. The Alluvium and Outwash agroecoregion is likely composed of sorted stream deposits and filled channels of former streams (MnDOT 2001).

5.1.1.1 Potential Impacts

Project construction and subsequent maintenance of the Project ROW is expected to impact approximately 454 acres of surface land cover, as summarized in **Table 5.2**. The impacts are most likely to affect common roadside vegetation, including planted reclamation species, weeds, and roadside ditches, as well as cultivated crops where the Proposed Alignment does not follow existing roadways. Construction and maintenance of the Proposed Alignment will not impact recognized areas of high-quality biodiversity significance or specifically designated native plant communities.

Permanent impacts to roadside vegetation within the Project ROW would be limited to locations of poles and other support structures. After construction, maintenance of these road and transmission line ROW areas is expected to continue generally unchanged. Temporary impacts to roadside vegetation would be revegetated in compliance with the Stormwater Pollution Prevention Plan (SWPPP) and in coordination with the Dodge County Highway Department, Mower County Public Works, the Minnesota Department of Transportation (MnDOT), and landowners, as appropriate.

Permanent impacts to agricultural crops within the Project ROW would be limited primarily to the two locations where poles and other support structures are proposed outside of road ROW (as discussed in **Section 2.4**): within the DCW Wind Project area and where the Project will be co-located with the GRE Pleasant Valley to Austin Northeast transmission line. Where the proposed Project would be co-located with the existing GRE Pleasant Valley to Austin Northeast transmission line, existing GRE poles would be removed and replaced with combined project and GRE circuits on monopole structures. As such, within the GRE ROW, slight changes to pole locations are anticipated; however, appreciable permanent impacts are not anticipated.

5.1.1.2 Mitigation Measures

Along the approximately 2.1 miles of private transmission line easements within the DCW Wind Project area, permanent impacts to agricultural crops would be mitigated by locating structures on property boundaries, section lines, and the outer edges of existing agricultural fields to the extent feasible.

Temporary construction impacts to agricultural crops would be revegetated, including planting of crops up to the edge of the transmission line ROW, in coordination with the landowner. Changes in agricultural equipment maneuvering routes adjacent to the transmission line and associated structures may be required but are expected to have a negligible effect on overall production.

5.1.2 Geology and Soils

5.1.2.1 Geology

The Route is located within the Central Lowland physiographic region of Minnesota (Leverett 1932). This region covers the majority of the state and is underlain by a series of horizontal beds of sedimentary rocks. The bedrock layers beneath the Route comprise three geologic units: the Upper Ordovician, Middle Devonian, and one concealed dike anomaly (Jirsa et al. 2011; USDA 2019). The Upper Ordovician of limestone, shaley limestone, and dolostone includes the Maquoketa Formation and the Stewartville, Prosser, and Cummingsville formations of the Galena group. The Middle Devonian unit of dolostone, sandy dolostone, limestone, and shale includes the

Pinicon Ridge Formation, Spillville Formation, and the Chickasaw Shale and Bassett members of the Little Cedar Formation (**Appendix I - Figure 5.4**).

5.1.2.1.1 Potential Impacts

No modifications to existing geologic features are expected to occur as a result of construction of transmission line support structures and associated facilities.

5.1.2.1.2 Mitigation Measures

No impacts to geologic features are anticipated. Therefore, no mitigation measures are proposed.

5.1.2.2 Soils

The Digital General Soil Map of the United States is a broad-based inventory of soils and non-soil areas that occur in a repeatable sequence across the landscape (NRCS 2021). These soil associations have been mapped at a scale of 1:250,000 in the continental United States. The dominant soil associations within the Route include Tripoli-Readlyn-Oran-Clyde, Skyberg-Maxfield-Clyde, Skyberg-Maxfield-Kasson, Waukee-Spillville-Radford-Lawler, Ostrander-Maxfield-Kenyon, Waukee-Udolpho-Marshan-Hayfield-Fairhaven, and Readlyn-Racine-Maxfield-Kasson (**Appendix I - Figure 5.5**).

The Natural Resources Conservation Service (NRCS) Soil Survey Geographic Database is a dataset that provides information about soil map units at scales ranging from 1:12,000 to 1:63,360. Soil map units provide a description of the soils present and information about their unique properties and productivity (USDA 2019). All soil map units have been assigned to Capability Classes, which are categories of soils generally grouped by limitations and restrictions on their use. Soil associations occurring within the Route have been assigned Capability Classes ranging from Class 1 to Class 5. Capability Class 1 indicates that the soils have few limitations restricting their use, and Capability Class 5 indicates that the soils have little hazard of erosion but have other limitations that restrict their use to mainly pasture, range, forestland, or wildlife habitat. Most of the Route includes Capability Classes 1 and 2, indicating that there are few to moderate limitations that reduce the choice of plants or require moderate conservation practices (USDA 2019).

The dominant soil series found within the Project ROW are classified as silt loams or silty clay loams and range from moderately well drained to poorly drained (USDA 2019). In all, 452.8 acres (>99 percent) of soils in the Project ROW are classified as prime farmland, prime farmland if drained, or farmland of statewide importance (**Appendix I - Figure 5.6**). It is important to note this is a soil classification and extends to developed areas that no longer support agriculture, including parking lots, buildings, roads, and road ROW. Additional discussion of prime farmland soil categories is provided in **Section 5.3**.

5.1.2.2.1 Potential Impacts

As noted in **Table 5.2**, the Project ROW crosses approximately 197 acres of mapped cropland (MRLC 2019) (refer to **Section 5.1.1.1**). A small area of soils with prime farmland classification would be permanently taken out of agricultural production due to the development of the Proposed Alignment. These impacts will not have a meaningful impact on total prime farmland within the state of Minnesota.

Soil compaction or erosion may occur during the clearing and construction of the Proposed Alignment. Minor potential soil impacts may result from the excavation, stockpiling, and redistribution of soils.

5.1.2.2.2 Mitigation Measures

The majority of the Proposed Alignment will be built within existing road and transmission line ROW. As such, impacts to soils with prime farmland classification have been reduced through avoidance to the greatest extent practicable.

Impacts from soil compaction and erosion would be short-term and minor in nature and would be mitigated through the proper use and installation of best management practices (BMPs), which may include installation of erosion control measures, minimization of the number of vehicles used, topsoil salvage, and stockpile construction and maintenance. Additional information related to agricultural impacts is located in **Section 5.3**.

5.2 Human Settlement

5.2.1 Public Health and Safety

State, local, and National Electrical Safety Code (NESC) standards have been developed for ground clearance, crossing utilities clearance, building clearance, strength of materials, and ROW widths to control for practical safeguarding of utility workers and the public during the installation, operation, and maintenance of electric supply, communication lines, and associated equipment. Further, Occupational Safety and Health Administration (OSHA) measures have been developed to prevent occupational injuries and illnesses in any workplace throughout the United States. A discussion of electric and magnetic fields and their potential effects on public health is included in **Section 5.2.2**.

Regional emergency management response services that serve the Route are provided by the Dodge County Sheriff, Dodge County Emergency Management, Mower County Sheriff, and Mower County Emergency Management. Dodge and Mower counties have specific plans for preparedness, response, recovery, and mitigation and work closely with local, state, and federal officials to educate, prepare for, respond to, and recover from disasters and large-scale emergencies. Emergency response centers are located nearby in the City of Austin for Mower County and in the City of Mantorville for Dodge County and dispatch all 911 calls for their respective counties, including fire, medical, and police emergencies. Regional fire and police departments services are a mix of local, county, and volunteer departments. No hospitals or other medical facilities are located within the Route, but such facilities are in the cities of Austin, Owatonna, Dodge Center, and nearby Rochester.

The Minnesota Statewide Communication Interoperability Plan (SCIP) was created to maximize interoperability between public safety/service agencies as part of Department of Homeland Security requirements. The Minnesota SCIP has made significant progress toward enhancing emergency communication with the deployment of a statewide, standards-based communication system known as the Allied Radio Matrix for Emergency Response (ARMER) (Minnesota Department of Public Safety 2015). ARMER has more than 300 tower sites scattered across Minnesota, six of which are located in the same counties as the Project. Dodge County has one

tower located near Dodge Center, and Mower County has four towers located in Hayfield, Austin, Elkton (Dexter), and Leroy.

5.2.1.1 Potential Impacts

Construction activities and the temporary increase in associated workers are not expected to adversely affect public health or emergency services due to the limited number of construction workers and short duration of activities. Project construction will require different worker skill sets for various aspects of project construction and installation. The specialized nature of the workers' skill sets, and the short duration of construction activities, would preclude any long-term worker relocation to the area. Construction activities may require additional resources for traffic control and law enforcement. Temporary traffic impacts, including lane and road closures, may be necessary during construction. DCW will work with the Dodge County Highway Department, Mower County Public Works, and MnDOT to develop and implement a traffic management plan during construction, which would provide for safe access by police, fire, and other emergency or rescue vehicles.

5.2.1.2 Mitigation Measures

The Project will be designed in accordance with all state, local, and NESC standards, as well as NextEra Energy Resources, LLC's specific standards for ground clearance, crossing utilities clearance, building clearance, strength of materials, and ROW widths. The portions of the Project situated within road ROW will be designed in accordance with Minnesota Administrative Rule (Minn. R.) 8820.9920 and in compliance with utility permits anticipated to be issued from the Dodge County Highway Department, Mower County Public Works, and MnDOT. Poles placed within road ROW will maintain clear zone requirements from the travel lanes consistent with Minn. R. 8820.9920 and in compliance with utility permits anticipated to be issued from the Dodge County Highway Department, Mower County Public Works, and MnDOT prior to construction. DCW will work with these parties to develop and implement a traffic management plan during construction. Traffic management plans may include signage, flagging, physical barriers, temporary lane closures, and temporary road closures. DCW will ensure construction crews and/or contract crews will comply with local, state, and NESC standards regarding facility installation and standard construction practices. Further, OSHA measures will be adhered to by construction, operations, and maintenance crews to ensure safety. During operations, DCW and its contractors will follow all applicable laws and regulations, including OSHA 1910.269, and use industry practices, such as tailboard risk assessment meetings, in order to protect the public and employee health and safety. The Proposed Alignment is not expected to impact ARMER towers due to their distance from the Route. Dodge County Highway Department, Mower County Public Works, and MnDOT preferences for pole setbacks from road intersections and turning structure type will be taken into consideration as discussed in **Section 4.1.1**.

DCW will deploy all state, local, and NESC standards and associated protective measures to safeguard the public in the event of an accident. In the event of a structure or conductor falling to the ground, protective equipment (circuit breakers and relays located at the transmission line termini) would de-energize the transmission line. Local residents would be contacted, as necessary, if nearby structures are subject to further protective measures. Should landowners or the public identify safety concerns, DCW will investigate and take appropriate corrective action. Other safety concerns not identified by DCW, but raised by landowners or the public, will be investigated and

addressed. Furthermore, the project substation will be fenced and accessible only by authorized personnel. Signage around the Project will provide warning of risk associated with the energized equipment. With these safeguards and protective mechanisms, no significant impacts to public health and safety are anticipated.

5.2.2 Electric and Magnetic Fields

Electric fields (EF) and magnetic fields (MF) are typically separated at low frequencies (in this case, 60 hertz (Hz)) and are calculated separately. The magnitude and direction of the force that is exerted on a stationary electrical charge defines the EF. The EF is determined by the voltage of the transmission line. Similarly, the same forces applied to the electrical charges determine the MF. The current on the transmission line will impact the MF.

There is no federal standard for generation tie line or transmission line EFs. The Commission, however, has historically imposed a maximum EF limit of 8 kilovolts per meter (kV/m) measured at 1 meter above the ground.[5] The standard was designed to prevent serious hazards from shocks when touching large objects parked under alternating current (AC) transmission lines of 500 kV or greater.

There is no Minnesota or federal standard on MFs. The Institute of Electrical and Electronic Engineers (IEEE) C95.6 standard provides the following guidance regarding low frequency (60 Hz) MF: The fields should not exceed 904 milligauss (mG) within or at the edge of the ROW. The peak MF value is calculated at a height of 1 meter above the ground.

5.2.2.1 Potential Impacts

The Project's associated EF is calculated to be no greater than 5.0 kV/m at 1 meter above the ground within the Project ROW. Existing transmission lines that parallel the Project are not included as part of this calculation. The fields generated by those lines will be determined during detailed engineering and through communications with transmission line owners. The Project's EF will not exceed 8.0 kV/m within the ROW. The Project's MF will not exceed 500 mG within the ROW.

5.2.2.2 Mitigation Measures

As demonstrated above, both electric and magnetic fields will be well below the Commission's historically imposed maximum for EFs (8 kV/meter) and IEEE guidelines of 904 mG for MFs. Because no negative impacts from EFs and MFs are anticipated, no mitigation will be necessary.

5.2.2.3 Stray Voltage

Stray Voltage, as defined by IEEE, is a voltage resulting from the normal delivery and/or use of electricity (usually smaller than 10 volts) that may be present between two conductive surfaces that can be simultaneously contacted by members of the general public and/or their animals. Stray voltage is caused by primary and/or secondary return current and power system induced currents, as these currents flow through the impedance of the intended return pathway, its parallel

[5] *In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, Docket No. ET-2/TL-08-1471*, Order Granting Route Permit (adopting Finding 194 of ALJ) (September 14, 2010).

conductive pathways, and conductive loops in close proximity to the power system. Stray voltage is not related to power system faults and is generally not considered hazardous.

5.2.2.3.1 Stray Voltage Potential Impacts

The Project will not be connected to the local distribution system; therefore, no stray voltage on the local electrical system is anticipated.

5.2.2.3.2 Stray Voltage Mitigation Measures

If necessary, appropriate measures will be taken to mitigate stray voltage concerns if distribution lines are co-located with transmission. These mitigation measures tend to be site specific, but could include phase cancellation, transmission-to-distribution separation, isolation of the end-user neutral, and improved grounding. Any stray voltage concerns will be addressed in coordination with the distribution utilities along the Project Route.

5.2.2.4 Farm Operations, Vehicle Use, and Metal Buildings Near Transmission Line

Farm equipment, passenger vehicles, and trucks may safely cross under, or operate near, transmission lines. The NESC code clearances accommodate vehicle heights of up to 14 feet. The design of the DCW transmission line will meet or exceed NESC minimum clearance requirements over roads, driveways, cultivated fields, and other land traversed by vehicles.

Fences can pick up an induced charge from transmission lines depending on their proximity and length and therefore may be grounded as part of the Project. Insulated electric fences cannot be grounded but may pick up charge when disconnected either during installation or maintenance, which may result in nuisance shocks.

Buildings are generally not allowed within the Project ROW due to NESC code requirements, easement agreements, and safety concerns. Metal buildings and other metal objects adjacent to the ROW may require a study of potential induction to determine required mitigation. DCW will coordinate with landowners, local utilities, MnDOT, the Dodge County Highway Department, and Mower County Public Works to address concerns regarding new or existing metal structures adjacent to or within the Project ROW.

5.2.2.4.1 Farm Operations, Vehicle Use, and Metal Buildings Near Transmission Line Potential Impacts

Grounding of metal objects under a transmission line is the best method of meeting the NESC's and Commission's standards and avoiding electrical shocks. Thus, for objects that the permittee can ensure are effectively grounded (*i.e.*, stationary objects), no impacts due to induced voltage are anticipated from the Project. However, for metallic objects where the grounding path cannot be supplemented (*e.g.*, machinery that is movable and operated directly under a transmission line) impacts could occur, such as a nuisance shock.

5.2.2.4.2 Farm Operations, Vehicle Use, and Metal Buildings Near Transmission Line Mitigation Measures

The primary means of mitigating this potential impact is to avoid exiting, entering, or parking machinery directly under a line.

5.2.3 Residential and Non-Residential Buildings

The Route traverses a rural area. Dominant land uses are road ROW, agricultural crops, and dairy production. Rural residences are scattered throughout the landscape. Various farming operations are located within the Route. Minimizing impacts to residences was a primary criterion in designing the Proposed Alignment. Therefore, no residences are located within 75 feet of the Proposed Alignment. In total, 28 residences are within 500 feet of the Proposed Alignment, including eight residences that are within 150 feet. In total, 30 residences are within 500 feet of the Project ROW. This includes five residences within 75 feet of the Project ROW and 19 residences between 76 and 150 feet of the Project ROW (**Table 5.3**). No non-residential buildings such as outbuildings, grain bins, machinery storage sheds, and/or livestock holding pens are within 75 feet of the Proposed Alignment; however, several non-residential buildings are within 500 feet of the Proposed Alignment.

Table 5.3
Proximity of Residences to the Proposed Alignment and Project ROW

Buffer Width (feet)	Residences in Buffer on Proposed Alignment	Residences in Buffer on Project ROW
0–75	0	5
76–150	8	19
151–300	13	3
301–500	7	3
Total	**28**	**30**
Residence Density (homes/mile)	**1.04**	**1.12**

5.2.3.1 Potential Impacts

The Project Route is planned primarily within existing road and transmission line ROW. No residences are located within 75 feet of the Project ROW and impacts to residential structures are not anticipated.

5.2.3.2 Mitigation Measures

The locations of residential and non-residential structures were incorporated into the design of the Project ROW to minimize impacts to such structures. As discussed in **Section 3.0**, the preliminary and secondary route network routing efforts sought to decrease proximity to residences as a key criterion in selecting the Proposed Alignment. Because no impacts are anticipated, no mitigation measures are proposed. While not anticipated, should final project design require the removal or relocation of non-residential buildings, DCW will address the removal or relocation on a case-by-case basis in agreement and under easement with the landowner.

5.2.4 Displacement

Displacement is defined as the process by which a household is forced to move or relocate from its residence. As NESC standards require specific clearances between transmission lines and buildings, displacement can be a factor in transmission line planning. No displacement of residences is expected to occur from the Project.

5.2.4.1 Potential Impacts

No displacement impacts are expected to occur as a result of project construction and operation.

5.2.4.2 Mitigation Measures

No mitigation measures are proposed as no impacts are anticipated.

5.2.5 Sound

Minimal sound is produced from transmission lines during fair weather conditions. However, inclement weather (such as foggy, damp, or rainy conditions) may lead to a "corona effect," when a "crackling" sound is produced as a result of a small amount of electricity ionizing moist air near the wires (a corona). Other factors, including conductor voltage, conductor shape and diameter, and surface irregularities (such as scratches, nicks, dust, or water drops) can also affect a conductor's surface voltage gradient and its corona performance. Corona noise levels are typically low until transmission line operating voltages exceed 345 kV. Given the project voltage of 161 kV, minimal noise emissions are anticipated.

Current sound sources in the project vicinity include vehicles on roadways, rustling vegetation, birds, insects, and farm equipment. The Minnesota Pollution Control Agency (MPCA) regulates noise under Minn. R. 7030 and has set standards for sound levels based on land use activities. Noise Area Classifications (NAC) are set based on land use classifications of rural, industrial, and commercial land uses. Each NAC has an assigned daytime (7 am to 10 pm) and nighttime (10 pm to 7 am) limit for noise. Limits are expressed as the range of permissible A-weighted decibels (dBA) within an hour period. L_{50} is the dBA that may be exceeded 50 percent of the time within an hour (*i.e.*, 30 minutes), and L_{10} is the dBA that may be exceeded 10 percent of the time within an hour (*i.e.*, 6 minutes). These limits are summarized in **Table 5.4**. Dodge County (Dodge County 2017) and Mower County (Mower County 2003) both require activities to comply with MPCA standards. Neither county has additional noise compliance standards.

The Project ROW passes through a mostly rural agricultural setting. In total, 28 residential receptors are located within 500 feet of the Proposed Alignment. No residences are located within 75 feet of the Proposed Alignment, as further discussed in **Section 5.2.3**.

Table 5.4
Minnesota Pollution Control Agency Sound Standards—Hourly A-Weighted Decibels

Noise Area Category	Day (7 am–10 pm)		Night (10 pm–7 am)	
	1-Hour L_{10} (dBA)	1-Hour L_{50} (dBA)	1-Hour L_{10} (dBA)	1-Hour L_{50} (dBA)
NAC-1 (Residential)	65	60	55	50
NAC-2 (Commercial)	70	65	70	65
NAC-3 (Industrial)	80	75	80	75

5.2.5.1 Potential Impacts

Project operation and construction are associated with different potential noise impacts, of significantly differing durations. These are discussed in the following sections.

5.2.5.1.1 Potential Impacts from Operations

High voltage transmission line conductors are designed to prevent the creation of coronas under ideal weather conditions. During times of inclement weather there may be some audible sound. Often the sound of the weather event itself may mask any sound from the transmission line.

The maximum audible sound associated with the transmission line during operations is estimated to not exceed 26 dBA at 5 feet above the ground. **Table 5.5** summarizes estimated sound calculations for the proposed transmission line. Noise standards are regulated by the MPCA under Minn. R. Chapter 7030. The most stringent of these standards is a 50 dB limit for nighttime sound levels. As the highest modeled L_{50} for the proposed transmission line is 25.9 dBA, it is expected to operate well under the regulated noise limits.

Table 5.5
Sound Calculations

Operating Voltage	Structure Configuration	L_{50} Rain (dBA)		L_{50} Fair (dBA)	
		0 feet	50 feet	0 feet	50 feet
161 kV	Single Circuit Delta Tangent	23.3	22.8	0	0
	Single Circuit Vertical Tangent	22.8	22.6	0	0
	Double Circuit Vertical Tangent	25.9	25.3	0.9	0.3

5.2.5.1.2 Potential Impacts from Construction

Activities associated with project construction may generate sound impacts in the project vicinity that would be intermittent, temporary, and limited to times when construction activities are

underway, typically during the daytime. Sounds associated with construction would occur at different locations and times as construction sequencing occurs. Noise-producing activities are primarily associated with clearing and grading, materials delivery, auguring foundation holes, setting structures, and stringing conductors. Noise associated with construction includes the following, measured at 50 feet from the noise source (FHWA 2006).

- Clearing and grading: grader (85 dBA), chainsaw (84 dBA), and tractor (84 dBA)
- Materials delivery: flatbed truck (74 dBA) and crane (81 dBA)
- Auguring foundation holes: augur drill rig (84 dBA)
- Setting structures: crane (81 dBA)

5.2.5.2 Mitigation Measures

5.2.5.2.1 Operations

No mitigations are necessary or proposed as sound associated with the transmission line during operations is expected to be well under the regulated noise limits.

5.2.5.2.2 Construction

To alleviate any increased sound levels during project construction, DCW and their construction contractors will adhere to the following sound control BMPs recommended to minimize construction sound levels and comply with MPCA standards, per Dodge County and Mower County requirements:

- Limit heavy equipment activity (*e.g.*, pile driving, drilling, and crane use) adjacent to residences or other sensitive receptors to the shortest possible period required to complete the work activity;
- Minimize construction equipment idling;
- Ensure that proper mufflers, intake silencers, and other noise reduction equipment are in place and in good working condition;
- Maintain construction equipment according to manufacturer's recommendations;
- Where practical, locate stationary equipment such as compressors, generators, and welding machines away from sensitive receptors or behind sound-mitigation barriers; and
- When possible, limit construction activities to daylight hours.

5.2.6 Radio, Television, Cellular Device, and GPS Interference

Several AM and FM radio stations are heard, although no broadcast stations or towers are located, within the Route. Nearby AM tower call signs include KAUS, KOLM, KQAQ, KRFO, KROC, and KWEB. Nearby FM tower call signs include K228DR, K252DM, K277AD, K280EC, K280EF, K285EL, K289AE, K292EM, KFSI, KMFX-FM, KMSK, KNLW-LP, KRCH, KRFO-FM, KVCS, KVGO, KWWK, and KYBA.

No digital or analog television towers are located within the Route. Nine full-power television stations broadcast within the region of the Route. These include one analog station (call sign

K52HH) and eight digital stations (call signs KAAL, KIMT, KSMQ-TV, KTTC, KXLT-TV, KYIN, NEW, and WKTB) that potentially have reception within the Route (FCC 2018).

No cell towers are located within the Route. Multiple cell towers operated by Alltel and AT&T exist within the region and likely provide cellular service near and within the vicinity of the Route.

GPS units are commonly used for a variety of purposes including vehicle navigation (personal and commercial), aviation, and surveying. GPSs rely on a connection between satellites and a receiver (*e.g.*, cell phone, handheld GPS, etc.) to spatially locate the end user. It is likely that a variety of GPSs are utilized throughout the Route.

5.2.6.1 Potential Impacts

Noise created by electric transmission line coronas may impact local reception of radio and television signals. Interference with AM radio frequency is the most common type of interference from corona noise. This is most commonly observed immediately below a transmission line. Impacts to FM signals are more infrequent due to their operation outside of corona noise frequencies. Television signals may be impacted when the receiver is behind a transmission structure (in a shadow) and is opposite the transmitter. Based on the project design, DCW does not anticipate radio or television interference that would exceed limits recommended by industry guidelines.

Interference associated with cellular devices is not likely as cellular transitions or packet switching occurs when a cellular link becomes unavailable. Additionally, interference with GPS systems is not anticipated from the construction or operation of the Project, as GPS signals generally are not interrupted by corona-produced noise (Silva and Olsen 2002).

5.2.6.2 Mitigation Measures

DCW will address any reception impacts that may arise following construction of the Project on a case-by-case basis. If impacts do occur to radio signals, additions or changes to transmitters, receivers, or amplifiers can be made to communication systems to minimize impacts.

In the unlikely event that television interference is reported following project construction, DCW will work with affected residents or businesses to determine the cause of interference, and, when necessary, reestablish television reception and service in a timely manner. Reported television interference will be addressed by DCW on a case-by-case basis, and if reported DCW will do the following:

- Log the report and determine whether the interference is project related;
- Meet with the complainant and the local communications technician to determine the status of the affected television reception equipment;
- Discuss with the complainant the option of: (1) installing a combination of high-gain antenna and/or a low-noise amplifier or (2) entering into an agreement to provide a monetary contribution (equal to the cost of installing the recommended equipment) toward comparable Direct Broadcast Satellite (DBS) service;

- At the complainant's election, DCW will either install the recommended equipment or enter into an agreement to reimburse the landowner for the cost of comparable DBS service;
- If the complainant chooses DBS service, DCW will consider the matter closed upon installation of the satellite dish;
- If the complainant selects antenna and/or amplifier installation and later reports continued interference issues, DCW will send a technician to the property to assess the status of the equipment and provide any necessary repairs;
- If project-related interference remains an issue, DCW will propose an agreement that reimburses the complainant for the cost of comparable DBS service and will remove the antenna and/or amplifier equipment, unless it was initially installed to service multiple households; and
- If DCW and the complainant are unable to reach an agreement to resolve interference-related issues, DCW will report the concern as an unresolved complaint and defer to the Commission's dispute resolution process to resolve the matter.

5.2.7 Aesthetics

Aesthetic quality and appeal of a region generally derive from the terrain, natural features (*e.g.*, mountains, lakes, rivers, ponds, etc.), native flora, and cultural features that define the landscape. Individual observers will have differing opinions on the aesthetic appeal of a region and impacts that may alter its quality. Those likely to be viewing the proposed Project include permanent observers (residents) and temporary observers (motorists, tourists, or recreationalists passing by or using the area intermittently). Residents near the Project ROW are expected to have a higher sensitivity to the potential aesthetic impacts than temporary observers as they may look at the Project more frequently than individuals passing through the area.

Regional topography is characterized by nearly level to gently rolling plains. Historically, the region was covered with tallgrass prairie and scattered woodlands but today land cover is dominated by cropland and pasture (Omernik and Gallant 1988).

Viewsheds in the area are generally long and open with only small, scattered areas where the view from a location would be blocked by vegetation, topography, or existing structures. Viewsheds in the vicinity of the Route include existing highways and county/township roads and associated maintained ROW; croplands and pastures; overhead electric transmission and distribution lines; and wind turbines. Snowmobile trails, discussed in further detail in **Section 5.2.10**, are present within the Route. Dominant natural features within the viewshed include the North Branch of the Root River, Sargeant Creek, the South Fork of the Zumbro River, several unnamed creeks, and their associated tributaries, floodplains, and wooded riparian areas.

5.2.7.1 Potential Impacts

The proposed Project would alter the visual appearance within the vicinity of the Route by adding additional vertical and horizontal human-made structures to the existing landscape. The height, type, and configuration of the proposed transmission structures will depend on the terrain, span length, and respective county design preferences.

Proposed heights of project infrastructure are not anticipated to exceed 160 feet. Proposed span lengths for the transmission line support structures are not anticipated to exceed 900 feet, with a typical average span of approximately 500 to 800 feet and a minimum span of 300 feet. The proposed Project will not create a new feature type within the landscape as existing overhead transmission and distribution lines are present within the landscape surrounding the Route. Where pole structures are spaced farther apart, there will generally be less visual impact than in locations where poles are spaced closer together. The Proposed Alignment parallels existing overhead electric transmission line ROWs for approximately two miles. The Applicant has sited the Project largely within existing road and transmission line ROW, which reduces the amount of new visual impacts.

5.2.7.2 Mitigation Measures

Impacts to visual resources were avoided by siting most of the Proposed Alignment within road ROW. This area is already impacted by existing overhead electric transmission and distribution lines, as well as wind turbines. DCW continues to seek and secure overhang easements with landowners adjacent to the road ROW to allow for larger spacing between pole structures. Larger pole spacing reduces the visual impact of the Project. No other mitigation measures are proposed for aesthetic impacts.

5.2.8 Socioeconomics

The comprehensive plans for Dodge and Mower counties each detail social and economic goals for their respective county. The Dodge County 2019 Comprehensive Plan provides recommendations for the county's social and economic development. The overall vision of Dodge County includes encouraging input and participation from residents, maintaining the county's rural value and character, protecting prime agricultural land, growing and sustaining a diversity of housing options, providing increased opportunity for business growth and increased jobs, supporting improved access to quality broadband in the rural areas of the county, increasing recreational opportunities, allowing for growth without jeopardizing clean air and water, and improving and maintaining transportation infrastructure (CEDA 2019).

The Mower County 2002 Comprehensive Plan provides planning goals relating to the county's social and economic development. The goals of the county are as follows: conservation of prime agricultural lands for long-term agricultural use, conservation and enhancement of the county's rich natural resource base, preservation of the rural/small town/agrarian lifestyle in harmony with the urban lifestyle, accommodation of responsible urban expansion, creation of expanded employment opportunities, maintenance of healthful living environments and compatible land use relationships, maintenance of quality educational standards, cooperation and improvement in working relationships between all units of government, preservation of the county's investment in publicly owned facilities, and delivery of an appropriate and efficient level of public services (Mower County 2002).

Socioeconomic data were gathered for Ripley, Ashland, Hayfield, and Vernon townships in Dodge County and for Sargeant and Pleasant Valley townships in Mower County to ascertain the current estimated socioeconomic conditions for the region. Data was also acquired for Dodge County, Mower County, and the state of Minnesota for comparison. The socioeconomic data was gathered

from the U.S. Census Bureau 2015 to 2019 American Community Survey (ACS) five-year estimates.

According to the U.S. Census Bureau 2015–2019 ACS 5-Year Data Profile, the total population of the townships through which the Route extends is approximately 2,359 people. This accounts for approximately 0.04 percent of the total population of the state of Minnesota. Of these 2,359 individuals, approximately 99.2 percent are Caucasian. Total minorities account for approximately 2.6 percent (U.S. Census Bureau 2021) (**Table 5.6**).

Table 5.6
Population Characteristics Along the Route

Location	Total Population	Caucasian (%)	Black or African American (%)	Asian (%)	Other (%)	Hispanic or Latino (%)	Total Minority[1] (%)
Route[2]	2,359	99.2	0.2	0.4	0.5	1.5	2.6
Dodge County	20,669	96.1	1.1	1.1	3.2	5.0	10.4
Mower County	39,807	88.5	4.4	4.4	4.8	11.6	25.2
Minnesota	**5,563,378**	**85.5**	**7.7**	**5.7**	**4.2**	**5.4**	**23.0**

Source: U.S. Census Bureau 2015–2019 ACS 5-Year Data Profile (U.S. Census Bureau 2021).
[1] May include some individuals in more than one minority category.
[2] Includes Ripley, Ashland, Hayfield, and Vernon townships in Dodge County and Sargeant and Pleasant Valley in Mower County.

According to the 2015–2019 ACS 5-Year Data Profile, the median household income for Dodge County ($74,575) is higher than the state median of $71,306, whereas the median household income for Mower County ($54,295) is lower (**Table 5.7**). Median household incomes for townships along the Route range from $70,568 to $113,125. Median household incomes for most townships along the Route are higher than the state median household income, with the exception of Ripley Township, which is slightly below the state median household income.

Table 5.7
Economic Characteristics for the Route

Location	Median Household Income ($)	Unemployment Rate (%)	Population Below Poverty (%)
Dodge County	74,575	2.6	5.1
Ripley Township	70,568	4.7	9.8
Ashland Township	95,625	2.3	0.0
Hayfield Township	113,125	0.7	2.5

Location	Median Household Income ($)	Unemployment Rate (%)	Population Below Poverty (%)
Vernon Township	91,094	2.1	6.2
Mower County	54,295	3.7	13.5
Sargeant Township	72,917	0.0	23.2
Pleasant Valley Township	86,250	3.6	3.2
Minnesota	**71,306**	**3.6**	**9.7**

Source: U.S. Census Bureau 2015–2019 ACS 5-Year Data Profile (U.S. Census Bureau 2021).

The unemployment rate and percentage of the population below poverty in Dodge County (2.6 percent and 5.1 percent, respectively) are below the state average (3.6 percent and 9.7 percent, respectively). The unemployment rate and percentage of the population below poverty in Mower County (3.7 percent and 13.5 percent, respectively) are above the state averages. Unemployment rates and the percentage below poverty are generally better within the townships along the Route than the state averages. However, Ripley Township has an unemployment rate higher than the state and county averages. Ripley and Sargeant Township's percentage below poverty is also higher than the state average (U.S. Census Bureau 2021). Socioeconomic parameters for Dodge and Mower county townships are summarized in **Table 5.7.**

According to the ACS 2015 to 2019 estimates, educational services, health care, and social assistance accounted for 25.4 percent of jobs in Minnesota, followed by manufacturing at 13.4 percent and retail trade at 11.0 percent. For Dodge County, educational services, health care, and social assistance accounted for 32.7 percent of jobs, followed by manufacturing at 13.5 percent and retail trade at 9.5 percent. For Mower County, educational services, health care, and social assistance accounted for 26.8 percent of jobs, followed by manufacturing at 22.9 percent and retail trade at 9.5 percent (U.S. Census Bureau 2021).

According to the ACS 2015–2019 5-Year Data Profile, 8,241 housing units are in Dodge County and 17,071 housing units are in Mower County. The median value of owner-occupied housing units along the Route in Dodge and Mower counties ($183,900 and $123,900, respectively) are both considerably below the state median value of $223,900 (U.S. Census Bureau 2021).

5.2.8.1 Potential Impacts

Construction of the Project will not significantly impact the permanent population size or demographics of the counties or townships traversed by the Route because the Project will not create any permanent jobs. The duration of construction may be variable, but is generally anticipated to be approximately six months. The influx of laborers to the area during construction may create a temporary increase in population size and a change in demographics. During construction, up to approximately 40 temporary construction personnel will be required and will likely only remain in Dodge and Mower counties over the duration of project construction. This short-term increase in population is likely to result in a small financial gain for the local economy, as project personnel will utilize products and services from a variety of local businesses, including infrastructure maintenance services, industrial supplies, and hospitality services.

Based on the results of market impact analyses conducted for the DCW Wind and Transmission Line Projects, it is anticipated that the Project will have a negligible effect on property values along the Route. Further, as stated in the analysis conducted for the DCW Wind and Transmission Line Projects, "there is no market data indicating the project will have a negative impact on either rural residential or agricultural property values in the surrounding area." (Marous & Company 2021), **Appendix H**). No additional socioeconomic impacts are anticipated as a result of development of the Project.

5.2.8.2 Mitigation Measures

No negative socioeconomic impacts are anticipated to occur from construction and operation of the Project. As previously mentioned, a small, temporary increase in population size is likely to result in a small financial gain for the local economy. Therefore, no mitigation measures are proposed.

5.2.9 Cultural Values

The cultural values in the project vicinity are closely related to the agriculturally dominated landscape. Protection of land to allow for the continuation of farming is of the utmost importance in Dodge and Mower counties and is supported by the counties' respective comprehensive plans.

The Dodge County 2019 Comprehensive Plan focuses on maintaining the county's rural value and character and protecting prime agricultural land and provides goals regarding growing and sustaining a diversity of housing options. The plan identifies Smart Growth Principles that promote quality responsible housing options by maintaining buffers between residential land uses and agricultural or industrial land uses, minimizing conflicts of use by educating the public on traditional agricultural practices and the effects of living next to agricultural operations, and preserving prime agricultural lands by limiting residential development in the agricultural district and promoting development in areas where infrastructure already exists to support development (CEDA 2019). The majority of the county and Route are zoned as Agricultural land. In addition, the Route crosses through portions of the Shoreland Overlay and Dodge County Floodplain Overlay Districts. These are discussed in **Sections 5.5.2** and **5.5.4**, respectively. Major essential services such as transmission lines with a voltage greater than 34.5 kV are allowed with permits in the agricultural district (Dodge County 2017).

The Mower County 2002 Comprehensive Plan focuses on the preservation of the rural/small town/agrarian lifestyle in harmony with the urban lifestyle and the accommodation of responsible urban expansion in areas that do not conflict with or appreciably diminish the supply of prime agricultural land or interfere with the rural lifestyle and where the full range of urban services can be provided (Mower County 2002). The majority of the county and the entirety of the Route is zoned as Agricultural.

5.2.9.1 Potential Impacts

Cultural values are not expected to be impacted by the Project. The Project will not alter the rural character of the area, nor will it substantially influence the continuation of farming for local residents. The proposed Project appears to comply with the overall goals of Dodge and Mower counties to conserve farmland and natural resources and to support economic and sustainable development. The Project appears compatible with the rural, agricultural character of the counties;

appears compatible with the economic and development goals set forth in each of the respective county comprehensive plans; and promotes development to occur where infrastructure already exists. A more detailed analysis of agricultural impacts can be found in **Section 5.3.1**.

Farming activities may be temporarily impacted during project construction. Given the location of the Project primarily within existing road and transmission line ROW, with only a small amount of land to be taken out of agricultural production, landowners may continue to plant crops and graze livestock near the transmission line structures.

5.2.9.2 Mitigation Measures

The Applicant will work closely with landowners to ensure that temporary impacts to farming activities are minimized and appropriately mitigated within the terms of individual easements.

The Route has been designed to be compatible with current zoning designations across Dodge and Mower counties. As a result, the Project is not anticipated to have any impact on planning and zoning within these counties, and no mitigation measures are proposed.

5.2.10 Recreation

Dodge and Mower counties provide a variety of recreational opportunities including hiking, fishing, hunting, camping, nature viewing, and snowmobiling. WMAs in Dodge and Mower counties are publicly accessible areas that provide opportunities for wildlife observation and hunting (MNDNR 2021b). No WMAs are located within the Route.

Five WMAs occur within 5 miles of the Route (MNDNR 2021b), as follows:

- Orning WMA
- Marsh Wren WMA (Steele County)
- McMartin WMA
- Vernon WMA
- Bud Jensen WMA

The Zumbro River and its tributaries in Dodge County (east of the Project) likely provide various areas of access for water-based recreation. Both Dodge and Mower counties offer several camping locations, several parks, and many miles of trails. In addition, Dodge County owns and maintains Seminary Park (approximately 8.6 miles northeast of the Route) and the Plowville Historic Site (approximately 6.4 miles north of the Route) (Dodge County 2019).

No parks, campsites, hiking trails, or other wildlife areas are located within the Route. Three designated snowmobile trails occur within the Route: the Kasson-Mantorville Trail, Heartland Sno-goers Trail, and the Dodge County Trail. The Kasson-Mantorville Trail crosses the Route at one location. The Heartland Sno-goers Trail parallels the Project for approximately 0.3 miles and crosses the Route at one location. The Dodge County Trail parallels the Project ROW for approximately 1 mile and crosses the Route at two locations. Recreational uses in the vicinity of the Route are included in **Appendix I - Figure 5.7**.

5.2.10.1 Potential Impacts

As the Project is planned primarily within existing road and transmission line ROW, recreational impacts will largely be avoided. The Route could impact snowmobiling along the portions of the snowmobile trails that parallel or cross the Project. During construction, the Project may require the temporary closing or relocating of part of the snowmobile trails to ensure the safety of construction personnel and recreationalists. Recreationalists using the snowmobile trails may be impacted by the change in aesthetics when they are in proximity to the transmission line. Construction and maintenance activities may also cause wildlife to relocate from the Project ROW, which could impact localized hunting activities.

5.2.10.2 Mitigation Measures

It is not anticipated that construction will occur during snowmobile season (December 1 through April 1).[6] The Applicant has initiated coordination with the potentially impacted snowmobile clubs and will continue to coordinate regarding the placement of pole structures in the vicinity of the trails, as well as construction timing. Coordination regarding any safety and any rerouting of existing trails will occur when project design is more refined and in advance of the snowmobile season's annual trail mapping.

5.2.11 Public Services

Public services and associated facilities are discussed below and were previously discussed in **Section 5.2.1**.

5.2.11.1 Emergency Services

Dodge and Mower counties have specific plans for preparedness, response, recovery, and mitigation and work closely with local, state, and federal officials to educate, prepare for, respond to, and recover from disasters and large-scale emergencies. Regional emergency response services are provided by local law enforcement and emergency response entities located in nearby communities. Regional law enforcement is provided by the Dodge County Sheriff, Mower County Sheriff, and the Claremont Police Department. Additional assistance may be provided by other local municipal departments. Within Dodge and Mower counties, several fire departments and ambulance providers respond to emergencies within the area. Emergency response centers are located nearby in the City of Austin for Mower County and in the City of Mantorville for Dodge County. These centers dispatch responders for all 911 calls for their respective counties, including fire, medical, and police emergencies.

5.2.11.2 Hospitals

No hospitals or other medical facilities are located within or adjacent to the route. In Mower County and nearby in Olmstead County, the Mayo Clinic and associated branches are available for routine, emergency, and specialized medical services.

[6] While construction is proposed to start in Q2 of 2022, it will not start prior to April 1, 2022.

5.2.11.3 Water and Wastewater Services

Within the Route, water and wastewater services are expected to be provided mainly through privately owned water wells and septic systems. Municipal water and sewer may be present within the small portion of the Route that is located near the City of Hayfield.

5.2.11.4 School Districts

The Route crosses two school districts in Dodge and Mower counties (Hayfield and Triton). However, no school buildings are located within the Route.

5.2.11.5 Electric and Natural Gas Utilities

Northern States Power Company and the Southern Minnesota Municipal Power Agency provide electricity to the project vicinity. Minnesota Natural Gas provides natural gas to consumers in southern Minnesota. One natural gas pipeline owned by Northern Natural Gas is crossed by the Route. Existing transmission infrastructure in the project vicinity is shown in **Appendix I - Figure 1.2**. Xcel Energy, Steele-Waseca Cooperative Electric, People's Energy Cooperative, and Freeborn Mower Electric Cooperative, among others, also operate distribution lines within the vicinity of the Project. The Applicant will work with the appropriate utility companies, as necessary, to avoid potential impacts to electric and gas utility infrastructure and to execute crossing agreements, where applicable.

5.2.11.6 Other Public Services

A wide variety of other public services in the area are provided by Dodge and Mower counties. These include environmental, administrative, planning and zoning, economic development, and veteran services, among others. Townships throughout the Route assist with snow removal, road maintenance, stormwater management, building maintenance, and sidewalks.

5.2.11.7 Potential Impacts

Public services within the Project ROW are not anticipated to be permanently or significantly impacted by the construction and operation of the Project. Construction of the Project will temporarily increase the population and workforce present in the vicinity of the Project by up to 40 people. This increase in population may cause temporary increases in individuals requesting the use of public services or requiring assistance from emergency services. Project construction may require road closures for the safety of public and construction personnel. Road closures may temporarily impact the travel of public service vehicles, including emergency response services.

5.2.11.8 Mitigation Measures

The minimal increase in population should not create the need for more public services than already exist. Therefore, no mitigation measures are proposed.

Prior to the start of construction, the Applicant will notify the Dodge County Highway Department, Mower County Public Works, and MnDOT to minimize any potential impacts from road closures caused by the construction of the Project.

The Applicant will work with public service providers to determine the location of public service infrastructure, to ensure proper coordination, and to ensure that impacts to public services are

avoided. The Applicant will coordinate with individual landowners to ensure the Project does not impact privately owned septic systems and water wells.

The Applicant will also work with other electric utility providers, as appropriate, to ensure the Project will not impact the existing utilities in the area, specifically other transmission or distribution lines, or those under construction. The Applicants will utilize the Gopher State One Call system to locate and mark existing underground utilities prior to construction to avoid impacts to pipelines or other buried infrastructure.

5.2.12 Transportation

5.2.12.1 Roadways

Existing road infrastructure in the vicinity of the Project primarily comprises paved and unpaved county and township roads that typically follow section lines. Unpaved two-track roads, likely used for farming and private access, are also present within the Route. The two largest roadways included in the Project are State Highway 30 and State Highway 56. State Highway 30 is located near the central portion of the Route, approximately 6.3 miles north of the GRE Pleasant Valley Substation and 6.6 miles south of the DCW collector substation. State Highway 56 is located approximately 5.4 miles east of the project collector substation.

The MnDOT Average Annual Daily Traffic (AADT) data can be used to determine traffic volumes within and around the Route. Data was not available for all of the roads followed by the Proposed Alignment; therefore, only roads with available data are discussed further. From 2017 data for Dodge County, State Highway 56 (MN 56 or 190th Avenue) had the highest AADT count with 3,000 vehicles per day; the lowest count was County Road W (670th Street) with 40 vehicles per day. The remainder of roads within the Route contained traffic counts between 110 and 1,800 vehicles per day or lacked AADT data (MnDOT 2020a). Generally, traffic counts within the Route are relatively low with a few main thoroughfares conveying most of the traffic. Due to the rural setting of the Project, roads lacking AADT data likely also carry low traffic levels. Additional information regarding AADT data for the roads within the Route is included in **Table 5.8.**

Table 5.8
Annual Average Daily Traffic (AADT) on County, State, and U.S. Highways, Roads, and Interstates Crossed or Paralleled by the Proposed Alignment

Road	County	AADT	Traffic Count Year	Distance Paralleled (miles)
140th Ave	Dodge County	NA	NA	1.5
150th Ave	Dodge County	NA	NA	0.0
CR W (670th St)	Dodge County	40	2014	1.6
CSAH 5 (160th Ave)	Dodge County	260	2017	1.0
CSAH 6 (680th St)	Dodge County	185	2017	1.3
170th Ave	Dodge County	NA	NA	2.0

Road	County	AADT	Traffic Count Year	Distance Paralleled (miles)
690th St	Dodge County	NA	NA	0.0
CR K (700th St)	Dodge County	110	2013	3.1
180th Ave	Dodge County	NA	NA	0.0
MN 56 (190th Ave)	Dodge County	3,000	2017	0.0
200th Ave	Dodge County	NA	NA	1.0
CSAH 4 (710th St)	Dodge County	270	2017	1.2
210th Ave	Dodge County	NA	NA	0.0
720th St	Dodge County	NA	NA	0.0
CSAH 9 (220th Ave)	Dodge County	950	2017	2.0
MN 30	Dodge County	1,800	2015	0.0
740th St	Dodge County	NA	NA	1.0
230th Ave	Dodge County	NA	NA	2.0
750th St	Dodge County	NA	NA	0.0
CSAH 9 (Dodge Mower Rd)	Dodge County	180	2017	0.4
CSAH 20 (Dodge Mower Rd)	Dodge County	190	2016	0.0
640th Ave	Mower County	NA	NA	1.0
330th St	Mower County	NA	NA	2.0
650th Ave	Mower County	NA	NA	0.0
CSAH 7 (660th Ave)	Mower County	285	2016	2.0
CSAH 1 (310th St)	Mower County	440	2016	2.3
665th Ave	Mower County	NA	NA	0.0
680th Ave	Mower County	NA	NA	0.0

Source: MnDOT AADT GIS Shapefile (MnDOT 2020a)
Notes: CR = County Road, CSAH = County State Aid Highway, MN = Minnesota State Highway, NA = Not Available

5.2.12.2 Railroads

No active railroads are within or adjacent to the Route.

5.2.12.3 Airports and Airstrips

The Proposed Alignment is south of Dodge Center Airport (TOB); at its nearest point it is approximately 4.1 nautical miles southwest of the nearest runway end. At this proximity and based on a maximum transmission structure height of 160 feet above ground level, it is expected that some structures along the Proposed Alignment would require the filing of a Federal Aviation Administration (FAA) Form 7460-1, Notice of Proposed Construction or Alteration (notice) prior

to construction. This process allows the FAA to determine the effect a structure could have on the safe and efficient use of navigable airspace. The FAA applies different sloping and horizontal obstacle identification surfaces (OIS) to all public use airports as part of their aeronautical study. When a structure penetrates an OIS, the FAA conducts further study to determine the level of adverse effect from the structure and whether a determination of hazard would be warranted. A structure that has little or no effect on the navigable airspace would be issued a determination of no hazard.

To facilitate route selection and structure design, DCW conducted its own internal aeronautical evaluation. To assist in this evaluation DCW contracted Capitol Airspace Group to identify areas where transmission line structures could be restricted. A portion of the Proposed Alignment crosses through two OIS and three Instrument Approach Areas associated with TOB, as reviewed by Capitol Airspace in December 2020 (as identified in FAA Order 7400.2M). Each of these Instrument Approach Areas has an altitude that, if exceeded, would require filing of an FAA Form 7460-1. The altitudes range from 1,390 feet AMSL to 1,401 feet AMSL depending on each Instrument Approach Area. If the combined height of the ground elevation and the height of a 160-foot structure exceeds one of these altitudes, a FAA Form 7460-1 will be filed. Any project structures that require a determination of no hazard will not be erected until the determination of no hazard is received.

5.2.12.4 Potential Impacts

5.2.12.4.1 Roadways

Because the Project will be largely located within existing road ROW there is the potential for the safety of the traveling public to be impacted during construction, operations, and maintenance. Project construction would likely result in temporary impacts to roadways such as road and lane closures and an increase in traffic congestion. Temporary road and lane closures would be necessary to safely and efficiently install the transmission line along, and across, roadways. Road and lane closures may cause localized, temporary delays. Once the transmission line has been installed near a road or lane closure, the road and/or lanes would be reopened, and traffic flow would resume as normal. As noted in **Section 5.2.12.1**, most of the roads within the Route have minimal daily traffic, and road and/or lane closures should not have significant impacts on local traffic. There may be some temporary traffic impacts at the crossings of State Highway 30 and State Highway 56.

To ensure that conductors are maintained at a minimum safe clearance from vehicles on roadways, the NESC regulates the above ground clearance for electric lines adjacent to, crossing, or overhanging roads. The NESC requires that a 161 kV electric line maintain a minimum safety clearance of 21.2 feet above a roadway, designed to accommodate vehicles up to 14 feet tall. This minimum clearance is applicable in all temperature and wind ranges including those that would cause temporary “blowout conditions.” DCW will exceed the NESC requirement utilizing a minimum clearance threshold of 25.4 feet. The larger clearance threshold is designed to accommodate oversized vehicles, such as large farm equipment or combines, up to 18.2 feet. Except for crossing locations, the conductor line will not hang over roadways during normal conditions.

Construction and operation of the Project is not anticipated to have permanent impacts on roadways or traffic and is not anticipated to impact the safety of the traveling public given the mitigation measures discussed below.

5.2.12.4.2 Railroads

As there are no active railroads within or adjacent to the Route, construction and operation of the Project will have no impacts to railroads.

5.2.12.4.3 Airports and Airstrips

The notice criteria analysis conducted by Capitol Airspace Group identified three areas where transmission structure heights could be restricted by overlying obstruction surfaces as identified in 14 Code of Federal Regulations (CFR) Part 77.9 Notification Surfaces and Joint Order 7400.2N Instrument Approach Areas.

5.2.12.5 Mitigation Measures

5.2.12.5.1 Roadways

As discussed in **Section 4.1.1**, DCW will coordinate construction activities with the Dodge County Highway Department, Mower County Public Works, and MnDOT and will coordinate on the development and implementation of a traffic management plan. For sections of the line proposed within road ROW, notification and coordination with the Dodge County Highway Department, Mower County Public Works, and MnDOT and any impacted utilities will occur as required prior to the start of construction of those segments to confirm that all applicable utility accommodation policies and procedures are followed. DCW will coordinate construction activities with MnDOT and county highway departments so that a traffic management plan can be developed and implemented. The traffic management plan will be applied to specific roadways or areas where specific setbacks or mitigation measures, including signage, flagging, physical barriers, temporary lane closures, and temporary road closures, are necessary to comply with all applicable transportation safety requirements. Implementation of construction access and traffic control plans will also be necessary to ensure safety during construction activities within the road ROW. Transmission structures within the road ROW will maintain clear zone requirements from the travel lanes consistent with Minn. R. 8820.9920 and in compliance with utility permits anticipated to be issued from the Dodge County Highway Department, Mower County Public Works, and MnDOT prior to construction.

As discussed in **Section 5.2.1**, the Project will be designed in accordance with all state, local, and NESC standards and considers ground clearance, crossing utilities clearance, building clearance, strength of materials, and ROW widths. The portions of the Project situated within road ROW will be designed in accordance with the technical requirements in the MnDOT Utility Accommodation and Coordination Manual (2019).

Utility permits from the Dodge County Highway Department, Mower County Public Works, and MnDOT will be obtained prior to construction. DCW will ensure construction crews and/or contract crews will comply with local, state, and NESC standards regarding facility installation and standard construction practices. Further, OSHA measures will be adhered to by construction, operations, and maintenance crews to ensure safety. As explained in **Section 5.2.1.2**, DCW and its

contractors will follow all applicable laws and regulations, including OSHA 1910.269, and use industry practices, such as tailboard risk assessment meetings, in order to protect the health and safety of the public and employees. The Project will also follow all NESC standards. As the mitigation measures will be integrated into project design, potential residual impacts to public safety are not anticipated.

5.2.12.5.2 Railroads

No mitigation measures are proposed as construction and operations of the transmission line will have no impacts to railroads.

5.2.12.5.3 Airports and Airstrips

DCW will coordinate with FAA for review of the Project in areas identified for possible impacts. Following final structure design and siting, DCW will identify and file all structures that require notice to the FAA. DCW has also coordinated with the Dodge Center Municipal Airport Board regarding the Project.

5.3 Land-Based Economies

5.3.1 Agriculture

Developed open space is the largest land use category within the Project ROW, accounting for approximately 206 acres (approximately 45 percent) of the Project ROW. Agricultural uses cover approximately 204 acres (approximately 43 percent) of land within the Project ROW (MRLC 2019). According to the 2017 USDA Agricultural Census Report, over 90 percent of the land in Dodge County (roughly 248,036 acres) was used for agriculture on approximately 611 farms. Corn, soybeans, and forage hay are the primary crops grown in Dodge County, while chicken and cattle are the predominant livestock raised in the county. The total market value of agricultural products sold in the county in 2017 was approximately $238.4 million, with crop markets totaling approximately $138.3 million and livestock markets totaling approximately $100.1 million (USDA 2017), as summarized in **Table 5.9**.

Table 5.9
Agriculture Statistics for Dodge and Mower Counties and the State

Location	Number of Farms	Average Farm Size (acres)	Land in Farms (acres)	Crop Sales ($)	Livestock Sales ($)
Dodge County	611	406	248,036	138,341,000	100,062,000
Mower County	1,068	419	447,193	242,698,000	170,527,000
Minnesota	**68,822**	**371**	**26,035,838**	**10,191,518,000**	**8,203,872,000**

Source: USDA 2017 Census of Agriculture County Summary Highlights (USDA 2017).

Agricultural land is also a major land use in Mower County. Approximately 447,193 acres were in agriculture on 1,068 farms in 2017, according to the USDA Agricultural Census Report. The total market value of agricultural products sold in Mower County in 2012 was approximately

$413.2 million, with crop markets totaling approximately $242.7 million and livestock markets totaling approximately $170.5 million (USDA 2017), as summarized in **Table 5.9**.

The use of feedlots is a common practice in raising livestock in Minnesota, and the MPCA administers rules regulating livestock feedlots. According to the MPCA's What's in My Neighborhood map search tool, 621 registered feedlots are in Dodge County and 379 registered feedlots are in Mower County. In total, two feedlots are registered within the Project ROW. These two feedlots are located in Dodge County (MPCA 2021a).

5.3.1.1 Potential Impacts

The Proposed Alignment is situated almost entirely within existing road and transmission line ROW (approximately 24.7 miles of the total 26.8 miles). While a portion of the Project ROW extends onto agricultural lands adjacent to the Proposed Alignment, the proposed project design generally avoids placing new structures on agricultural land, and most of these agricultural locations would be used solely for overhang. Permanent impacts to agricultural crops within the Project ROW would be limited primarily to the two locations where poles and other support structures are proposed outside of road ROW (as discussed in **Section 2.4**): (1) within the DCW Wind Project area, and (2) where the Project will be co-located with the GRE Pleasant Valley to Austin Northeast transmission line. Along the approximately 2.1 miles of the Proposed Alignment within the DCW Wind Project area, between the project substation and 680th Avenue, structures will be located primarily along property boundaries, field edges, and section lines. Landowners may continue to plant crops and graze livestock near these transmission line structures. Where the proposed Project will be co-located with the existing GRE Pleasant Valley to Austin Northeast transmission line, existing GRE poles will be removed and replaced with combined project and GRE circuits on monopole structures. As such, within the GRE ROW, slight changes to pole locations are anticipated; however, appreciable permanent impacts are not.

Land that is used for agricultural production will largely remain unchanged. Short- and long-term effects on agricultural land will be minimal. Where the Proposed Alignment is not within road or transmission line ROW, farmland will be permanently altered in the limited locations where transmission line structures are erected. However, farmers can plant crops right up to these structures, provided the crops do not impact the maintenance of and clearance requirements for the transmission line. When construction occurs outside of winter months there is a higher possibility that minor temporary impacts could occur. Soil compaction, loss of planting opportunity, crop damage, and drain tile damage could occur due to construction. Changes in agricultural equipment maneuvering routes adjacent to the transmission line and associated structures may be required but are expected to have a negligible effect on overall crop production.

Livestock grazing could experience temporary impacts if animals are temporarily relocated to other pastureland during construction.

The Project ROW crosses the driveways to several feedlots in Dodge County. With landowner coordination during construction and operations, potential impacts to feedlot infrastructure and operations are not expected to occur.

As discussed in **Section 5.1.2.2**, the Project ROW would cross approximately 453 acres of soil classified as prime farmland or prime farmland if drained (**Table 5.10**). In areas where the Project ROW is currently cultivated, crops could continue to be planted up to transmission structures.

Because the majority of the Proposed Alignment is located in existing road and transmission ROW, these areas are not currently cultivated. Therefore, only a small fraction of prime farmland soils would be expected to be permanently taken out of agricultural production due to project construction. These impacts will not cause a meaningful reduction to total prime farmland within the state of Minnesota.

Table 5.10
Impacts to Land-Based Economic Sources within the Project Right-of-Way

Resource Within Project ROW	Area[1] (acres)	Percent of Total Project ROW[1]
Cultivated Crops		
Cultivated crops	196.7	43.3
Prime Farmland Soil Classifications		
Prime Farmland	223.9	49.3
Prime Farmland, if Drained	228.9	50.4
Farmland of State Importance	0	0
Total: Prime Farmland; Prime Farmland, if Drained; and Farmland of Statewide Importance	452.8	99.7
Forestry		
Commercial forestry operations in Route	0	-
Commercial forestry operations in Project ROW	0	-
Tourism		
Water trails crossed by Project ROW	0	-
Number of snowmobile trails in Project ROW	3	-
Number of snowmobile trail crossings in Project ROW	4	-
Mining		
Mines within Route	0	-
Mines within Project ROW	0	-

[1] Subject to rounding.

After construction of the transmission line structures is completed, all remaining land surrounding the structures that is not within road ROW can remain in agriculture. Construction and operation of the DCW Transmission Project will not result in the loss of agricultural-related jobs or appreciable net loss of income. **Table 5.10** summarizes land-based economic sources located within the Project ROW.

5.3.1.2 Mitigation Measures

Final project structure siting will include discussions with landowners where the Project is not in existing ROW to keep the footprint of each structure to a minimum and to identify agricultural infrastructure (*e.g.,* drain tiles) that should be avoided, or will need to be disturbed and subsequently repaired, on their property.

Regarding grazing livestock, appropriate measures will be taken to ensure fenced pastureland is secure during construction activities. Temporary fencing may be put in place if fencing is impacted, and permanent fencing will be repaired or replaced after construction.

The Applicant will coordinate with landowners to identify property features, such as terraces and drain tiles, that need to be avoided during construction activities. Should incidental soil compaction occur as a result of temporary construction activities, appropriate measures will be taken to ensure farmland is restored in accordance with the lease agreement between the landowner and the Applicant. Since the majority of the poles will be located within existing road or transmission line ROW, significant impacts to agriculture in the area are not expected from pole installation, and minimal amounts of land will be taken out of production.

5.3.2 Forestry and Mining

No economically important forestry resources are found within the Route (see **Table 5.10**). Most wooded areas within the Route are shelterbelts (small woodlands surrounding active farmsteads) or woodlands along streambanks. See **Appendix I - Figure 5.3** for details related to wooded areas along the Route.

Based on review of MnDOT County Pit Maps and the MnDOT Aggregate Source Information System, no economically significant mining resources are located within the Route (MnDOT 2002a; MnDOT 2002b; MnDOT 2018) (see **Table 5.10**). According to current aerial imagery and the 7.5-minute series U.S. Geological Survey (USGS) topographic map for Hayfield, Minnesota (USGS 1966), two minor sand or gravel operations appear to be located near the Route northeast of the intersection of 220th Avenue and 720th Street in Dodge County. This sand or gravel pit is located outside of the Route. According to current aerial imagery and the 7.5-minute series USGS topographic maps for Sargeant, Minnesota, and High Forest SW, Minnesota, no sand or gravel operations occur near the Project ROW. Quarries, gravel pits, and sand pits exist throughout Dodge and Mower counties but are largely inactive, abandoned, or their use is limited to a private landowner.

5.3.2.1 Potential Impacts

Because no economically important forestry resources are found within the Route, no impacts would occur to these resources.

Project infrastructure will not be located within sand or gravel operations, so impacts to the mining industry are not expected.

5.3.2.2 Mitigation Measures

The Project is not expected to impact economically important forestry resources or the mining industry. As such, no mitigation will be necessary. If applicable, the Applicant will restore wooded areas in accordance with the lease agreement between the landowner and the Applicant. Project infrastructure will not be located within sand or gravel operations.

5.3.3 Tourism

Dodge County offers residents and visitors tourism and recreational opportunities throughout the year. In 2018, annual spending on leisure and hospitality in Dodge County was approximately

$13,269,192, which sustains about 480 private tourism-related jobs in the county (Explore Minnesota 2020). Generally, tourism in Dodge County focuses on promoting the area's parks, art, and hospitality facilities, as well as recreational activities. Local community events include the Dodge Center Harvest Fest, Mantorville Marigold Days, Zumbro Bend Rendezvous, Dodge County Relay for Life, Claremont Hog Fest, Festival in the Park, Dodge County Free Fair, and West Concord Survival Days.

Annual spending on leisure and hospitality in Mower County in 2018 totaled approximately $55,437,215, which sustains about 1,225 private tourism-related jobs in the county (Explore Minnesota 2020). Several tourism-related facilities are located nearby in the City of Austin: Jay C Hormel Nature Center, Mower County Fairgrounds, Mower County Veterans Memorial, Bandshell Community Park, and the SPAM Museum. Local community events include the Mower County Fair, Mower County Relay for Life, and the Annual Taste of Mower County.

No U.S. Fish and Wildlife Service (USFWS) Waterfowl Production Areas, Minnesota Scientific and Natural Areas (SNAs), Wetland Reserve Program conservation easements, or WMAs are within 1 mile of the Proposed Alignment. These public resources can provide recreational and tourism opportunities including biking, camping, wildlife watching, hunting, fishing, and snowmobiling (MNDNR 2021c). As discussed in **Section 5.2.10** and shown in **Table 5.10**, three snowmobile trails cross the Project ROW (refer to **Appendix I - Figure 5.7**).

5.3.3.1 Potential Impacts

Transmission line structures are expected to be located mostly in existing road and transmission line ROW. Therefore, structures would create relatively few direct impacts to existing recreational facilities and tourism activities. Impacts to snowmobile trails would be mostly visual in nature.

5.3.3.2 Mitigation Measures

The Applicant will continue to coordinate with snowmobile clubs regarding construction timing and the placement of pole structures in the vicinity of trails. The project structures are not anticipated to have a negative effect on area tourism. Because no negative impacts to tourism are anticipated, no mitigation will be necessary.

5.4 Archaeological and Historic Resources

The DCW Transmission Line Project area is located in the Southeast Riverine Archaeological Region. The Southeast Riverine Archaeological Region covers the southeastern most corner of Minnesota, including all of Dodge and Mower counties (Hudak et al. 2002). The region was not exposed to the Late Wisconsin Ice Age and has many rock outcrops with exploitable material dissected by streams (Hudak et al. 2002). Archaeological resources are predominantly concentrated along major river terrace systems; specifically, archaeological resources would be expected near water sources on terraces, bluffs, and hilltops. However, archaeological resources have been documented in a large variety of landforms within the region.

The State Historic Preservation Office (SHPO) and Minnesota Office of the State Archaeologist (OSA) were contacted in December 2020 to gather cultural resources records related to the Route. Cultural resources data maintained by the SHPO and OSA include National Register of Historic Places (NRHP) records, Minnesota State Historic Sites Network (MSHSN) records, Minnesota

State Monument (MSM) records, Minnesota State Register of Historic Places (MSRHP) records, "state site" or "state archaeological site" records, records related to previous professional architectural and archaeological surveys, and records related to reported architectural inventory resources and archaeological sites.

No cultural resources listed on the MSHSN, MSM, or MSRHP are located within the Route. The literature review indicated that 10 NRHP listings (sites, structures, properties, or districts) are in Dodge County and 9 NRHP listings are in Mower County (NPS 2021). None of these NRHP listings are located within the Route. The closest NRHP listings to the Proposed Alignment include Carlson Ole House (approximately 6.5 miles east of the Proposed Alignment), Wasioja Historic District (approximately 7.9 miles northeast of the Proposed Alignment), and Blooming Prairie Commercial Historic District (approximately 8.1 miles southwest of the Proposed Alignment).

The Route contains two known architectural inventory resources (Inventory Numbers: XX-ROD-022 and MW-SNT-006; **Table 5.11**). One of these resources, XX-ROD-022, which is MnDOT Trunk Highway 56, intersects the Proposed Alignment. Bridge No. 2493 (MW-SNT-006) is located entirely within the Route and partially within the Project ROW. Neither of these two architectural inventory resources have been evaluated for listing on the NRHP. Refer to **Appendix I - Figure 5.8** for more information.

Table 5.11
Architectural Inventory Resources within the Route

Inventory Number	Site Name / Site Type	Site Significance
XX-ROD-022	Trunk Highway 56	Unevaluated
MW-SNT-006	Bridge No. 2493	Unevaluated

One known archaeological site lead is located within the Route (Site Number 21DOj). It is also partially within the Project ROW. This site lead consists of historical documentation related to a potential former town, Ashland Village. The town was platted in July 1855 but was never incorporated, and it appears to have lasted no more than one year. The site has not been surveyed by an archaeologist to evaluate its NRHP eligibility.

In 2020, DCW conducted outreach to 31 tribes to provide an overview of the Project and to invite tribes to participate in project coordination. A list of the tribes contacted is provided in **Appendix F: Agency Correspondence**, and a copy of the outreach letter is included in **Appendix F: Agency Correspondence**. In response to this invitation, the Standing Rock Sioux Tribe, Upper Sioux Community, Rosebud Sioux Tribe, and Sisseton Wahpeton Oyate participated in project micrositing. No concerns were identified by tribal representatives during these efforts. Coordination with tribes is expected to continue throughout project development.

5.4.1 Potential Impacts

Two known architectural inventory resources are located within the Route (Bridge No. 2493 and MnDOT Trunk Highway 56). The Proposed Alignment would not cross over Bridge No. 2493 but

would instead parallel the bridge approximately 40 feet to its north. The Proposed Alignment would cross over Trunk Highway 56.

One previously recorded archaeological resource, site lead 21DOj, is located within the Proposed Alignment. The site lead refers to a former village that may be located within a more than 800-acre area adjoining the Proposed Alignment. The site has never been surveyed by an archaeologist to determine its location. Therefore, it is not known whether remnants of the former village are present within the Route.

No tribal resources were located within the Route during micrositing and coordination to date.

DCW recognizes the importance of cultural resources to local and scientific communities. To that end, DCW implements an avoidance strategy for cultural resources. However, the proposed construction activities for the Project may have the potential to encounter unidentified archaeological sites.

5.4.2 Mitigation Measures

If impacts to cultural resources are unavoidable, DCW, and its cultural consultant, will coordinate with the SHPO and/or OSA on whether or not the resource is eligible for listing in the NRHP. In addition, should DCW encounter unidentified archaeological sites during project construction, DCW will follow an Unanticipated Discovery Plan (UADP) to address any unanticipated discoveries of cultural resources, including archaeological sites and possible human remains. The UADP is discussed further below.

In the portion of the Proposed Alignment that parallels Bridge No. 2493, the proposed transmission line would be co-located with an existing transmission line owned by GRE. Because of the proposed co-location, indirect visual impacts to the bridge would not increase over the current impacts created by the existing transmission line. Furthermore, examination of aerial imagery indicates that Trunk Highway 56 is currently traversed by existing distribution and transmission line routes. Therefore, indirect (*i.e.,* visual) impacts to this highway would not increase from the current impacts created by existing distribution/transmission line routes within the vicinity of the Route. Accordingly, no increase in direct and/or visual impacts are anticipated to affect these architectural inventory resources, and no mitigation measures are proposed.

DCW will avoid and minimize impacts to any discovered significant archaeological or architectural resources to the extent practicable during all phases of the Project, including development siting, construction, and operation. Utilization of existing road and transmission line ROW reduces the potential for impacts to intact cultural resources in comparison to construction of new transmission line. A high probability area model was developed by DCW using Geographic Information Systems (GIS) databases that were queried to select features that are commonly associated with significant cultural resources. The results of the database queries were then combined with areas derived from review of aerial imagery into a high probability area model. The model was used to assess the DCW Wind Project area to identify areas that have a high potential to contain significant cultural resources or features that could be eligible for listing in the NRHP. The model included assessment of high probability areas for prehistoric resources. A Phase I archaeological survey will be conducted within high probability areas of the Project ROW prior

to construction to identify and avoid unrecorded archaeological sites that may be present. The tribes will be invited to participate in the survey to identify and avoid any tribal resources.

While no state regulations require a UADP, DCW will prepare such a plan. Should project construction and/or operation inadvertently encounter previously undocumented archaeological resources or human remains, the discoveries will be reported to the SHPO and/or OSA, as applicable. The UADP will include a section addressing Minnesota's *Damages; Illegal Molestation of Human Remains; Burials; Cemeteries; Penalty; Authentication Statute* (Minnesota Statutes (Minn. Stat.) 307.08), which protects known or suspected human burials and burial grounds regardless of land ownership status; this section of the UADP will apply if human remains are inadvertently discovered.

5.5 Natural Environment

5.5.1 Air Quality

The Clean Air Act (CAA) of 1970, 42 U.S. Code 7401 et seq., amended in 1977 and 1990, is the primary federal statute governing ambient air pollution (USEPA 2020). The CAA designates standards for the following criteria pollutants that have been determined to affect human health and the environment: particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), lead (Pb), and ozone (O_3). Volatile Organic Compounds and NO_2 are precursors to O_3, which is not an emitted source but is formed by these pollutants in the atmosphere (40 CFR Part 50). The U.S. Environmental Protection Agency (USEPA) has developed National Ambient Air Quality Standards for these criteria pollutants to protect public health and welfare (USEPA 2021a). The MPCA has also established state standards (Minnesota Ambient Air Quality Standards) for hydrogen sulfide (H_2S) and PM (Minn. R. part 7009.0080; Revisor of Statutes, State of Minnesota 2017). The MPCA is responsible for compliance with state and federal standards for air quality in Minnesota.

The Air Quality Index (AQI) was developed by the USEPA to provide a simple, uniform way to report daily air quality conditions (AirNow 2021). Minnesota AQI numbers are determined by hourly measurements of five pollutants (MPCA 2020a). The pollutant with the highest AQI value determines the overall AQI for that hour (MPCA 2020a). These five pollutants include:

- Fine particulate matter ($PM_{2.5}$);
- Ground-level ozone (O_3);
- Sulfur dioxide (SO_2);
- Nitrogen dioxide (NO_2); and
- Carbon monoxide (CO).

Many factors can lead to poor air quality days. Air pollution levels in Minnesota come from local pollutant emissions from sources such as industries, cars, and homes and from pollution that is blown into Minnesota from surrounding areas (MPCA 2020a). The MPCA monitors outdoor air quality at over 50 air quality monitoring stations that are dispersed across the state. Collected data are used to determine whether Minnesota meets the federal and state air quality standards and health benchmarks (MPCA 2020b). The MPCA ranks air quality breakpoints based on the reported levels of indicators and places them into one of five narrative categories: good, moderate,

unhealthy for sensitive groups (USG), unhealthy, and very unhealthy (MPCA 2020a). The AQI categories, ranks, and values are summarized in **Table 5.12**.

Table 5.12
Minnesota Pollution Control Agency Air Quality Index Breakpoints

Category	AQI Value	O_3 (ppb) 8-hour	CO (ppm) 8-hour	SO_2 (ppb) 24-hour	$PM_{2.5}$ ($\mu g/m^3$)	NO_2 (ppb) 1-hour
Good	0–50	0–59	0.0–4.4	0–34	0.0–12	0–53
Moderate	51–100	60–75	4.5–9.4	35–144	12.1–35.4	54–100
Unhealthy for Sensitive Groups	101–150	76–95	9.5–12.4	145–224	35.5–55.4	101–360
Unhealthy	151–200	96–115	12.5–15.4	225–304	55.5–150.4	361–640
Very Unhealthy	201–300	116–374	15.5–30.4	305–604	150.5–250.4	641–1,240

Source: (MPCA 2020a).

The closest AQI monitoring station to the Project ROW is located to the east in Rochester, Minnesota. The Rochester station monitors ozone and fine particulate levels (MPCA 2018). Refer to **Table 5.13** below for the AQI levels for Rochester for the most recent five years of data (MPCA 2021b).

Table 5.13
Air Quality Index for Rochester, Minnesota (2015–2019)

Year	AQI (days)		
	Good	Moderate	Unhealthy for Sensitive Groups
2015	315	49	1
2016	327	36	1
2017	312	53	0
2018	292	69	0
2019	313	51	0

Source: (MPCA 2021b).

Air quality in Rochester has fluctuated over the period of five years from 2015 to 2019, with a varying number of moderate days. No USG days were reported for Rochester from 2017 through 2019. No unhealthy or very unhealthy days were reported over the five-year period (see **Table 5.13**) (MPCA 2021b).

5.5.1.1 Potential Impacts

Construction of the Project may result in direct and indirect emissions of criteria air pollutants and greenhouse gas emissions. These may occur as a result of exhaust emissions from construction equipment and other vehicles, and from fugitive dust that may become airborne during Project ROW clearing or construction activities in dry conditions.

As transmission lines themselves do not appreciably affect air quality, there will be no permanent environmental impacts to air quality from the operation of the transmission line. However, according to the Electric Power Research Institute (EPRI), a small amount of ozone is created during the operation of the transmission line (EPRI 1982) due to corona discharge.

5.5.1.2 Mitigation Measures

Emissions during construction would be expected to be short-term and localized because of the relatively short construction timeframe. In addition, any short-term air quality impacts related to the construction activity that would occur along the Project ROW would be similar to the preexisting agricultural activities already prevalent within the Route. No significant or long-term impacts to air quality are anticipated from the operation of the Project; thus, no mitigation measures are proposed during operation.

The Applicant will employ BMPs, as necessary, to minimize the amount of fugitive dust and emissions created by construction activities, including the following:

- Minimizing idling of construction vehicles;
- Ensuring that construction equipment is properly tuned and maintained prior to and during on-site operation; and
- Using mechanical sweepers on paved surfaces where necessary to prevent dirt buildup, which can create dust.

Typically, ozone production during fair conditions is not detectable, and ozone production during rain events is only detectable using specialized methods (EPRI 1982). Transmission line design can also affect ozone production. As the diameter of the conductor increases relative to the voltage, the corona discharge and associated ozone creation decreases. Additionally, ozone creation is greatly reduced when utilizing bundled conductors instead of single conductors. The use of conductor alternatives proposed for use by the Applicant for 161 kV transmission lines complies with industry BMPs regarding ozone production and corona discharge. This use complies with the recommended BMPs for reducing corona discharge of a 161 kV transmission line. Therefore, due to the design and operating voltage, the Project is not anticipated to have a significant impact on the environment through ozone creation.

5.5.2 Surface Water

The Route intersects three sub-watersheds of the Upper Mississippi River Basin (USEPA 2021b). All three are part of the Upper Mississippi—Region 7 water resource region, as defined by the USGS, and are defined by Hydrologic Unit Codes (HUC). Approximately 16.0 miles of the Zumbro Watershed (HUC 07040004) are crossed by the Proposed Alignment. The Proposed Alignment would also cross approximately 10.6 miles of the Root River Watershed (HUC

07040008). Approximately 0.2 miles of the Proposed Alignment would intersect the Upper Cedar Watershed (HUC 07040201) near the intersection of 210th Avenue and 720th Street.

According to the USGS National Hydrography Dataset (NHD), the Proposed Alignment intersects no waterbodies (lakes or ponds) but does intersect approximately 22 watercourses that comprise rivers, streams, and ditches (USGS 2020) (**Appendix I - Figure 5.9 - Surface Waters and Floodplains**). Approximately 5.7 miles of watercourses cross the Route.

Five of these watercourses are streams that are designated as Public Waters Inventory (PWI) streams with designated 50-foot buffer requirements according to the Minnesota Buffer Law (MNDNR 2021d). These include the Root River, Sargeant Creek, and three unnamed creeks. Two unnamed creeks are tributaries to Dodge Center Creek. The first crosses the Proposed Alignment at its northern end, and the second crosses the Proposed Alignment near the center of the alignment. The third unnamed creek crosses the southern portion of the Proposed Alignment and is a tributary of Sargeant Creek. The Root River and Sargeant Creek are both located in the southern portion of the Proposed Alignment (**Table 5.14; Appendix I - Figure 5.9).** In addition, the area within 300 feet of each side of Sargeant Creek is mapped within the Dodge County Shoreland Overlay District. Major essential services, including transmission lines of at least 34.5 kV, may be permitted within the Shoreland Zoning District (Dodge County 2017).

Table 5.14
Minnesota Designated PWI Streams and Rivers
Crossed by the Proposed Alignment

Waterbody Name	Number of Crossings
Root River (M-009)	1
Sargeant Creek (M-009-065)	1
Unnamed Creek (M-009-065-001)	1
Unnamed Creek (M-034-056-004-021-002)	1
Unnamed Creek (M-034-056-004-021-005)	1

The MNDNR commissioner may formally designate lakes for wildlife management under the authority of Minn. Stat. § 97A.101, subdivision (subd.) 2(a). No MNDNR-designated wildlife lakes, or identified outstanding resource value waters or trout streams, are found within the Route (MNDNR 2016a).

The Clean Water Act (CWA) mandates that each state publish a list of impaired waters (waterbodies that do not meet water quality standards due to excessive pollution) every two years under Section 303(d) of the CWA. In Minnesota, the MPCA has jurisdiction over determining 303(d) waters and publishes this bi-annual list, known as the 303(d) list. The majority of impairments to surface waters in the state are caused by airborne sources such as coal-fired power plants that release mercury into the atmosphere and agricultural sources (fecal coliform, dissolved oxygen, turbidity, excess nutrients/eutrophication). Due to turbidity, the North Branch of the Root

River is the single listed impaired water that is crossed by the Project ROW (MPCA 2016) (see **Appendix I - Figure 5.9**).

In addition to the above Section 303(d) authority, the MPCA has jurisdiction over the CWA Section 401. Section 401 requires that projects that discharge into jurisdictional waters of the United States (WOTUS) obtain a Water Quality Certification in compliance with state and federal water quality regulations.

5.5.2.1 Potential Impacts

Potential temporary impacts to surface water and floodplain resources could occur during project construction when activities could result in increased turbidity of surface waters from soil erosion, fuel or chemical leaks from equipment near surface water areas, and physical disruption to vegetation and wildlife habitat bordering streams. As the Project is currently designed, the highest potential for these temporary impacts would occur at the 22 NHD watercourse crossings. No standing waterbodies such as ponds or lakes would be crossed by project infrastructure. No impacts are expected to designated wildlife lakes and special waters.

Runoff from construction area surface disturbance could enter surface waters during installation/removal of temporary and permanent culverts. This could result in localized increases in turbidity and sediment load in adjacent streams. Similar impacts could occur when collection lines are installed beneath waterway surfaces via open cut methodology or crossing of stream areas by crane path walks. Direct negative impacts to water quality could result in indirect detrimental impacts to aquatic wildlife and habitat.

Potential temporary impacts to surface water quality could occur from inadvertent spills or release of construction equipment fuel or construction activity chemicals. Direct negative impacts to water quality from fuel or chemical contamination could result in indirect detrimental impacts to aquatic wildlife and habitat.

Temporary and permanent impacts could occur should construction activities require clearing of woody vegetation. Similarly, such impacts to herbaceous vegetation could occur during construction area clearing and equipment operation. Direct negative impacts to vegetation resources could cause indirect negative impacts to wildlife habitat and individual organisms.

Permanent impacts to streams and ditches will be largely avoided by completely spanning the beds and banks of these features. In the case of the five PWI watercourses, the spans would also include the required 50-foot protective buffers. Likewise, the 600-foot Dodge County Shoreland Overlay District associated with Sargent Creek is well within the span capabilities of the Project. Thus, permanent impacts within PWI protective buffers and the Dodge County Shoreland Overlay District will be avoided to the extent practicable.

Waters designated by the state of Minnesota as Public Waters (Minn. Stat. § 103G.005, subd. 15) are regulated by the MNDNR. These waters comprise PWI as set forth in Minn. Stat. § 103G.005, subd. 15 (MNDNR 2021e). The MNDNR requires a license to cross PWI waters with an electric transmission line (Minn. Stat. § 84.415). While such project activity is not anticipated, the MNDNR would require a Public Waters Work Permit should the course, current, or cross section of any water listed in the PWI be altered.

5.5.2.2 Mitigation Measures

The Applicant will work with the appropriate agencies to ensure all proper permits, licenses, and approvals are obtained for temporary impacts to surface water features from crossings by span. All conditions of approval and required mitigation for these permits would be integrated during project construction.

Other mitigation measures will be incorporated to minimize temporary surface water impacts during the construction of this Project. The Applicant will apply for a National Pollutant Discharge Elimination System (NPDES) Permit from the MPCA, which will include development of a SWPPP. The SWPPP would systematically employ BMPs for the protection of surface waters from erosion resulting from construction activities. BMPs consistent with the MPCA Stormwater BMP Manual would be employed to contain excavated material and assure no drainages would be impeded. These will include specific topsoil protection actions, protection of disturbed and exposed soil, and revegetation of temporary surface disturbance with appropriate plant species. Temporary culverts or other temporary crossing devices would be utilized to maintain proper drainage in accordance with the SWPPP and any permit requirements.

With avoidance by spanning, and the described mitigation measures, negligible residual impacts to surface water are expected from project construction and operations. Negligible impacts are expected to result in no increased turbidity in the impaired Root River.

5.5.3 Groundwater

Minnesota contains six distinct groundwater areas (MNDNR 2020a). The Route is located primarily within the South-central Province (Province 2) and, to a lesser extent, the Southeastern Province (Province 3). Approximately 655 feet of the Proposed Alignment crosses Province 3 along the southeastern portion of the Route in Mower County. Province 3 has thin or no unconsolidated sediments over bedrock with productive aquifers. The remainder of the Proposed Alignment crosses Province 2, which has clayey overburden with limited use surficial or buried sand aquifers. The sedimentary bedrock is commonly used for a groundwater supply (MNDNR 2001). The general availability of groundwater from bedrock aquifers is good in both Provinces 2 and 3 (**Appendix I - Figure 5.10**).

The Minnesota Department of Health (MDH) manages the Minnesota Well Index, Source Water, and Wellhead Protection Programs. The Minnesota Well Index is a database that contains groundwater well information for more than 340,000 wells in Minnesota (MDH 2019). Review of the Minnesota Well Index indicates that 10 wells are located within the Route with depths ranging from 0 to 200 feet below the surface. One well of an unknown depth is located within the Project ROW.

5.5.3.1 Potential Impacts

Impacts to groundwater resources and wells are not expected from project construction due to abidance of setback requirements. As a best practice, transmission line structures will be set back from known well locations following state and county standards.

Minimal water-related needs for construction and operations are expected to be fulfilled with either well or rural water service. The Project therefore has no need for groundwater use, nor will it result in intrusion into groundwater systems.

Wells in the Route typically range from 75 feet to 200 feet deep. This is significantly deeper than the maximum project structure foundation depth, which is not expected to exceed approximately 50 feet. Therefore, as no intersection is anticipated, no impacts from structure foundations to existing water wells is expected.

5.5.3.2 Mitigation Measures

Because project construction and operations are not expected to impact groundwater resources, no additional mitigation is proposed.

5.5.4 Floodplains

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps do not exist for Dodge County but are available for the entirety of the Route within Mower County. Digital floodplain data was provided by FEMA for Dodge County. According to FEMA maps and data, approximately 1.2 acres of mapped 100-year floodplains cross into the Dodge County portion of the Project ROW, including approximately 1.1 acres associated with the previously mentioned tributary to Dodge Center Creek and approximately 0.04 acres associated with the South Fork of the Zumbro River (FEMA 2018). The rest of Dodge County and the entire area of the Route and ROW located within Mower County has been mapped as having minimal flood hazard (Zone X) (see **Appendix I - Figure 5.9**).

5.5.4.1 Potential Impacts

Potential temporary impacts to floodplain resources could occur during project construction from soil erosion and deposition or runoff, fuel or chemical leaks from equipment, and physical disruption to vegetation and wildlife habitat within the floodplain.

Loosened soil from construction area surface disturbance could be carried by wind or precipitation events. This could result in localized loss, or deposition, of soil within floodplains. Contamination impacts are also possible from the inadvertent spill or release of construction equipment fuel or chemicals while construction activities are occurring within the floodplain.

Temporary and permanent impacts could occur should construction activities require clearing of woody vegetation. Similarly, such impacts to herbaceous vegetation could occur during construction area clearing and equipment operation.

5.5.4.2 Mitigation Measures

Project design included efforts to minimize impacts to floodplains by avoidance, when feasible. Where floodplain crossings by the transmission line are necessary, they will be made in locations narrow enough to facilitate pole spanning to avoid placing transmission structures within floodplains. Should the placement of transmission structures in floodplains be necessary, permitting will be sought as appropriate, and any necessary mitigation will be implemented.

Other mitigation measures will be incorporated to minimize temporary impacts to floodplains during the construction of this Project. The Applicant will apply for an NPDES permit from the MPCA, which will include development of a SWPPP. The SWPPP would systematically employ BMPs for the protection of floodplain areas from erosion resulting from construction activities. BMPs consistent with the MPCA Stormwater BMP Manual would be employed to contain excavated material, including specific topsoil protection actions to protect disturbed and exposed soil, and revegetation of temporary surface disturbances with appropriate plant species.

With avoidance by spanning, and the described mitigation measures, negligible residual impacts to floodplain areas are expected from project construction and operations. These would not be expected to impact the function of the floodplain.

5.5.5 Wetlands

A survey for wetlands within the Project ROW has not been completed. The description of wetlands and watercourses that follows is derived from a desktop analysis of available data. The USFWS National Wetlands Inventory (NWI) estimates approximately 3.2 acres of 16 wetlands and watercourses occur within the Project ROW (**Table 5.15**).

Table 5.15
National Wetlands Inventory Features Crossed by the Project Right-of-Way

NWI Classification	Count of Features in Project ROW	Area of Features in Project ROW (acres)
Palustrine Emergent (PEM)	14	3.0
Palustrine Forested (PFO)	0	0
Palustrine Scrub/Shrub (PSS)	1	0.1
Riverine Waters	1	0.1
Total	**16**	**3.2**

The majority of wetland features within the Project ROW are associated with watercourses (discussed in **Section 5.5.2**) (**Appendix I - Figure 5.11)**. Based on aerial photographic interpretation, a moderate number of features are also likely jurisdictional WOTUS due to their apparent connectivity with the Mississippi River, a Traditional Navigable Water.

Calcareous fens are not found within the vicinity of the Project ROW, based on MNDNR data. Calcareous fens are rare and distinctive wetlands characterized by non-acidic peat with a constant supply of calcium carbonate–rich groundwater. This specialized environment is dominated by a calcium-loving plant community (MNDNR 2018). The closest mapped calcareous fen is approximately 5.9 miles northeast of the Route.

5.5.5.1 Potential Impacts

Negligible impacts to wetlands are expected from project construction and operations. No NWI-mapped forested wetlands occur in the Project ROW. Potential impacts to scrub/shrub wetlands

from tree trimming and woody vegetation removal for the maintenance and operation of the Proposed Alignment is unlikely, given only 0.1 acre of these wetlands occurs within the Project ROW (see **Table 5.15**). Temporary impacts to wetlands may occur but will be minimized as described below.

5.5.5.2 Mitigation Measures

Project routing included identifying and avoiding potentially jurisdictional wetland areas. As discussed above, very few wetlands would be intersected by the Project ROW (see **Table 5.15**), which is in part due to the use of existing road ROW. NWI-identified wetland resources will be field verified and delineated prior to construction. Every attempt to avoid wetlands will be made during final design. With average spans of 500 to 800 feet, transmission line structures will be sited to avoid or minimize adverse impacts to these resources. As most of the Project is planned within road and transmission line ROW, ample access to the Project ROW is anticipated, which will further reduce the potential for wetland impacts.

Unavoidable indirect temporary impacts to wetlands will be minimized by implementing BMPs to protect topsoil, minimize soil erosion, and revegetate disturbed areas with non-invasive species. Wetland soils and steep slopes can also be subject to sheet and rill erosion or slumping. Depending on site-specific needs, seasonal construction scheduling, cutting vegetation where roots remain, temporary timber matting, erosion control blankets, mulch, straw bales, rolls, tackifiers, temporary seeding, hydro-mulch, and sediment fence may be used to manage soil erosion. Where feasible, a narrower construction corridor may also be considered to minimize impact.

If required, appropriate wetland permits, as well as an NPDES permit, will be obtained prior to project construction. No more than negligible and temporary residual impacts to wetlands are anticipated due to use of design considerations for avoidance and the implementation of protective BMPs. While certainly not anticipated, compensatory mitigation would be coordinated with the appropriate jurisdictional agency should it becomes necessary.

5.5.6 Flora

Because the Proposed Alignment is primarily within existing road and transmission line ROW adjacent to agricultural fields, the dominant land cover types within the Project ROW are developed open space and cultivated crops. Developed open space (approximately 45 percent of the Project ROW) includes managed roadside vegetation; cultivated crops account for approximately 43 percent of the Project ROW (MRLC 2019). Land cover types are summarized in **Table 5.2** and illustrated in **Appendix I - Figure 5.3**. (Note: although difficult to see at the scale of **Appendix I - Figure 5.3**, narrow bands of developed open space (roadside vegetation) parallel most of the roads shown). The developed, low-intensity category, which includes smaller roadsides, accounts for approximately 8 percent of the Project ROW area. Approximately 3 percent of the Project ROW comprises hay fields, pastures, and other herbaceous vegetation that could represent more native plant communities. Less than 0.1 acre of deciduous woodland is traversed by the Project ROW.

In terms of natural vegetation, the Route is located within the Minnesota and Northeast Iowa Morainal Section and Oak Savannah Subsection (222Me) of the Eastern Broadleaf Forest Province (MNDNR 2021a). The Eastern Broadleaf Forest Province spans approximately 12 million acres of eastern North America. Historically, the dominant vegetative communities within the Oak

Savannah Subsection were tallgrass prairie and bur oak savanna; however, the majority of this area is now converted to farmed land. Tallgrass prairies are identified by the presence of native grasses such as little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*), as well as an assortment of herbaceous forbs. Oak savannas are identified by a low density of canopy cover, usually less than 50 percent. Common vegetation associated with bur oak savannas include bur oak (*Quercus macrocarpa*), big bluestem, switchgrass, Indiangrass, and numerous forbs.

The Oak Savanna Subsection is a fire-prone region historically occupied by relatively expansive bur oak savanna. Oak savanna typically is concentrated at the ecotone of prairie and forested landscapes. Overall vegetation structure can be characterized as scattered, mature trees dominated by bur oak, with minimal closed canopy and a continuous tallgrass prairie understory. Areas with denser forest canopy (*i.e.*, >30 percent canopy cover) are thought to be a direct result of fire suppression (NatureServe 2020). Wetlands occupy an important role in this ecosystem.

Modern settlement throughout southeastern Minnesota has converted much of this ecological region to cultivated agricultural lands as well as residential housing and urban centers (MNDNR 2021a). No ecological subsection in Minnesota's Eastern Broadleaf Forest Province is currently represented by more than 3.5 percent oak savanna (MNDNR 2021a), including the Oak Savanna Subsection spanned by the Route. The dominant land cover encompassed by the Project ROW is developed, open space and cultivated crops, most notably corn varieties (*Zea mays*) and soybean (*Glycine max*). Pasture grasses, such as alfalfa (*Medicago sativa*) and winter wheat (*Triticum aestivum*), account for a smaller percentage of the land cover.

An aerial interpretation of the above-described natural vegetation areas intersecting the Project ROW indicates that most of the deciduous woodland areas are isolated wooded areas associated with homesteads or small riparian corridors. The Proposed Alignment parallels the edge of some wooded areas, as it is primarily confined to road and transmission line ROW. The largest woodland crossed by the Project ROW is located where the Proposed Alignment would cross the North Branch Root River. There is no indication that wooded areas traversed by the Project ROW are consistent with remnant bur oak savanna or other woodlands that MNDNR would designate as native plant communities of particular conservation focus.

Aerial interpretation of the approximately six acres of herbaceous vegetation within the Project ROW indicates that much of this acreage is associated with wetlands and watercourses that cross existing roads. Additional acreages may be associated with agricultural buffer strips, pastures, and revegetated areas.

USGS Gap Analysis Program (GAP) (USGS 2021) data indicate the following ecosystem classifications that intersect the Project ROW (refer to **Appendix I - Figure 5.12**). Together, these plant communities account for 1.2 percent of the Project ROW. These small areas of native vegetation represent the highest potential for plant species richness within the Project ROW:

- Harvested Forest–Grass/Forb Regeneration
- Central Tallgrass Prairie
- Central Interior and Appalachian Floodplain Systems
- North-Central Interior Dry-Mesic Oak Forest and Woodland

- Recently burned shrubland

These plant communities are concentrated within the southern half of the Project ROW. The Project ROW crosses approximately six clusters of relatively native vegetation. These habitat crossings occur in areas where roads, existing overhead electric transmission lines, or farmsteads already bisect the native vegetation areas.

5.5.6.1 Sites of Biodiversity Significance (MNDNR)

The Minnesota Biological Survey (MBS) uses a classification ranking system to denote the level of biological diversity characteristics of a particular site. Ranking classifications are based on the degree to which the occurrences of the rarest species, including the rarest native plant communities or the most intact native ecosystems, are present (MNDNR 2020b).

The MBS identifies a single Site of Biodiversity Significance, Sargeant 23, that overlaps approximately 1.7 acres within the Route in Mower County (MNDNR 2020c). The Project ROW does not intersect this Site of Biodiversity Significance. The site has a biodiversity significance ranking of "Below" (**Table 5.16**; refer also to **Appendix I - Figure 5.13**). Sites ranked as "Below" lack occurrences of rare species and natural features or do not meet the minimum MBS threshold for biodiversity significance. These sites may include areas of conservation value at the local level, such as habitat for native plants and animals, corridors for animal movement, buffers surrounding higher-quality natural areas, areas with high potential for restoration of native habitat, or open space (MNDNR 2020b).

Table 5.16
Sites of Biodiversity Significance Associated with the Route

Site of Biodiversity Significance Ranking	Number of Sites within the Route	Area (acres)	Number of Sites within the Project ROW	Area (acres)
Below	1	1.7	0	0
Moderate	0	0	0	0
High	0	0	0	0
Outstanding	0	0	0	0

5.5.6.2 Native Plant Communities

The MNDNR specifically defines recognizable native plant community units. Oak savanna is an example of one such designated natural community. MNDNR-designated native plant communities are found in the project vicinity; however, the Proposed Alignment does not intersect any of these defined communities. The closest native plant communities to the Proposed Alignment (Southern Wet-Mesic Hardwood Forest and Southern Mesic Oak-Basswood Forest) are both located approximately 0.4 miles north of the Route. Similarly, native prairies occur within the region but do not intersect the Route. The nearest designated native prairie—Mesic Prairie (Southern)—is located south of Hayfield, approximately 2.4 miles southwest of the Route.

5.5.6.3 Potential Impacts

Construction and subsequent maintenance of the Project ROW are expected to primarily impact common vegetation associated with road ROW, including roadside ditches, as well as cultivated crops where the Proposed Alignment does not follow existing roadways. As approximately 1.2 percent of the Project ROW supports natural vegetation, very few impacts to this resource are anticipated during construction and maintenance of the Proposed Alignment. Likewise, construction and maintenance of the Proposed Alignment will not impact recognized areas of high-quality biodiversity significance or specifically designated native plant communities. However, project construction will result in temporary unavoidable impacts to existing vegetation.

While the Route intersects one MBS Site of Biodiversity Significance (Sargeant 23; ranked "Below"), no impacts to this site are expected as it is located outside of the Project ROW. No impacts are expected to MBS Sites of Biodiversity Significance or native plant communities.

For impacts to cultivated crops and a subsequent plan for mitigation, please see **Section 5.3.1** of this permit Application. For impacts to wetlands and a subsequent plan for mitigation to those specific plant communities, please see **Section 5.5.5** of this permit Application.

5.5.6.4 Mitigation Measures

Temporarily disturbed areas will be revegetated per details outlined in **Section 4.3**. Temporary construction areas will be reseeded unless the area is an agricultural field. For non-agricultural areas, a seed mix specified by the Dodge County Highway Department, Mower County Public Works, or MnDOT will be used. In the portion of the Project that will be co-located with the existing GRE transmission line, areas will be reseeded using a seed mix specified by GRE. In areas that are not within road ROW, a seed mix of native plant species appropriate to the region will be constructed in coordination with the local NRCS. Reseeded areas will be monitored by DCW to confirm successful revegetation in compliance with the SWPPP. Stormwater BMPs, such as silt fence and straw wattle, will not be removed until cover by seeded species is established. If the area is in a tillable agricultural field, a temporary cover crop may be planted to minimize soil loss due to erosion.

The Applicant will implement BMPs during construction in order to control and prevent the introduction of invasive species to the Route. These BMPs include limiting invasive species spread via maintenance equipment and vehicles through early detection of invasive species, cleaning mowers and bladed equipment, minimizing disturbance, limiting traffic through weed-infested areas, and frequently inspecting equipment storage areas for weeds. In the event that invasive weeds are detected within the Project ROW, weed control through timing, cutting, and targeted herbicide application consistent with weed control BMPs published by the MnDOT and MDA will be conducted (MnDOT 2020b; MnDOT 2020c; MDA 2020a; MDA 2020b).

Because no native prairie has been identified in the Route, impacts to native prairie are not anticipated. Therefore, preparation of a Prairie Protection and Management Plan for the Project is not planned.

5.5.7 Fauna

Within the Route, wildlife associated with agricultural landscapes and scattered natural vegetation remnants, wetlands, and wooded areas are expected to be prevalent. These wildlife species include mammals, various bird taxa, fish, aquatic invertebrates, and terrestrial insects.

Many common mammal species have the potential to utilize the Route, including white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), red fox (*Vulpes vulpes),* gray fox (*Urocyon cinereoargenteus*), Virginia opossum (*Didelphis virginiana*), gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*), and striped skunk (*Mephitis mephitis*). The larger mammal species (*e.g.*, deer, raccoon, fox) are most likely to utilize the scattered wooded areas and uncultivated grassland areas within the Route, while the smaller mammal species are typically generalists, occupying most habitat types present within the Route, including cultivated fields.

The Route is within the range of several bat species including little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), evening bat (*Nycticeius humeralis*), tricolored bat (*Perimyotis subflavus*), and the northern long-eared bat (*Myotis septentrionalis*), which is listed as threatened under the Endangered Species Act (ESA). Many of these bats are fairly common in Minnesota, with the exception of evening bat, tricolored bat, and northern long-eared bat. While the ranges of these bat species overlap the Route, their preferred habitat includes larger, connected forested areas and water sources such as streams, ponds, and wetlands. Most of the forested areas within the Route are small (less than 8 to 10 acres in size) and are associated with homesteads. Two relatively larger forested areas are intersected by the Route: one along 210th Avenue and another along 310th Street (see **Appendix I - Figure 5.12**). Within the Route along 210th Avenue, the forested area is the edge of a larger (greater than 8 acres) woodlot associated with a homestead; however, no woodland is located within the Project ROW at this location. Within the Route along 310th Avenue the forested area is associated with the North Branch Root River. Here, trees are located just within the Project ROW at this crossing location, which corresponds to an existing transmission line and road ROW. As described in **Sections 5.5.2,** and **5.5.5**, relatively few streams and wetlands (water features that provide foraging habitat for bats) are crossed by the Route; the Root River is the largest stream crossing.

A wide variety of avian species occur in southeastern Minnesota, and many are likely to utilize the habitats present within the Route. According to eBird records from January 2000 to December 2020, 266 avian species have been recorded in Dodge and Mower counties (eBird 2020). The USGS Breeding Bird Survey contains records for breeding birds along two routes in Mower County (Austin 50055, Le Roy 50054). From 1993 to 2019, 108 unique breeding bird species were recorded along these routes (Pardieck et al. 2020). Avian species listed under the ESA and by the state of Minnesota are further discussed in **Section 5.6.1**.

The USFWS maintains a list of all species protected by the Migratory Bird Treaty Act, 50 CFR § 10.13 (1973). This list includes over one thousand species of migratory birds, including eagles and other raptors, waterfowl, shorebirds, seabirds, wading birds, and passerines.

Known nest locations, particularly raptor nest locations, are of interest to DCW since regular flights to and from nests may intersect the Proposed Alignment. Several raptor species nest within

Dodge and Mower counties, including bald eagle (*Haliaeetus leucocephalus*), which are protected under the Bald and Golden Eagle Protection Act (BGEPA; U.S. Congress 1940). MNDNR designates certain species of special concern (SPC) if they are deemed extremely uncommon in Minnesota or have highly specific habitat requirements. Other species are designated as Species in Greatest Conservation Need (SGCN) if they are identified as rare or vulnerable to decline. Six diurnal raptor species with the potential to occur in Dodge and Mower counties meet these criteria: northern goshawk (*Accipiter gentilis*; SPC), red-shouldered hawk (*Buteo lineatus*; SPC), peregrine falcon (*Falco peregrinus*; SPC), Swainson's hawk (*Buteo swainsonii*; SGCN), northern harrier (*Circus hudsonius*; SGCN), and American kestrel (*Falco sparverius*; SGCN) (MNDNR 2016b). Of these species, northern harrier and American kestrel have several records of possible and probable nesting throughout Dodge and Mower counties, and one documented observation of a Swainson's hawk was made during the breeding season in Mower County (Pfannmuller et al. 2017). Other common raptor species are more likely to nest within the Route, including red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Accipiter cooperii*), and sharp-shinned hawk (*Accipiter striatus*).

Raptor nest surveys were conducted as part of the pre-construction due diligence for the DCW Wind and Transmission Projects (Atwell 2017a; HDR 2017; Foo 2020; Tuma and Foo 2020; Foo and Pickle 2021). No known raptor nests occur within the Project ROW; the nearest documented nest is more than approximately 1,062 feet from the edge of the Project ROW. The 2017 studies focused on the DCW Wind Project site and a previously identified potential transmission line area. This study did not completely cover the current Route. The majority of raptor nests detected during the 2017 raptor nest survey (which covered only the northwestern half of the current Route) were associated with red-tailed hawks, including one occupied active red-tailed hawk nest within 1 mile of the Proposed Alignment (Atwell 2017a). No bald eagle nests were documented in the vicinity of the portion of the Route that was covered by the 2017 nest surveys.

A spring 2021 ground-based survey covered all eagle nesting habitat within 1.0 mile of the Route (Foo and Pickle 2021). Generally, results of these surveys indicate that raptor stick nests occur in relatively low density in the overall vicinity of the Route, likely due to the limited amount of wooded habitat. Eagle nest surveys of the Route in 2021 documented one occupied active bald eagle nest 5,289 feet from the edge of the Project ROW, east of the intersection of 690th Street and Trunk Highway 56. This nest was also documented in 2020. A ground-based nest check conducted in December 2020 detected two raptor nests not previously identified; both appeared to be unidentified raptor (non-eagle) stick nests, and both were located outside of the Route. One is located approximately 1,062 feet from the edge of the Project ROW north of where the Proposed Alignment parallels 710th Street, and one is located approximately 2,003 feet from the edge of the Project ROW south of where the Proposed Alignment parallels 710th Street. Additional information related to known bald eagle nest resources in relation to the Route are discussed further below in **Section 5.6.1**.

Aquatic fauna (both vertebrate and invertebrate) are restricted to the few rivers, small creeks, and ditches within the Route. Twenty-two NHD streams, five of which are PWI streams (see **Section 5.5.2**), occur along the Route. Based on review of aerial imagery, all of these streams are narrow and perennial, which is common in southeastern Minnesota, and provide typical habitat for aquatic wildlife. The North Branch Root River crosses the Project ROW where it parallels 310th Street (Mower County) and is the largest watercourse within the Route. MNDNR Natural Heritage

Information System (NHIS) data indicates that five mussel species, none of which are listed under the ESA or by MNDNR, were identified in the North Branch Root River in 2002. NHIS data pertaining to SPC fish species, including redfin shiner (*Lythrurus umbratilis*) and suckermouth minnow (*Phenacobius mirabilis*), indicate these species may be associated with the North Branch Root River; these species are further discussed in **Section 5.6.1**. As noted above, the Project ROW follows existing transmission line and road ROW where it crosses the North Branch Root River.

For more information, please see **Section 5.1.1** and **Section 5.5.6,** which discuss the different land cover types, available habitat, and natural communities that harbor the limited wildlife diversity that is found along the Route.

5.5.7.1 Potential Impacts

Temporary impacts to wildlife and wildlife habitats within the Project ROW would be associated with the construction of the Project. Native habitats within the Project ROW are highly fragmented and scattered, and cultivated crops are the primary land cover. Construction may temporarily disturb these areas. Maintenance of the Project ROW may permanently remove (in the case of woody vegetation) an extremely limited amount of wildlife habitat in an already highly fragmented area.

Any permanent impacts to wooded habitats, particularly in association with forested riparian corridors, have the potential to impact bat maternity roost trees, should they be present. The ESA-listed, threatened northern long-eared bat may occur within Dodge and Mower counties; however, to date no known roost trees or hibernacula have been documented in these counties (MNDNR and USFWS 2020). For additional discussion about potential impacts to this species, please refer to **Section 5.6.1.3**.

The Proposed Alignment likely will not pose a significant barrier to the movement or migration of most terrestrial wildlife species expected to occur in this region. The Project ROW does not span any officially designated conservation corridors or other notable wildlife habitat corridors (*e.g.,* Important Bird Areas (National Audubon Society 2021), or WMAs). As noted in **Section 5.5.5.** the Project ROW crosses the eastern edge of the Ashland Township Wetland Complex (a planted grassland/wetland complex). The Proposed Alignment runs along the edge of the complex parallel to an existing roadway (170th Avenue), more than 1,000 feet from the open water wetland.

Of the animal species that reside or seasonally occur within the Route, avian taxa are most likely to experience direct impacts from the Project once it is operational. Transmission lines and distribution lines have been documented to pose hazards to birds, through collision mortality and electrocution (Bevanger 1994; Erickson et al. 2005). During operation of the proposed 161 kV transmission line, no electrocution risk to perching birds is expected, given the size and clearances associated with this voltage (APLIC 2006). However, collisions could still occur, depending on location and surrounding habitat features.

Known nest sites, particularly raptor nest sites, near the Project ROW are of concern for potential impacts from project construction, as regular flights to and from nests may intersect the Proposed Alignment.

5.5.7.2 Mitigation Measures

For terrestrial wildlife habitats, the Proposed Alignment design will be engineered to the extent practicable to avoid placement of poles and support structures within wooded habitat, particularly within sensitive habitats (*e.g.,* streams, wetlands). To the greatest extent practicable, these habitats will be spanned, and construction practices will avoid bringing heavy equipment through these habitats. As noted above, the forested riparian area associated with the North Fork Root River is the most significant wooded riparian habitat within the Route; however, there are few trees within the proposed Project ROW, and, thus, little to no tree removal would be necessary for construction or maintenance of the Proposed Alignment at this location. For avoidance and impact minimization construction practices associated with wetlands, please refer to **Section 5.5.5**.

In instances where the Project ROW traverses wooded or riverine corridors, the Proposed Alignment will run parallel to an existing electric transmission/distribution corridor and/or roadway, which currently limit wildlife movement. Construction of the Project is not expected to increase limitations to this movement.

DCW will design the Project to follow the appropriate suggested practices outlined by the Avian Power Line Interaction Committee (APLIC) collision manual (APLIC 2012). Particular attention will be paid to portions of the Proposed Alignment that cross surface water features, which have a higher likelihood of attracting wildlife such as waterfowl (APLIC 2006; 2012). MNDNR has requested the use of bird diverters on overhead lines near lakes and rivers or other areas that may attract large concentrations of waterfowl. DCW will continue to coordinate with MNDNR to integrate recommendations into project design to minimize impacts to avian taxa, including nesting raptor species.

5.6 Rare and Unique Natural Resources

5.6.1 Threatened and Endangered Species

5.6.1.1 Endangered Species Act and Bald and Golden Eagle Act

The USFWS provides distribution lists of ESA-listed threatened and endangered species on a county-by-county basis, with a more refined, project-specific assessment available through the Information for Planning, and Consultation system (IPaC; USFWS 2020a). The IPaC database was used to assess the potential presence of ESA-listed species in the vicinity of the Route. IPaC data, using an approximately 1-mile-wide buffer of the Route, indicated that two ESA-listed threatened species may occur within the vicinity of the Route: northern long-eared bat and prairie bush-clover (**Table 5.17** in **Section 5.6.1.2**). Neither of these species have Designated Critical Habitat.

Dodge and Mower counties are within the range of the ESA-listed as threatened northern long-eared bat, which is also listed by MNDNR as an SPC species. In the summer, this *Myotis* species utilizes forested landscapes where summer roosting habitat depends on the availability of suitable roost tree substrate (USFWS 2015). General acoustic bat data collected within the proposed wind project boundary in 2014 indicated that northern long-eared bats may occur in the adjacent wind project area, although the recorded bat calls were not qualitatively reviewed or confirmed to species (Normandeau Associates, Inc. 2014). It is still possible that this species could migrate through the Route during spring and fall migration periods or occur during the summer in larger wooded areas. Desktop habitat review indicates that the majority of the Route does not intersect

preferred northern long-eared bat summer habitat, but the crossing of the North Branch Root River could contain or be adjacent to potential summer habitat.

Prairie bush-clover (*Lespedeza leptostachya)* is the single plant listed as threatened under the ESA with the potential to occur within the Route (USFWS 2020a). Prairie bush-clover is also listed by MNDNR as threatened. This Midwestern bush-clover is endemic to healthy tallgrass prairie systems, particularly those managed through periodic prescribed fire (USFWS 2009). MNDNR indicates that remnant populations in southwestern Minnesota typically occur on dry-mesic prairie slopes with populations concentrated in concave bowls containing gravelly soils (MNDNR 2020d). Populations in southeastern counties are associated with upper slopes of bluff prairies, which may contribute to increased scarcity in this region of the state. MNDNR states that populations that had occurred in level prairie areas prior to widespread cultivation have long since been plowed under and remain exceedingly rare and may have been extirpated (MNDNR 2020d). The Route does not contain remnant prairies that fit the habitat profile to harbor this threatened species.

Bald eagles are afforded protections through the BGEPA. The National Bald Eagle Management Guidelines (NBEMG) guide development projects that may have impacts on nesting bald eagle pairs or nest sites (USFWS 2007). The northwestern portion of the Route was evaluated for active raptor nests via helicopter in April 2020. One occupied active bald eagle nest was identified approximately 5,289 feet from the edge of the Project ROW, east of the intersection of 690th Street and Trunk Highway 56. Ground-based surveys of the Route in December 2020 and March 2021 confirmed the continued presence and occupancy of this bald eagle nest. No other bald eagle nests were documented within 1 mile of the Route. The NBEMG specifies maintenance of a 660-foot avoidance buffer around any known bald eagle nest during the breeding season to protect the nest from construction activities. Because the identified bald eagle nest is located outside of the NBEMG-specified buffer for eagle nests on the Route ROW, construction activities would not need to be constrained during the eagle breeding season to protect this nest.

5.6.1.2 Minnesota Department of Natural Resources-Listed Species and Rare Features

In April 2020, DCW requested a formal NHIS data summary and review of rare species and other significant natural resource features from the MNDNR Natural Heritage Program (NHIS Correspondence # ERDB 20170420) for a broad study area encompassing the Route. This database represents the most up-to-date repository of records for rare or significant species occurrences. No response from the Natural Heritage Program has been received to date. A preliminary desktop query was run to assess the area included in a 1-mile buffer of the Route. This yielded records for six species with potential to occur in this area: suckermouth minnow, redfin shiner, loggerhead shrike (*Lanius ludovicianus)*, wild quinine (*Parthenium integrifolium*), rattlesnake master (*Eryngium yuccifolium*), and Sullivant's milkweed (*Asclepias sullivantii*;). MNDNR lists loggerhead shrikes and wild quinine as endangered, and Sullivant's milkweed is listed as threatened. The two fish species and rattlesnake master are SPC and are tracked by MNDNR but do not have specific legal protections within the state. The status of these species is summarized in **Table 5.17**.

Table 5.17
Endangered Species Act– and Minnesota Department of Natural Resources–Listed Species within the Route in Dodge and Mower Counties, Minnesota

Common Name	Scientific Name	Record within Project ROW	Status[1]	
			MNDNR	ESA
Loggerhead shrike	*Lanius ludovicianus*	No	E	-
Northern long-eared bat	*Myotis septentrionalis*	No	SPC	T
Sullivant's Milkweed	*Asclepias sullivantii*	No	T	-
Prairie bush-clover	*Lespedeza leptostachya*	No	T	T
Redfin shiner	*Lythrurus umbratilis*	Yes	SPC	-
Suckermouth minnow	*Phenacobius mirabilis*	Yes	SPC	-
Wild quinine	*Parthenium integrifolium*	No	E	-
Rattlesnake master	*Eryngium yuccifolium*	No	SPC	-

[1] Status: E = Endangered, SPC = Species of Special Concern, T = Threatened.

Loggerhead shrikes are medium-sized songbirds that typically utilize open habitats with scattered trees and shrubs, particularly pasture where barbed wire fencing is present (Eliason 1996). This region of southeastern Minnesota coincides with a large segment of the state's remnant population of the species (Eliason 1996; Pfannmuller et al. 2017; eBird 2020). NHIS data noted that one adult and two immature birds were observed in August 2003 over a four-day period approximately 0.5 miles south of Trunk Highway 30. A targeted survey for loggerhead shrikes in 2017 associated with the proposed wind project confirmed the presence of nesting shrikes (one observation of one adult with at least two recently fledged young observed) in Dodge County approximately 4.5 miles northeast of the Route (Atwell 2017b; see **Appendix I - Figure 5.13**). This observation occurred in an area dominated by row crop cultivation, which is the dominant land cover type throughout the Project ROW and vicinity. Thus, it is possible that loggerhead shrikes could utilize some of this habitat within the Route.

Two Sullivant's milkweed records have been documented within 1 mile of the Route. One record, with observations from 2002 and 2009, was documented along 680th Street west of the Proposed Alignment. Another record was observed in 2002 along 150th Avenue, north of the Proposed Alignment. Neither the Route nor the Project ROW intersects the features documented as containing Sullivant's milkweed; the nearest record is approximately 0.5 miles from the Route.

Sullivant's milkweed is a flowering plant native to the extensive tallgrass prairie associated with the Oak Savanna and Rochester Plateau Subsections, with many populations currently known from abandoned railroad ROW and remnant roadside habitats (MNDNR 2021f). The Iron Horse Prairie SNA is located approximately 2.5 miles west of the Project ROW and is known for its population of Sullivant's milkweed (MNDNR 2021g; see **Appendix I - Figure 5.13**). Targeted windshield surveys in August 2020 searched for potential Sullivant's milkweed habitat in the vicinity of the NHIS records and in other areas of potential native tallgrass prairie but did not document any stems of that species (Markhart 2021). The windshield survey reviewed the road ROW and adjacent

fields in the vicinity of previous records of Sullivant's milkweed along 150th Avenue that are north of the Route. On July 23, 2021, a presence/absence survey was conducted within the road ROW on the east and west sides of 150th Avenue, extending from the Route north for approximately one and one-half miles including the area designated as below Sites of Biodiversity Significance that contained records of the species. Per the MNDNR-approved study plan, the qualified botanist conducted meandering walking surveys in the road ROW. No Sullivant's milkweed stems or flowers were documented in this area, indicating the likely absence of this species (Markhart and Voth 2021). The Project ROW does not intersect any mapped native prairie remnants (please see **Section 5.6.2** for more information) or other areas with records of this species.

Redfin shiner (*Lythrurus umbratilis*) and suckermouth minnow (*Phenacobius mirabilis*) are medium-sized minnows. The northern extent of the redfin shiner range includes the Root and Zumbro rivers, where they prefer turbid sections with gravel, silt, or rubble substrates (Becker 1983). NHIS data show one record of nine redfin shiner identified in the North Branch Root River in 2008, near where the Proposed Alignment parallels 310th Street. There are also redfin shiner records from the South Fork Zumbro River, which intersects the Route along 220th Avenue, from as recent as 2008. Similarly, suckermouth minnow habitat in southeastern Minnesota includes the Root and Zumbro river systems as the northern extent of their range. Suckermouth minnows prefer highly turbid streams with gravel substrate (Becker 1983). NHIS records of suckermouth minnow documented four individuals in 2008 and one individual in 2015 in the North Branch Root River near where the Proposed Alignment parallels 310th Street.

Wild quinine is a long-lived flowering species, with a range in Minnesota limited to a few southeastern counties (MNDNR 2020e). Wild quinine in Minnesota is now found only in remnant prairie strips along railroad ROW. One NHIS record of over 25 individuals was documented in 2009 along a township road in Mower County within 1 mile of the ROW, approximately 0.5 miles south of the Route.

Rattlesnake master is a prairie-obligate perennial found in mesic prairie remnants in southern Minnesota (MNDNR 2021h). One NHIS record of more than 35 individuals was documented in 2009 along a township road in Mower County within 1 mile of the ROW, approximately 0.5 miles south of the Route.

The Project ROW does not intersect any rare features listed as rare plants and animals, native plant communities, or geologic features in the MNDNR NHIS Biotics database (MNDNR 2021i). As noted in **Section 5.5.7**, these NHIS data note an animal aggregation comprising five mussel species, none of which have ESA or MNDNR status, identified by a single record in the North Branch Root River in 2002, within 1 mile of the Project ROW.

5.6.1.3 Potential Impacts

As indicated in **Section 5.5.6**, the Project ROW spans a landscape that intersects few biodiverse habitat assemblages. Based on land cover data and review of NHIS data, the probability that the Project ROW will intersect, and impact, ESA-listed species is relatively low, particularly for prairie bush-clover, for reasons noted above.

Population impacts to northern long-eared bats are not likely as no known northern long-eared bat roost trees or hibernacula are known to exist within Dodge or Mower counties. Relatively little woodland clearing will be required for construction and maintenance of the Project ROW. As

noted above, the riparian area associated with the North Fork Root River is the most significant wooded riparian feature that could provide suitable summer habitat for the northern long-eared bat within the Route. Because the Project ROW follows existing transmission line and road at this crossing, little to no tree removal would be necessary for construction or maintenance of the Proposed Alignment at this location.

One bald eagle nest has been identified approximately 5,289 feet from the edge of the Project ROW east of the intersection of 690th Street and Trunk Highway 56. The NBEMG specifies a 660-foot construction activities avoidance buffer around any known bald eagle nest during the breeding season (USFWS 2007). No impacts to the nest tree are anticipated given the distance from the Project ROW, which is greater than the recommended 660-foot buffer. Raptor nest surveys did not document any active state-listed raptor nests within 1 mile of the Project ROW. As noted above in **Section 5.5.7**, avian (including raptor) electrocution risk is not anticipated from the proposed transmission line. However, collisions could still occur, depending on location and surrounding habitat features.

Regarding MNDNR-listed species with NHIS records near the Project ROW, these data indicate that populations of Sullivant's milkweed (threatened), wild quinine (endangered), and rattlesnake master (SPC) could be present in roadside ditches or other grasslands within 1 mile of the Route. Windshield surveys conducted in 2020 for Sullivant's milkweed could not confirm these observations, and 2021 presence/absence surveys did not document any Sullivant's milkweed within the Project ROW. The Project ROW does not cross any mapped native prairies or railroad prairies (the habitats where wild quinine and rattlesnake master could occur), and the NHIS records for these two species are 0.5 miles from the Project ROW. Therefore, these species are unlikely to occur in the Project ROW.

Since state-endangered loggerhead shrikes nest in low height profile vegetation communities, limited suitable habitat may be present along the Project ROW.

Strictly aquatic species, such as the suckermouth minnow, redfin shiner, and mussel assemblages, are not likely to be directly impacted by the construction and operation of the Proposed Alignment as all support structures will be located outside of the ordinary high water mark and the associated 50-foot setbacks from Minnesota public watercourses. This includes the North Branch Root River where these species have been documented (see **Section 5.5.7**).

No native plant communities delineated by MNDNR occur within the Project ROW. Thus, no impacts to these resources are anticipated.

5.6.1.4 Mitigation Measures

Should DCW identify or receive information indicating a roost tree is near or within the Project ROW, no tree clearing would occur within 150 feet of a known roost between June 1 and July 31 in keeping with MNDNR recommendations and the USFWS 4(d) rule for this species within the white nose virus syndrome zone, which includes all of Minnesota (MNDNR and USFWS 2020; USFWS 2020b). Furthermore, the USFWS has published tree clearing recommendations to mitigate for direct impacts to this species (USFWS 2015).

In order to reduce the risk of collision, appropriate suggested practices outlined by APLIC's collision manual (APLIC 2012) will be followed, and coordination with the MNDNR will be

conducted to determine suitable line marking procedures to reduce the potential for avian (including raptor) collision.

DCW will coordinate with MNDNR regarding any appropriate roadside construction and heavy equipment usage BMPs as they pertain to Sullivant's milkweed, wild quinine, and rattlesnake master. Mapped native prairie sites do not occur along the Project ROW. If prairie sites are identified, electric transmission spanning design would be implemented to the extent practicable to avoid direct impacts to this habitat type.

DCW will coordinate with MNDNR regarding applicable BMPs in the event that territorial and/or nesting birds are discovered occupying the Project ROW at the time of construction.

Potential indirect impacts to aquatic species from erosion and sedimentation will be mitigated through the implementation of BMPs as described in **Section 5.5.2.2.**

5.6.2 Natural Resources Sites

The Project ROW avoids all mapped MNDNR native communities, as well as other managed areas that could contain higher-quality natural resources, including WMAs, SNAs, State Parks, USFWS easements, and any MBS Sites of Biodiversity Significance ranked as Moderate, High, or Outstanding. As indicated previously in **Section 5.5.6**, MBS identifies one Site of Biodiversity Significance intersected by the Route. The Sargeant 23 site partially overlaps the Route where the Proposed Alignment parallels 310th Street, near the North Branch Root River; this site was determined to have a rank of "below," meaning it did not meet the criteria for Moderate, High, or Outstanding ranks (MNDNR 2020c; 2021j; see **Appendix I - Figure 5.13**) **Table 5.18** summarizes the Project ROW in relation to nearby rare and unique features. As the landscape is dominated by cultivated crops and existing ROW, no impacts from the Project to rare and unique natural features are expected.

Table 5.18
Summary of Environmental Sites for the Proposed Alignment or Route

Environmental Site Type	Total
Number of MBS Biodiversity Sites crossed by the Proposed Alignment	0
Number of MBS Biodiversity Sites crossed by the Route	1
Number of WMAs within 1 mile of the Route	0
Number of WMAs within the Project ROW	0
Lengths (feet) of WMAs over 1,000 feet that are within the Project ROW	0
Number of SNAs within 1 mile of the Route	0
Number of State Parks within 1 mile of the Route	0
USFWS easements within 1 mile of the Route[1]	0
State-listed species observations within the Project ROW[2]	0
State-listed species observations within 1 mile of the Route[2]	3
Total unique species observed within 1 mile of the Route[2]	3

Environmental Site Type	Total

[1] Farm Service Agency Interest of Minnesota.
[2] Only species listed as endangered or threatened are included.

5.6.2.1 Potential Impacts

Overall, no adverse impacts to rare or unique resources, such as direct take or disturbance, are anticipated as a result of construction of the Project. The majority of the Proposed Alignment runs parallel to existing overhead electrical lines and/or roadways, which represents a fragmented potential habitat for these resources. No additional impacts or habitat fragmentation impacts from the construction and maintenance of the Project ROW are expected to these resources. The majority of the existing vegetation within the Project ROW would remain unchanged following project construction and revegetation.

Sensitive natural resources were assiduously avoided during the Project ROW planning. As noted above in **Section 5.6.2**, the Project ROW avoids all mapped MNDNR native communities, WMAs, SNAs, State Parks, USFWS easements, and all MBS Sites of Biodiversity Significance with a ranking of Moderate, High, or Outstanding. The Route crosses one segment of a Site of Biodiversity Significance that was designated as having a rank of "Below" (*i.e.,* not meeting biodiversity thresholds for Moderate, High, or Outstanding ranks). No impacts to this Site of Biodiversity Significance are anticipated from construction or operation of the Proposed Alignment.

5.6.2.2 Mitigation Measures

Project design has minimized impacts to natural resources sites to the greatest extent practicable through avoidance of sensitive locations. Therefore, specific mitigation measures are not proposed. DCW will coordinate closely with MNDNR and USFWS, as appropriate, to develop BMP measures to minimize or mitigate impacts to sensitive resources, as needed.

5.7 Irreversible and Irretrievable Commitments of Resources

Irreversible commitments refer to resources that cannot be replaced within a reasonable timeframe after use. Irretrievable commitments are resources that cannot be restored to original value after use. Potential impacts to natural resources, human settlement, economics, and archaeological/historical resources discussed in this section are summarized in **Table 5.19.** No irreversible and irretrievable commitments of these resources are expected from construction or operation of the Project.

Irreversible and irretrievable commitments of other nonrenewable resources are important to address when their use can influence the availability of resources to future generations.

Construction of the Proposed Alignment will result in minimal irreversible and irretrievable commitments of some types of resources. Resources used during construction include nonrenewable resources such as aggregate resources, concrete, steel, and hydrocarbon fuel. During construction of the Proposed Alignment, construction vehicles will be deployed on site and would need to travel along the Proposed Alignment and to and from the project site, consuming fuel. Further, resources will be used during pole construction, pole placement, and associated activities.

5.7.1 Impacts and Mitigation

The Proposed Alignment and the construction process will be designed to minimize the potential for irreversible and irretrievable commitments of resources. Due to the relatively short, approximately 6-month construction timeframe for the Project, potential impacts to nonrenewable resources from use are expected to be negligible. No significant or long-term impacts to nonrenewable resources are anticipated from the operation of the Project; thus, no mitigation measures are proposed during operation.

Table 5.19
Summary of Impacts and Routing Factors Considered
(Minnesota Statutes § 216E.03, subdivision 7, and Minnesota Administrative Rules 7850.4100)

Factor	Summary of Route
Effects on Human Settlement	
Displacement	Proposed Alignment is not expected to cause any displacement. In total, 53 residences occur within 500 feet of the Proposed Alignment. The nearest residence is more than 75 feet from the Proposed Alignment.
Noise	Activities associated with the construction of the Project may generate temporary sound. Sound generated from the operation of the Project would be in accordance with MPCA standards.
Radio, Television, Cellular Device, and GPS Interference	Interference with radio, television, cell phones, and GPS signals is not anticipated. AM radio signals will only be impacted while underneath powerlines, and television signals may be impacted if within the shadow of a transmission structure.
Aesthetics	The viewshed in the vicinity of the Project will be altered by construction of the Project. However, it will not create a new feature type within the landscape as overhead electric transmission and distribution lines are already present.
Socioeconomics	Permanent impacts to socioeconomics are not anticipated; however, the population size and demographics may temporarily increase and change with the addition of construction personnel, likely resulting in a small financial gain for the local economy.
Cultural Values	Impacts to cultural values are not anticipated.
Recreation	Three snowmobile trails are present within the Route and cross the Route at four locations. Temporary impacts to snowmobiling activities are anticipated.

Factor	Summary of Route
Public Services	Several public services and associated infrastructure are available within or near the Route. Significant impacts are not anticipated. Temporary impacts associated with road closures, an increase in traffic, and an increase in individuals requesting the use of public services may occur.
Transportation	Several roadways are located within the Route, most of which are lightly traveled. No active railroads are in the Route. The Proposed Alignment is approximately 4.1 nautical miles from the nearest runway end at Dodge Center Airport and crosses two OISs. Temporary impacts to roadways associated with road and land closures, as well as an increase in traffic may occur. All structures that require notice will be filed with the FAA.
Effects on Public Health and Safety	
Public Health	No adverse effects to public health are expected due to the implementation of the Proposed Alignment.
Safety	The Project is not anticipated to impact public safety.
Effects on Land-Based Economics	
Agriculture and Soils	A small area of soils with prime farmland designations will be permanently taken out of agricultural production. This will not have a meaningful impact on total prime farmland within the state of Minnesota.
Forestry	No impacts to commercial forestry operations will occur.
Tourism	Impacts to snowmobile trails will be mostly visual in nature. Project structures are not anticipated to have a negative effect on area tourism.
Mining	No impacts to active mining operations will occur.
Effects on Archaeological and Historic Resources	
Archaeological Resources	One previously recorded archaeological resource (site lead 21DOj) is located within the Route. The site lead refers to a former village that may be located within a more than 800-acre area adjoining the Proposed Alignment. The site has never been surveyed by an archaeologist to determine its location. Therefore, it is not known whether remnants of the former village are present within the Proposed Alignment. A UADP will be followed should DCW encounter unidentified archaeological sites during project construction.
Historic Resources	The Route contains two architectural resources that have not been evaluated for listing on the NRHP. Direct and/or visual impacts are not anticipated to affect these architectural inventory resources. A UADP will be followed should DCW encounter unidentified archaeological sites during project construction.

Factor	Summary of Route
Tribal Resources	No tribal resources have been identified within the Route; therefore, no impacts are anticipated. A UADP will be followed should DCW encounter unidentified archaeological sites during project construction.
Effects on the Natural Environment	
Air Quality	Temporary impacts to air quality associated with the Route from construction exhaust emissions and/or fugitive dust are expected to be negligible due to the relatively short construction timeframe. Negligible amounts of ozone will be created during the operation of the Proposed Alignment.
Water Quality, Wetlands, Streams, and Floodplains	The Proposed Alignment crosses 22 streams or rivers, which includes 5 PWI streams. The Project ROW crosses approximately 1.2 acres of 100-year floodplains and approximately 3.2 acres of wetlands. Due to avoidance, negligible impacts to these resources are expected.
Primary Water Resources	The Route is within the Zumbro, Root, and Upper Cedar HUC watersheds. Five primary surface waters occur within the Route. Due to avoidance, negligible impacts to these resources are expected.
Groundwater Resources	The Route includes 10 wells, one of which is located within the Project ROW. Impacts to groundwater resources are not expected to occur. In general, wells in the area are significantly deeper than the maximum structure foundation depth. Furthermore, as a best practice, transmission line structures will be set back from known well locations following state and county standards.
Flora	Because the Project will be sited primarily within existing road and transmission line ROW, mostly adjacent to agricultural fields, managed roadside vegetation (approximately 45 percent) and cultivated crops (approximately 43 percent) are the dominant vegetation communities. Smaller roadsides account for approximately 8 percent of the Route ROW area. Hay fields/pasture lands and herbaceous vegetation combined occupy approximately 3 percent of the Route ROW. These areas are the most likely to contain native vegetation communities. Very few impacts to this resource are anticipated during construction of the Proposed Alignment. Subsequent maintenance of the Project ROW is expected to primarily impact common vegetation associated with road ROW, including roadside ditches, as well as cultivated crops where the Proposed Alignment does not follow existing roadways. Recognized areas of high-quality biodiversity significance, designated native plant communities, and native prairies will not be impacted.

Factor	Summary of Route
Fauna	No Wildlife Management Areas or Important Bird Areas are intersected by the Project ROW. No known raptor nests are within the Project ROW. No permanent impacts to woodland habitats are expected to tree roosting bat species and woodland bird species. Impacts to other terrestrial and aquatic/wetland wildlife species are expected to be minimal.
Effects on Rare and Unique Natural Resources	
The Project ROW intersects known records for two SPC fish species. No known locations for ESA- or MNDNR-listed threatened and endangered species, nor Designated Critical Habitat, are located within the Route. A single Site of Biodiversity Significance (with a ranking of "Below") is within the Route in Mower County. No impacts to these resources are expected.	
Adverse Human and Natural Environmental Effects That Cannot Be Avoided	
Unavoidable impacts include the conversion of nominal areas of agricultural land cover, minor impacts to agricultural land use, and minor impacts to the aesthetics of the region. The Applicant will work with landowners to mitigate for impacts to land use and the visual impacts, as appropriate.	
Irreversible and Irretrievable Commitments of Resources	
No irreversible and irretrievable commitments of natural resources, human settlement, economics, or archaeological/historical resources are expected from construction or operation of the Project. A commitment of people and resources would be required to successfully construct the Project. Some resources could be scrapped and recycled at the end of the life of the Project, such as concrete and rock for foundations and aggregate backfill, steel poles, conductor, and shield wires. Fuels and lubricants used by equipment during project construction would be irretrievable.	

5.8 Alternate Segment Analysis

This section compares potential resources, impacts, and mitigation for the Alternate Segment White against its corresponding Proposed Alignment segment: Route Segment A (as shown in **Appendix I - Figure 5.1**). Unless specifically addressed in these sections, there is no difference in resources, impacts, or potential mitigation between Proposed Alignment Segment A and Alternate Segment White.

5.8.1 Comparison of Alternate Segment White and Proposed Alignment Segment A

Potential resources, impacts, and mitigation for Alternate Segment White are compared to Proposed Alignment Segment A in this section, and impacts are summarized in **Table 5.20**. Both are approximately 3.5 miles in length. Proposed Alignment Segment A includes a larger ROW area (54.5 acres versus 52.4 acres). As noted above, unless specifically addressed in this section,

there is no difference in resources, impacts, or potential mitigation between Proposed Alignment Segment A and Alternate Segment White.

Table 5.20
Comparison of Impacts Along Proposed Alignment
Segment A and Alternate Segment White

Route Impacts	Alternate Segment White	Proposed Alignment Segment A
Route Segment Length	3.5 miles	3.5 miles
Route Segment ROW Area	52.4 acres	54.5 acres
Land Cover	**Area (Acres/% of Total)**	**Area (Acres/% of Total)**
Cultivated Crops in ROW	19.1/36.4	36.1/66.4
Developed Roadside Vegetation in ROW	27.3/52.1	16.8/30.9
Smaller Roadside Vegetation in ROW	5.9/12.3	1.2/2.3
Developed, Medium Intensity in ROW	0.1/0.2	0.2/0.4
Proximity of Residences to Proposed Alignment	**Number of Residences**	**Number of Residences**
0–75 feet	0	0
76–150 feet	0	0
151–300 feet	1	0
301–500 feet	2	1
Total Residences	**3**	**1**
Density (homes/mile)	**0.9**	**0.3**
Prime Farmland Soil Classification	**Area (Acres/% of Total)**	**Area (Acres/% of Total)**
Prime Farmland within Project ROW	31.5/60.0	29.1/53.5
Groundwater Resources	**Number**	**Number**
Number of Wells within Route	1	0
Wetlands	**Number/Acres**	**Number/Acres**
Palustrine Emergent Wetlands in ROW	1/0.7	1/0.1
Surface Water Resources	**Number**	**Number**
Number of NHD Stream and River Crossings	1	4
Number of PWI Stream and River Crossings	0	1

Route Impacts	Alternate Segment White	Proposed Alignment Segment A
Floodplains	**Acres**	**Acres**
Acres of Mapped 100-Year Floodplains (Zone A) within Project ROW	0	1.1
Flora	**Area (Acres/% of Total)**	**Area (Acres/% of Total)**
Acres of Cultivated Crops within Project ROW	19.1/36.4	36.1/66.4
Acres of Non-Cultivated Land within Project ROW	33.4/63.6	18.3/33.6
Natural Vegetation Communities	**Area (Acres/% of Total)**	**Area (Acres/% of Total)**
North-Central Interior Dry-Mesic Oak Forest and Woodland in ROW	0.1/0.1	0
MBS Sites of Biodiversity Significance	**Number/Acres**	**Number/Acres**
Number (acres) within Route	1/7.4	0
Number (acres) within Project ROW	1/6.2	0
Threatened and Endangered Species	**Number**	**Number**
Sullivant's milkweed records within Project ROW	1	0

5.8.1.1 Land Cover

The dominant land use–land cover types are similar within ROWs for Alternate Segment White and Proposed Alignment Segment A but differ in the relative proportions of this cover. Due to its location within the DCW Wind Project site, Segment A comprises almost double the area of cultivated crops (36.1 acres versus 19.1 acres), and half the area of non-cultivated land compared to Alternate Segment White (18.3 acres versus 33.4 acres, respectively). Due to its location within road ROW, Alternate Segment White comprises 33.2 acres of roadside vegetation versus 18 acres in Segment A (MRLC 2019) (see **Table 5.20**).

Alternate Segment White represents fewer temporary and permanent impacts to agricultural areas. Impacts to land cover in both segments would be mitigated as discussed in **Section 5.1.1**.

5.8.1.2 Residential and Non-Residential Buildings

No residences occur within 150 feet of Alternate Segment White or Proposed Alignment Segment A. One residence occurs between 151 feet and 300 feet, and two residences occur between 301 feet and 500 feet of Alternate Segment White. One residence occurs between 301 feet and 500 feet of Proposed Alignment Segment A (see **Table 5.20**).

Impacts to residences and potential mitigation would be the same as discussed in **Section 5.2.3**.

5.8.1.3 Prime Farmland

Both segments comprise relatively similar areas of prime farmland. Alternate Segment White ROW contains 31.5 acres of soil classified as prime farmland, whereas the Proposed Alignment Segment A ROW contains 29.1 acres (see **Table 5.20**).

Neither segment would have meaningful impacts on total prime farmland soils in the state of Minnesota. Impacts and mitigation for both segments would be similar to the discussion provided in **Section 5.3.1**.

5.8.1.4 Groundwater Resources

The Minnesota Well Index indicates that one well is located within the Alternate Segment White Route, whereas no wells are located within the Proposed Alignment Segment A Route (**Table 5.20**). However, no wells are located within either segment ROW (MDH 2019).

Impacts to groundwater resources are not expected to be different between Alternate Segment White and the Proposed Alignment Segment A. Because construction and operation of either route segment is not expected to impact groundwater resources, no mitigation is proposed for either route.

5.8.1.5 Wetlands

According to the USFWS NWI database (USFWS 2020c), the Project ROW for Alternate Segment White contains one mapped NWI palustrine emergent wetland totaling approximately 0.7 acres (USFWS 2020c). The Project ROW for Proposed Alignment Segment A contains one mapped NWI palustrine emergent wetland totaling approximately 0.1 acres (see **Table 5.20**).

No direct impacts to wetlands are anticipated from construction and operation of either segment as all wetland areas will be spanned and transmission pole placement will be sited to avoid impacts. Temporary indirect impacts to wetlands would be minimized by mitigation measures discussed in **Section 5.5.5**.

5.8.1.6 Surface Water Resources

No lakes or ponds are located within the Route for Alternate Segment White or Proposed Alignment Segment A. According to the NHD, Alternate Segment White crosses a single unnamed NHD watercourse, which is not a Minnesota designated public watercourse. Proposed Alignment Segment A crosses two NHD watercourses twice, for a total of four crossings (USGS 2020). One of these watercourses, an unnamed tributary of Dodge Center Creek, is a Minnesota public watercourse with designated 50-foot buffer requirements according to the Minnesota Buffer Law (MNDNR 2021d).

No direct impacts to streams are anticipated for either route as they will be spanned for avoidance of the resources. Temporary indirect impacts and mitigation for both route segments would generally be the same as discussed in **Section 5.5.2**. In particular, additional permitting and mitigation may be required for Proposed Alignment Segment A as it crosses a designated Minnesota public water.

5.8.1.7 Floodplains

According to FEMA maps and digitized data, there are no mapped 100-year floodplains (Zone A) in the Alternate Segment White ROW. Approximately 1.1 acres of mapped 100-year floodplains (Zone A) are associated with a tributary of Dodge Center Creek within the Proposed Segment A ROW (FEMA 2018).

DCW plans to avoid placement of any project structures within floodplains to the extent feasible. Therefore, impacts and mitigation for both route segments would generally be the same as discussed in **Section 5.5.4**.

5.8.1.8 Flora

The Alternate Segment White ROW comprise approximately 19.1 acres (36.4 percent) of cultivated land (MRLC 2019). The ROW for Proposed Alignment Segment A comprises far more cultivated lands, approximately 36.1 acres (66.4 percent) (MRLC 2019).

Non-cultivated land within Alternate Segment White ROW comprises primarily roadside vegetation (27.3 acres, 52.1 percent), with 5.9 acres (12.3 percent) shorter roadside vegetation, and a very small amount of medium-intensity developed land (0.1 acre, 0.2 percent) (MRLC 2019).

Non-cultivated land within the Proposed Alignment Segment A ROW is similar in composition, comprising mostly developed roadside vegetation (16.8 acres, 30.9 percent), with far less shorter roadside vegetation (1.2 acres, 2.3 percent), and a very small amount of medium-intensity developed land (0.2 acres, 0.4 percent) (MRLC 2019).

USGS GAP data (USGS 2021) indicate that North-Central Interior Dry-Mesic Oak Forest and Woodland is the only natural ecosystem classification that intersects Alternate Segment White. Approximately 0.1 acre of North-Central Interior Dry-Mesic Oak Forest and Woodland is within the Alternate Segment White ROW (approximately 0.1 percent of the ROW). The Proposed Alignment Segment A ROW does not intersect any natural vegetation communities (USGS 2021).

Impacts and mitigation for both segments would generally be the same as discussed in **Section 5.5.6** since the ROWs for both segments contain little to no natural vegetation. Negligible impacts to natural vegetation are expected for either segment.

5.8.1.9 Sites of Biodiversity Significance (MNDNR)

The MBS identifies one Site of Biodiversity Significance that is located completely within the Alternate Segment White Route (MNDNR 2020c) (**Table 5.20**). This site (Ripley 24–25) is ranked "below." It comprises approximately 7.4 acres within the Route and 6.2 acres within the ROW for Alternate Segment White. The Proposed Alignment Segment A does not intersect any MBS Sites of Biodiversity Significance (see **Table 5.20**).

Due to the ranking of "below," temporary and/or permanent impacts to this location are not anticipated to significantly impact the biological quality of the region. Impacts to this site may consist of temporary grading and/or rutting from construction equipment and permanent impacts if a transmission pole is required within this location. The Applicant will avoid temporary and permanent impacts within the MBS Site of Biodiversity Significance, where feasible. Additionally, the Applicant will coordinate with the MNDNR, as appropriate.

5.8.1.10 Threatened and Endangered Species

No differences in potential occurrence of ESA- or MNDNR-listed threatened or endangered species are anticipated between Alternate Segment White and Proposed Alignment Segment A. There is one NHIS record of the MNDNR threatened plant species Sullivant's milkweed within the Alternate Segment White ROW, which does not intersect the Proposed Alignment Segment A ROW. As noted in **Section 5.6.1.2**, a windshield survey in August 2020 did not document Sullivant's milkweed in the vicinity of this NHIS record, but the roadside had been hayed prior to the 2020 windshield survey. On July 23, 2021, a presence/absence survey was conducted within the road ROW on the north and south sides of County Road 6 (680th Street) east of 150th Avenue. Per the MNDNR-approved study plan, the qualified botanist conducted meandering walking surveys in the road ROW, focusing on the area designated as below Sites of Biodiversity Significance. Several Sullivant's milkweed stems were identified on the north side of the road in six locations within the Alternate Route White ROW (Markhart and Voth 2021).

DCW will coordinate with MNDNR regarding Sullivant's milkweed to determine whether additional species-specific surveys may be needed along the Alternate Segment White ROW as well as any appropriate avoidance measures (through structure placement) and minimization measures (through roadside construction and heavy equipment usage BMPs) pertaining to this species.

6.0 Environmental Information: Substation

This section describes the current environmental setting and human use of the Dodge County Wind, LLC (DCW or Applicant), collector substation area in terms of natural resources, human settlement, economics, and archaeological/historical resources. Each subsection listed below includes the environmental setting as well as the potential impacts to these resources from the construction and operation of the DCW collector substation and the potential mitigations for these impacts.

The Applicant proposes to construct the DCW collector substation on up to two acres of land in Dodge County approximately six miles southwest of the city of Dodge Center, Minnesota. At this time, DCW has an option agreement with the landowner to purchase up to 10 acres of land where the substation will be sited. Potential impacts from the substation, as well as potential mitigation, are discussed below. Details regarding the proposed substation can be found in **Section 2.6**.

The DCW Transmission Line Project (Project) may also require minor modifications to the existing Great River Energy (GRE) Pleasant Valley Substation located in Mower County. Any required improvements at the GRE Pleasant Valley Substation are the responsibility of GRE. Therefore, the environmental analysis detailed in this section is limited to the DCW collector substation as this will create a new feature type in the landscape and require land use conversion.

6.1 Environmental Setting

The DCW collector substation is located in western Dodge County, Section 15 of Ripley Township, on a privately owned parcel of land that is currently used for crop production. The DCW collector substation would be located within the Eastern Iowa and Minnesota Drift Plains Level IV ecoregion of the Western Corn Belt Plains Level III ecoregion. The Western Corn Belt Plains landform in this area consists of level to rolling glaciated till plains with hilly loess-covered plains and has an annual average precipitation of 24 to 36 inches (Auch 2016).

The general topography of the area is described as undulating, rolling relief. The proposed DCW collector substation location has relatively flat terrain with approximate elevations between 1,286 and 1,294 feet above mean sea level. For more information regarding the topography of the Project, see **Section 5.1** and **Appendix I - Figure 5.2**. No modifications to existing topographic features are expected to occur as a result of construction and operation of the proposed substation. Therefore, no impacts to topography are anticipated, and no mitigation measures are proposed.

The proposed DCW collector substation location is currently in agricultural production. The area soils are classified as prime farmland, within the Level Plains agroecoregion (Minnesota and MDA 1998). The Level Plains agroecoregion soils are fine-textured and poorly drained and support row crop production on relatively flat topography. The dominant soil association within the substation property is Readlyn-Racine-Maxfield-Kasson. These soils are considered to be silty loams.

The DCW collector substation is located in the Zumbro River Watershed (Hydrologic Unit Code [HUC] 07040004). The nearest named perennial stream is Dodge Center Creek, which lies approximately 2.3 miles to the west. Several unnamed streams are immediately to the north and southwest of the DCW collector substation (USGS 2020).

According to the Minnesota Department of Natural Resources (MNDNR) Natural Heritage Information System (NHIS) geographical data, no species listed as threatened or endangered under the Endangered Species Act (ESA) or by MNDNR are recorded within 1 mile of the DCW collector substation location (MNDNR 2021i). Based on the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), no wetlands occur on the DCW collector substation site. The nearest wetland, classified as palustrine emergent, is located approximately 200 feet to the south.

6.1.1 Land Cover

The land cover within the region surrounding the proposed substation is described in **Section 5.1.2**. The DCW collector substation site is located entirely on cultivated crop land (see **Appendix I - Figure 5.3**). No conservation easements are present. Up to two acres of land currently under crop cultivation would be removed from agricultural production for the construction and operation of the proposed DCW collector substation, which would result in negligible impacts to agriculture on a regional scale. Therefore, no mitigation measures are proposed. Temporary construction impact areas would be revegetated per landowner requirements as appropriate. Refer to **Section 5.3** for additional information related to agricultural impacts.

6.1.2 Geology

The proposed substation property is located within the Central Lowland physiographic region of Minnesota (Leverett 1932). This region covers the majority of the state and is underlain by a series of horizontal beds of sedimentary rocks. The bedrock layer beneath the substation property is composed of a single geologic unit (Middle Devonian). The Middle Devonian unit of dolostone, sandy dolostone, limestone, and shale includes the Pinicon Ridge Formation, Spillville Formation, and the Chickasaw Shale and Bassett members of the Little Cedar Formation (see **Appendix I - Figure 5.4**). The maximum foundation depth of the substation will be 20 feet. Therefore, no modifications to existing geologic features are expected to occur as a result substation construction. Therefore, no impacts to geologic features are anticipated, and no mitigation measures are proposed.

6.1.3 Soils

The dominant soil association within the substation property is Readlyn-Racine-Maxfield-Kasson. Refer to **Appendix I - Figure 5.5** for a map depicting soil associations along the Proposed Alignment. According to the general soil data for Dodge County, the dominant soil series found within the substation property is considered to be loamy and silty soil on uplands, used for agricultural purposes. This soil series is well to poorly drained (NRCS 2018). According to soil surveys, the substation area is classified as prime farmland or prime farmland if drained.

Up to two acres of soil classified as prime farmland will be permanently taken out of agricultural production due to the development of the substation. This impact will be negligible on total prime farmland within the state of Minnesota.

Soil compaction or erosion may occur during ground clearing and construction of the substation. Potential soil impacts may result from the excavation, stockpiling, and redistribution of soils. Impacts would be short-term and negligible as they would be mitigated through the proper use and installation of soil protection best management practices (BMPs). BMPs may include installation

of erosion control measures, minimization of the number of vehicles used, topsoil salvage, and stockpile construction and maintenance of the proposed DCW collector substation.

6.2 Human Settlement

6.2.1 Public Health and Safety

Emergency management response services, other public health and safety information, and potential impacts from the Project (including the proposed substation) are described in **Section 5.2.1**.

6.2.2 Residential and Non-Residential Buildings

The human settlement information specific to Dodge County discussed in **Section 5.2** is generally applicable to the DCW collector substation site. The local area is rural agricultural with scattered houses and associated structures. Two residences are approximately 1,800 feet from the substation, and 11 accessory structures (*i.e.*, barns, garages, silos, or sheds) are located within 0.5 miles of the DCW collector substation (see **Table 6.1**).

Table 6.1
Structures Located within 0.5 Miles of the Dodge County Wind Collector Substation

Structure	Proximity to Substation (feet)
Shed	1,662
Barn/Garage	1,678
Barn/Garage	1,766
Residence	1,803
Residence	1,815
Silo	1,909
Shed	1,912
Shed	1,926
Silo	1,928
Silo	1,935
Silo	1,942
Silo	1,946
Silo	1,957

6.2.3 Displacement

Displacement is defined as the process by which a household is forced to move or relocate from its residence. No residences are located within the substation property; therefore, no involuntary displacement of residences is expected to occur, and no mitigation measures are proposed.

6.2.4 Sound

The primary source of sound at the DCW collector substation will be from the transformers. Two 150 megavolt-ampere (MVA) transformers are proposed for the substation. Octave band sound power levels (measured in hertz (Hz)) have been estimated using the methods outlined in the Electric Power Plant Environmental Noise Guide (Bolt, Beranek and Newman Inc. 1984) assuming each transformer will have a National Electrical Manufacturers Association noise rating of 74 A-weighted decibels (dBA). **Table 6.2** summarizes the sound power level data used in the sound modeling for each transformer at the DCW collector substation.

Table 6.2
Summary of Sound Power Level Data Used in Modeling

Maximum Rating	Broad band	Sound Power Levels per Octave Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
150 MVA	94 dBA	90 dBA	96 dBA	98 dBA	93 dBA	93 dBA	87 dBA	82 dBA	77 dBA	70 dBA

The sound impacts associated with the DCW collector substation transformer were predicted using the CadnaA sound calculation software developed by DataKustik GmbH. This software uses the International Organization for Standardization (ISO) 9613-2 international standard for sound propagation (ISO 1996). The benefits of this software are calculation of a refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. The CadnaA software allows for octave band calculation of sound from multiple sources as well as computation of diffraction. Several modeling assumptions inherent in the ISO 9613-2 calculation methodology, or selected as conditional inputs, were implemented in the CadnaA model to ensure conservative results (*i.e.*, higher sound levels), and are described below:

- As per ISO 9613-2, the model assumed favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night, or equivalently downwind propagation.
- Meteorological conditions assumed in the model (temperature = 10°C and relative humidity = 70 percent) were selected to minimize atmospheric attenuation in the 500 Hz and 1 kilohertz octave bands where the human ear is most sensitive.
- No additional attenuation due to tree shielding, air turbulence, or wind shadow effects was considered in the model.

Based on the sound level modeling results, the proposed DCW collector substation is predicted to comply with the Minnesota Pollution Control Agency (MPCA) noise standards. The closest sensitive receptor is approximately 1,900 feet from the proposed transformers at the DCW collector substation. The substation only (wind turbines excluded) modeled L_{eq} sound level at this receptor is 34 dBA). The MPCA has established sound level limits found in Minnesota Administrative Rule 7030. The applicable nighttime limits for a Noise Classification Area 1 location are 50 dBA (L_{50}) and 55 dBA (L_{10}). Since the operation of a substation transformer will result in a generally steady and continuous sound, the modeled L_{eq} sound level will be comparable to the L_{50} and L_{10} sound levels. Based on the sound level modeling, the DCW collector substation is predicted to comply with MPCA noise standards. To alleviate any increased sound levels at the DCW collector substation during construction, the Applicant will adhere to the sound control BMPs discussed in **Section 5.2.5.2**.

6.2.5 Radio and Television Interference

Radio and television stations and towers in the vicinity of the DCW collector substation and potential impacts from the Project are described in **Section 5.2.6**.

6.2.6 Aesthetics

Aesthetic quality and appeal of a region generally derive from the terrain, natural features (*e.g.*, lakes, rivers, ponds, etc.), native flora, and cultural features that define the landscape. The general vicinity of the proposed DCW collector substation includes farmsteads, overhead transmission and distribution lines, a railroad, and wind turbines. Highways and county roads are also an existing part of the human-made alterations to the environment.

The DCW collector substation will be a new facility with infrastructure at various heights, depending on final design, within an approximately two-acre fenced and graveled site. The substation will include 161 kilovolt (kV) busses, transformers, circuit breakers, reactive equipment, steel structures, a control building, metering units, and air-break disconnect switches. The new fence will likely include galvanized-steel chain-link fence fabric 7 feet in height with 1 foot of angled three-strand barbed wire on top. The DCW collector substation will also include an outdoor lighting system, with downward-turned lights, controlled by switches that will be activated only when project personnel are present. Preliminary schematics and representative photographs of the DCW collector substation are provided in **Appendix E** (Substation Preliminary Design, pages 3–7).

Individual observers will have differing opinions on the aesthetic appeal of a region and impacts that may alter its quality. Those likely to be viewing the proposed Project include permanent observers (residents) and temporary observers (motorists, tourists, or recreationalists passing by or using the area intermittently). Residents near the DCW collector substation are expected to have a higher sensitivity to the potential aesthetic impacts than temporary observers as they will look at the substation more frequently than individuals periodically passing through the area.

From an aesthetics perspective, those likely to be most impacted by the proposed DCW collector substation are nearby residents, motorists, and recreationalists using the general area. The substation will alter the visual appearance of the area by adding a relatively small footprint that would add vertical and horizontal human-made structures to the existing landscape.

6.2.7 Socioeconomics

The DCW collector substation is located in Ripley Township. Socioeconomic data was gathered for this township and is described in **Section 5.2.8**. Construction of the DCW collector substation will not create any new full-time employment positions. DCW anticipates that up to 40 temporary construction personnel will be employed to construct the Project over a period of approximately six months. DCW anticipates that construction of the DCW collector substation would take approximately six months and require up to 50 personnel. This temporary increase in population is likely to result in a small financial gain for the local economy, as the Project and its personnel will utilize products and services from a variety of local businesses, including infrastructure maintenance services, industrial supplies, and hospitality services. No additional socioeconomic impacts are anticipated as a result of the development of the Project.

6.2.8 Cultural Values

The cultural values associated with the DCW collector substation are likely related to the agriculture-dominated landscape. These cultural values and potential impacts from the Project, including the proposed substation, are described further in **Section 5.2.9**.

6.2.9 Recreation

No recreational facilities are within the substation property as the area is currently used for crop cultivation. Recreational opportunities in the vicinity of the DCW collector substation and potential impacts from the Project overall are described in **Section 5.2.10** and depicted on **Appendix I - Figure 5.7.**

6.2.10 Public Services

Emergency services, water and wastewater services, school districts, electric utilities, and other public services and facilities are located in the vicinity of the DCW collector substation. These public services and infrastructure are discussed in more detail in **Section 5.2.11**, as are the potential impacts to these resources from the Project.

6.2.11 Transportation

The proposed DCW collector substation would be located in a privately owned agricultural field accessed by 140th Avenue in Dodge County. A new access road would be constructed and permitted through the Dodge County Engineering Office. Additional details regarding transportation in the regional vicinity of the substation, and potential impacts from the Project, are described in **Section 5.2.12**.

6.3 Land-Based Economies

The entire site is currently in agricultural production. The development of the DCW collector substation is expected to permanently remove up to two acres of land from crop production. Depending on landowner preference, the remainder of the site may be leased back to the farmer to be used for agricultural purposes. If the landowner does not wish to use the remainder of the area, the entire parcel will be purchased outright.

6.4 Archaeological and Historic Resources

Cultural resource records available at the State Historic Preservation Office and the Office of the State Archaeologist were reviewed in December 2020 to identify known cultural resources located within 3 miles of the DCW collector substation. Currently, 10 historic properties (sites, structures, properties, or districts) in Dodge County are listed on the National Register of Historic Places (NRHP). The listings for all of these NRHP historic properties have full location information; none of the properties are located within 1 mile of the DCW collector substation. No cultural resources, archaeological resources, or architectural resources listed on the NRHP, the Minnesota State Historic Sites Network, or the Minnesota State Register of Historic Places are located within 1 mile of the DCW collector substation.

Because no known archaeological, architectural, or historical resources would be impacted as a result of construction of the proposed DCW collector substation, no mitigation measures are proposed. See **Section 5.4.2** for a discussion of protective BMPs to be applied in the event of an unanticipated discovery of human remains.

6.5 Natural Environment

6.5.1 Air Quality

The closest Air Quality Index monitoring station to the DCW collector substation is located to the east in Rochester, Minnesota. Air quality in Rochester has fluctuated over the last five years, with varying annual numbers of moderate days since 2015. However, no unhealthy for sensitive group days were reported from 2017 through 2019. A discussion of air quality, potential impacts, and mitigation measures for the Project overall is included in **Section 5.5.1**.

6.5.2 Surface Water

The DCW collector substation lies within the Zumbro River Watershed (USEPA 2021b), which is part of the Upper Mississippi—Region 7 water resource region, as defined by the U.S. Geological Survey. Based on aerial photointerpretation and data review, no intermittent or perennial streams (including Public Waters and 303(d)-listed waters), navigable waters, trout streams, or Public Waters Inventory (PWI) features are present within the substation property. As such, no impacts are anticipated, and no mitigation measures are proposed. Further discussion of surface water in the Project is included in **Section 5.5.2**.

6.5.3 Groundwater

The DCW collector substation property is located entirely within the South-central Province (Province 2) groundwater area (MNDNR 2020b). Information regarding Minnesota's groundwater areas was previously presented in **Section 5.5.3** and included on **Appendix I - Figure 5.10**. According to the Minnesota Department of Health, Minnesota Well Index map viewer, no wells are on, or immediately adjacent to, the DCW collector substation site. The maximum foundation depth of the substation will be 20 feet. As such, no impacts to groundwater resources from construction of the substation are anticipated; thus, no mitigation measures are proposed.

6.5.4 Floodplains

Based on available Federal Emergency Management Agency mapping, the substation property is not located within a 100-year floodplain (Zone A). As such, no impacts are anticipated, and no mitigation measures are proposed.

6.5.5 Wetlands

Based on aerial photointerpretation and respective datasets, no NWI or PWI wetlands are located on the DCW collector substation site. The nearest wetland is classified as palustrine emergent and is located approximately 200 feet south of the proposed DCW collector substation site. As no wetlands are present within the substation property, no impacts to wetlands are anticipated and no mitigation measures are proposed. Depending on site-specific needs, seasonal construction scheduling, cutting vegetation where roots remain, temporary timber matting, erosion control blankets, mulch, straw bales, rolls, tackifiers, temporary seeding, hydro-mulch, and sediment fence may be used to manage soil erosion. Information regarding wetlands within the Project was previously presented in **Section 5.5.5** and included on **Appendix I - Figure 5.11**.

6.5.6 Flora

The discussion of flora in the general project area in **Section 5.5.6** is applicable to the proposed DCW collector substation site. The proposed DCW collector substation is located within the Oak Savannah Subsection of the Eastern Broadleaf Forest Province (McNab and Avers 1994). Historically, the dominant vegetative communities within this subsection were tallgrass prairie and bur oak savanna. As the area is currently in agricultural cultivation, no impacts to natural flora are anticipated, and thus, no mitigation measures are proposed.

6.5.7 Fauna

The discussion of fauna in the general project area discussed in **Section 5.5.7** is applicable to the proposed DCW collector substation site. Wildlife typically associated with an agricultural landscape are expected to be prevalent within, and immediately adjacent to, the DCW collector substation site. The site is not located in or adjacent to any USFWS- or MNDNR-protected lands, Waterfowl Production Areas, or Wildlife Management Areas lands. See **Appendix I - Figure 5.7**.

Because the entire substation property is within cultivated fields, impacts to wildlife are most likely to be associated with the construction the Project. As such, construction may temporarily disturb a small amount of wildlife habitat in an already highly fragmented area. For further discussion of potential impacts to fauna and associated project mitigation measures see **Section 5.5.7**.

6.6 Rare and Unique Natural Features

Locations of rare and unique natural features are discussed in **Section 5.6**, and that discussion is applicable to the proposed DCW collector substation site. According to the MNDNR's NHIS geographical data, no species listed as threatened or endangered under the ESA or by MNDNR have been recorded within 1 mile of the DCW collector substation. In addition, no known raptor nests are within 1 mile of the substation (Atwell 2017c), as shown in **Appendix I - Figure 5.13**. As such, no impacts to rare and unique natural features are anticipated, and thus, no mitigation measures are proposed.

7.0 Agency Involvement, Public Participation, and Required Permits and Approvals

This section describes outreach efforts conducted by Dodge County Wind, LLC (DCW or Applicant), and discusses pre-application involvement with federal, state, and local agencies as well as other entities. DCW has also met with numerous landowners adjacent to the Proposed Alignment to seek voluntary easements to support the DCW Transmission Line Project (Project). This section also outlines the permits and approvals necessary for the Project.

Analysis of the project vicinity has been underway since 2014. During this time, DCW has used numerous study findings, as well as agency input, to inform appropriate siting of project infrastructure. After a change in project interconnection and design, project coordination has continued with regulatory agencies. Relevant past coordination and current ongoing coordination efforts are summarized below.

7.1 Agency Contacts

DCW initiated its outreach efforts in advance of this Application, engaging with public agencies and entities through meetings and project notification letters. Many agencies, stakeholders, landowners, and other interested parties were contacted in order to gather feedback on the Project (**Table 7.1**). This engagement campaign included meetings and correspondence with local government units, Minnesota Department of Natural Resources (MNDNR), the Minnesota State Historic Preservation Office (SHPO), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), Minnesota Department of Transportation (MnDOT), 31 individual tribes, Dodge County, Mower County, appropriate townships, snowmobile clubs in the vicinity of the Project, and various other entities. DCW requested input from governmental agencies with respect to the resources under their jurisdiction as well as the identification of federal, state, and local permits and approvals that may be required for the Project. Formal correspondence with agencies regarding the Project is presented in **Appendix F**. Meetings and other coordination activities with all agency stakeholders, including the entities listed in **Table 7.1,** are described in the following sections.

Table 7.1
Pre-Application Meetings

Agency or Entity	Location
Ashland Township Board	Dodge Center, MN
City of Dodge Center Airport Advisory Board	Dodge Center, MN
Dodge Center City Administration	Dodge Center, MN
Dodge County Board	Mantorville, MN
Dodge County Commissioner	Mantorville, MN
Dodge County Environmental Services	Mantorville, MN
Dodge County Geographic Information Systems	Mantorville, MN
Dodge County Highway Department	Dodge Center, MN
Dodge County Planning and Zoning	Mantorville, MN

Agency or Entity	Location
Dodge County Soil and Water Conservation District	Dodge Center, MN
Hayfield Township Board	Hayfield, MN
Mower County Highway Department	Austin, MN
Mower County Planning and Zoning	Austin, MN
Pleasant Valley Township Board	Pleasant Valley Township, MN
Ripley Township Board	Claremont, MN
Sargeant Township Board	Sargent Township, MN
Vernon Township Board	Hayfield, MN

7.1.1 U.S. Fish and Wildlife Service

DCW initially contacted the USFWS Twin Cities Ecological Services Field Office by letter on May 5, 2014, regarding the DCW Wind Project. Between 2017 and 2019, the Applicant had ongoing coordination with the USFWS regarding the Project. After a change in project interconnection and design, DCW again met with the USFWS in February 2021 and September 2021 to provide a project update and to discuss 2020 resource survey results. DCW continues to coordinate with the USFWS regarding the Project.

7.1.2 U.S. Army Corps of Engineers

The Applicant held an in-person meeting with USACE, St. Paul District, on August 7, 2017, to provide an overview of the Project and discuss related permitting. As project design progresses and field surveys of wetlands and waters of the United States (WOTUS) are completed, DCW will further coordinate with USACE regarding potential permitting that may be necessary for the Project.

7.1.3 Minnesota Department of Natural Resources

DCW initially contacted MNDNR regarding the DCW Wind Project by letter in 2014 and had ongoing coordination with MNDNR regarding the Project between 2017 and 2019. After a change in project interconnection and design, DCW again requested a Natural Heritage review from MNDNR for the Project on April 29, 2020. As of the date of this Application, DCW has not received a response to this review request. DCW met with MNDNR in February 2021 and September 2021 to provide a project update and to discuss the results of the 2020 resource survey. DCW continues to coordinate with MNDNR regarding the Project.

7.1.4 Minnesota Department of Transportation

A coordination meeting with MnDOT was conducted in May of 2018 regarding permitting and siting requirements. During the meeting, MnDOT engineering staff provided general information related to the MnDOT accommodation policy, as well as information related to the MnDOT right-of-way (ROW) mapping feature and planned future projects in District 6. MnDOT also stated that as part of the Commission permitting process, they would not approve a ROW permit prior to

issuance of a Route Permit. DCW and MnDOT agreed to continue coordination on the Project as additional engineering details become available.

DCW submitted a digital application for permits to microsite in MnDOT ROW on May 20, 2020.

DCW provided revised project coordination materials to MnDOT in February 2021, and coordination regarding the Project was re-engaged. A meeting was held with MnDOT in April 2021 to discuss the crossing of Trunk Highways 56 and 30, design requirements, and permitting procedures.

On October 6, 2021, MnDOT filed a letter in the Application docket (IP6981/TL-20-867) clarifying MnDOT Utility Accommodation on Trunk Highway Right of Way policy. MnDOT and DCW continued to coordinate with regard to the application of MnDOT policy in October and November 2021. In November 2021, DCW provided the Route to MnDOT to confirm that proposed crossings are consistent with MnDOT policy.

7.1.5 Minnesota State Historic Preservation Office

Correspondence with the SHPO regarding the Project has been underway since 2017. DCW sent an introductory letter to the SHPO in April of 2017. Several reports based on previous project designs were submitted to the SHPO in 2018. Ongoing coordination and correspondence with the SHPO will continue throughout project development. The SHPO and the Minnesota Office of the State Archaeologist (OSA) were contacted in December 2020 to gather cultural resources records related to the Route. The methods for cultural pedestrian survey in existing road ROW were discussed with the SHPO, and an application for a Minnesota Archaeological Survey License for survey on public lands to accommodate 2021 ROW activities was submitted to the OSA. Phase I archaeological field surveys are discussed in **Section 5.4**.

7.1.6 Tribal Outreach

In 2020, DCW conducted outreach to 31 tribes to provide an overview of the Project and to invite tribes to participate in project coordination. A list of the tribes contacted is provided in **Appendix F: Agency Correspondence,** and a copy of the outreach letter is included in **Appendix F: Agency Correspondence**. In response to this invitation, the Standing Rock Sioux Tribe, Upper Sioux Community, Rosebud Sioux Tribe, and Sisseton Wahpeton Oyate participated in project field reconnaissance and subsequent Phase I archaeological field surveys. No concerns were identified by tribal representatives during these efforts. Coordination with tribes is expected to continue throughout project development.

7.1.7 Wetland Conservation Act Local Government Units

The Applicant held an in-person meeting with the Dodge County Soil and Water Conservation District in August of 2017 to introduce the Project and discuss potential permitting. DCW provided a project update in July 2020. Coordination with Minnesota Wetland Conservation Act local government units for Dodge and Mower counties will continue as project design and permitting progresses.

7.1.8 County Contacts

7.1.8.1 Dodge County

The Applicant had extensive coordination with Dodge County between 2016 and 2019 regarding a previous iteration of the Project (Docket WS-17-307 and TL-17-308). Since 2020, and following a change in project interconnection and design, DCW has been in ongoing dialogue with various Dodge County representatives. An in-person meeting was held with the Dodge County Board on January 7, 2020. At this meeting, DCW provided a status update regarding the state-regulated permitting process for the construction of the DCW Wind Project and DCW Transmission Project. Project representatives also answered key questions from county staff.

DCW held a virtual meeting with the Dodge County Board to provide a status update for the Project on May 26, 2020. DCW also held virtual meetings with the following Dodge County representatives on July 14, 2020: (i) Dodge County Planning and Zoning regarding land use permitting; (ii) Dodge County Highway Department regarding the Road Use and Repair Agreement and permitting; (iii) Dodge County Environmental Services regarding floodplain, wetland, and shoreline permitting; and (iv) Dodge County Soil and Water Conservation District regarding floodplain, wetland, and shoreline permitting.

DCW held an agency coordination meeting with the Dodge County Highway Department on July 20, 2020. Similarly, DCW held a high-level project discussion via phone with the Dodge County Zoning Department on July 24, 2020. DCW held a virtual agency coordination meeting with Dodge County Environmental Services and Dodge County Planning and Zoning on August 6, 2020, to provide a project status update and to request a zoning letter. On August 28, 2020, DCW held a virtual discussion with Dodge County Environmental Services to review a detailed route plan for the Project.

On September 11, 2020, DCW held a conference call with Dodge County Environmental Services to discuss local floodplains and to request county floodplain data. DCW held a virtual meeting with Dodge County Geographic Information Systems (GIS) staff on September 25, 2020, to discuss GIS data layers for project planning and development. DCW held a virtual meeting with the Dodge County Highway Department on October 16, 2020, regarding the use of county road ROW for the proposed transmission line route. DCW held a virtual meeting with the Dodge County Board of Commissioners in December 2020 and attended in-person meetings in May and September 2021 to provide project status updates. DCW held virtual meetings with the Dodge County Highway Department in May and August 2021 to review intersection approaches and expected outcomes for pole positioning and to discuss Utility Permit requirements for operations and maintenance access.

7.1.8.2 Mower County

DCW held a courtesy call with the Mower County Highway Department regarding surveying on May 22, 2020. In July 2020, DCW held an early-stage phone conversation with Mower County Public Works and Zoning. Between August 31 and September 14, 2020, DCW provided Mower Public Works with updates on routing and current routes under consideration. Mower County confirmed that no expansions of roads and county ROW associated with the potential routes under consideration were planned.

DCW held a phone call with Mower County Public Works and Zoning on November 20, 2020. Mower County Public Works representatives concurred with DCW's plans to co-locate with the existing Great River Energy (GRE) Pleasant Valley to Austin Northeast 161 kilovolt (kV) transmission line in Mower County. Public Works staff also indicated that 660th Avenue may be widened in the future but could not indicate the specific width or exact location of the widening as final design for this expansion has not occurred. It was noted that Freeborn Mower Electric Cooperative has distribution lines in the 660th Avenue area and expects to move those distribution lines underground in the area discussed. During a follow-up virtual meeting in May 2021, Public Works staff confirmed that there are no immediate plans for widening 660th Avenue and that they therefore did not have any concerns regarding the specific roads along the Proposed Alignment. Public Works staff reinforced that they preferred for pole structures to be placed within road ROW instead of just outside of road ROW. DCW confirmed that new pole structures planned for the single circuit portion of the Proposed Alignment are proposed strictly within road ROW.

7.1.9 City and Township Contacts

7.1.9.1 City of Dodge Center

Project representatives initially met with the City of Dodge Center on November 23, 2016, to provide an update on a previous iteration of the Project (Docket WS-17-307). The city provided feedback on planned future expansion, the city's territorial jurisdiction, and raised considerations regarding the Dodge Center Airport. City officials provided DCW with guidance documents pertaining to future planned expansion, an airport zoning map, and associated proximity regulations pertaining to project development.

Project representatives met with the Dodge Center City Council on June 12, 2017. The meeting included a formal project presentation, as well as a discussion of the state-regulated permitting and application process for construction of the Project and its estimated timeline. Dodge Center City Council members asked general questions about the economic benefits of a commercial-scale wind farm.

After changes in project interconnection and design, DCW provided project updates via virtual meetings with the Dodge Center City Administrator on November 12, 2020, and with the City of Dodge Center Municipal Airport Board on December 16, 2020.

7.1.9.2 Ashland Township

DCW representatives initially coordinated with the Ashland Township Board in 2017 regarding the Project. After a change in project interconnection and design, DCW held a courtesy call with the Ashland Township Board in May 2020 regarding surveying. DCW held virtual meetings with the Ashland Township Board in December 2020 and May 2021 to discuss updates to the Project's proposed transmission line and point of interconnection. DCW attended an in-person Dodge County Township Officials' meeting in October 2021 to provide a project update for all township officials within the county.

7.1.9.3 Hayfield Township

Project representatives initially met with the Hayfield Township Board in February 2018 to discuss a previous iteration of the Project. Following a change in project interconnection and design, DCW

held virtual meetings with the Hayfield Township Board in December 2020 and May 2021 to discuss project updates. DCW attended an in-person Dodge County Township Officials' meeting in October 2021 to provide a project update for all township officials within the county.

7.1.9.4 Ripley Township

Project representatives initially met with Ripley Township Board members in July 2017 to discuss a previous iteration of the Project. Following a change in project interconnection and design, DCW held a courtesy call in May 2020 with the Ripley Township Board regarding surveying. DCW held virtual meetings with the Ripley Township Board in December 2020 and May 2021 to discuss updates to the Project's proposed transmission line and point of interconnection. DCW attended an in-person Dodge County Township Officials' meeting in October 2021 to provide a project update for all township officials within the county.

7.1.9.5 Vernon Township

DCW held a courtesy call with the Vernon Township Board regarding surveying in May 2020. DCW held a virtual meeting with the Vernon Township Board in May 2021 to discuss project updates. DCW attended an in-person Dodge County Township Officials' meeting in October 2021 to provide a project update for all township officials within the county.

7.1.9.6 Pleasant Valley Township

DCW held a courtesy call with the Pleasant Valley Township Board regarding surveying in May 2020.

7.1.9.7 Sargeant Township

DCW held a courtesy call with the Sargeant Township Board regarding surveying in May 2020. Additional coordination efforts with Sargeant Township were conducted in March and May of 2021.

7.2 Identification of Landowners

A list of potentially affected landowners along and adjacent to the Proposed Alignment and Alternate Segment White is included in **Appendix G**. DCW has secured landowner participation where the Proposed Alignment traverses private lands within the DCW Wind Project area. DCW will continue its outreach program with Dodge and Mower county landowners along the Proposed Alignment and Alternate Segment White to obtain private overhang easement agreements. In areas where overhang easement agreements are not secured, DCW intends to construct the Project wholly within the available road ROW. DCW will not utilize any private land where voluntary landowner transmission or overhang easements have not been secured. Along the approximately 2.1 miles of the Proposed Alignment where poles are planned outside of existing ROW, private landowner transmission easement agreements have been secured. In addition, along the 24.7 miles of Proposed Alignment where transmission structures are planned within road ROW, DCW is working with landowners to obtain overhang easements to allow the transmission line to overhang onto adjoining private properties. Currently, approximately 12 miles along the Proposed Alignment have options for overhang easement agreements in place. DCW continues to coordinate with landowners to further easement acquisition.

7.3 Required Permits and Approvals

The Project will be constructed within Dodge and Mower counties, Minnesota. DCW will be required to obtain a number of federal, state, and local permits prior to initiating project construction activities. A list of permits and other approvals that may be required for the Project is presented in **Table 7.2**.

Table 7.2
List of Potential Permits and Approvals

Regulatory Authority	Permit/Approval
Federal	
Federal Aviation Administration	▪ Form 7460-1 Notice of Proposed Construction or Alteration ▪ Form 7460-2 Supplemental Notice
U.S. Army Corps of Engineers	▪ Clean Water Act § 404 Permit Wetland Delineation Approvals
U.S. Fish and Wildlife Service	▪ Informal coordination regarding Section 7 of the Endangered Species Act
U.S. Environmental Protection Agency (Region 5) in coordination with the Minnesota Pollution Control Agency	▪ Spill Prevention Control and Countermeasure (SPCC) Plan
State	
Minnesota Public Utilities Commission	▪ Route Permit for high voltage transmission line (HVTL) ▪ Certificate of Need for HVTL as an associated facility of the Large Wind Energy Conversion System
Minnesota Department of Agriculture	▪ Agriculture Impact Mitigation Plan
Minnesota Pollution Control Agency	▪ National Pollutant Discharge Elimination System/State Disposal System Permit—General Storm Water Permit for Construction Activity ▪ SPCC Plan ▪ Clean Water Act Section 401 Water Quality Certification
Minnesota Department of Natural Resources	▪ General Permit for Water Appropriations, Dewatering ▪ License to Cross Public Lands and Waters ▪ Work in Public Waters Permit ▪ Endangered Species Statutes—Permits and Coordination

Regulatory Authority	Permit/Approval
Minnesota Board of Water and Soil Resources	▪ Wetland Conservation Act Approval
Minnesota Department of Transportation (MnDOT)	▪ Oversize/Overweight Permit for State Highways ▪ Access Driveway Permits for MnDOT Roads ▪ Utility Access Permit
Local	
Dodge and Mower Counties	▪ Road Use Agreements ▪ Utility Permits ▪ Working in Right-of-Way Permits ▪ Overweight/Over-Dimension Permits
Townships	▪ Driveway permits for access roads and electrical collection system, as needed

7.3.1 Federal Permits

7.3.1.1 U.S. Army Corps of Engineers—Clean Water Act, Section 404 Permit

A Section 404 permit is required from the USACE under the Clean Water Act (CWA) for discharges of dredged or fill material into WOTUS. DCW will apply for these permits, as necessary once a Route Permit is issued for the Project.

7.3.1.2 Federal Aviation Administration—Part 7460 Review

Federal Aviation Administration (FAA) notice and approval are required for structures 200 feet above ground level, or those that may exceed an imaginary surface extending outward and upward at certain slopes defined in the Code of Federal Regulations Part 77.9. FAA Form 7460-1 will be submitted to the FAA as notice of proposed construction or alteration. Each individual structure meeting these requirements will be filed for notice, which will include information such as the latitude and longitude, structure height, and the elevation at the structure location. The FAA will then conduct an aeronautical study for potential airspace impacts and issue a notice of presumed hazard (notice of preliminary findings) that may lead to a final determination of hazard or no hazard. If a structure location is changed prior to construction, it is necessary to resubmit Form 7460-1 for that structure. Any project structures that require a determination of no hazard will not be erected until the determination of no hazard is received. When the construction is complete, as-built information will be submitted to the FAA using Form 7460-2.

7.3.1.3 Spill Prevention, Control, and Countermeasure Plan

The U.S. Environmental Protection Agency (Region 5), in coordination with the Minnesota Pollution Control Agency (MPCA), will approve a Spill Prevention, Control, and Countermeasure (SPCC) plan, which is required to contain and prevent discharge of oil or other petroleum products into WOTUS. Should the minimum volume threshold be met for construction (*e.g.*, fuel storage) and substation operation for the Project, the Applicant will develop the necessary SPCC plans.

7.3.2 State of Minnesota Permits

7.3.2.1 Minnesota Pollution Control Agency—National Pollutant Discharge Elimination System Permit

The MPCA requires a National Pollutant Discharge Elimination System Permit for stormwater discharges associated with construction activities disturbing 1 acre or more of land. Prior to construction, DCW will obtain a stormwater permit and develop and implement a Stormwater Pollution Prevention Plan that identifies best management practices (BMPs) and construction measures to contain soils and to minimize discharge of sediment during stormwater events.

7.3.2.2 Minnesota Pollution Control Agency—Clean Water Act, Section 401

The MPCA requires a USACE Section 401 Water Quality Certification permit for any activity potentially resulting in discharge to WOTUS. This certification ensures the Project will comply with state water quality standards according to the CWA.

7.3.2.3 Minnesota Department of Natural Resources—License to Cross Public Waters or State Lands

An MNDNR Utility License is required for the passage of any utility over, under, or across any public land or Public Waters. The MNDNR Division of Lands and Minerals is responsible for granting approval in the form of a crossing license.

7.3.2.4 Minnesota Department of Natural Resources—Threatened and Endangered Species Consultation

Pursuant to Minnesota's Endangered Species Statute, the MNDNR designates species meeting the statutory definitions of endangered, threatened, or species of special concern and regulates treatment of those species. DCW will consult with the MNDNR regarding any project-specific construction considerations related to Minnesota's Endangered Species Statute.

7.3.2.5 Minnesota Department of Transportation—Utility Permit

The Applicant will apply for a Utility Accommodation on Trunk Highway Right of Way permit (Form 2525). This permit is required for the construction of utility facilities crossing existing trunk highway ROW.

7.3.2.6 Minnesota Department of Transportation—Access/Driveway Permit

The Applicant will apply for an Access/Driveway Permit (Form 1721) for using driveways and access points to trunk highways crossed by the Project during construction.

7.3.2.7 Minnesota Department of Transportation—Oversize/Overweight Permits

The Applicant will apply for oversize and/or overweight permits for all vehicles using state trunk highways during construction and operation of the Project. These permits are required for vehicle loads of excess height, length, and/or weight, although overlength utility poles may be exempt. Certain overwidth and/or overlength loads require escorts, which the Applicant will arrange as necessary.

7.3.2.8 Minnesota Department of Agriculture—Agriculture Impact Mitigation Plan

If applicable to the Project, the Applicant will develop an Agriculture Impact Mitigation Plan for the Project. If needed, Applicant will consult with the Minnesota Department of Agriculture to develop a plan that details the measures to be implemented to avoid, mitigate, or compensate for impacts on agricultural lands that may occur during project construction and operations. This plan will describe measures and BMPs to be used to minimize negative impacts on cultivated fields and drain tile systems. Landowners would be compensated for any loss of or damage to crops, or for lands that cannot be planted because of project construction activities.

7.3.2.9 Minnesota Wetland Conservation Act Permits

The Applicant will secure all permits under the Minnesota Wetland Conservation Act as needed for the Project.

7.3.3 Local Permits

When field work and surveys are conducted in road ROW, appropriate Work-in-ROW permits will be obtained from Dodge and Mower counties. Once the Commission issues a Route Permit, all zoning, building, and land use rules, regulations, and ordinances promulgated by regional, county, and local governments are preempted under Minnesota Statutes § 216E.10, subdivision 1. Applicable permits such as Utility Access Permits concerning road access and road ROW use will be secured, as needed, for the Project.

If applicable, the Applicant will coordinate with Dodge County and Mower County on the placement of structures within the 100-year floodplain.

8.0 References

AirNow. 2021. Air quality index (AQI) basics. https://www.airnow.gov/aqi/aqi-basics/.

ANSI [American National Standards Institute]. 2017. Tree, shrub, and other woody plant management - standard practices (Pruning). ANSI A300 (Part 1) - 2017 Pruning.

APLIC [Avian Powerline Interaction Committee]. 2006. Suggested practices for avian protection on power lines: the state of the art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission.

APLIC [Avian Powerline Interaction Committee]. 2012. Reducing avian collisions with power lines: the state of the art in 2012. Washington (DC): Edison Electric Institute and APLIC. http://www.aplic.org/uploads/files/11218/Reducing_Avian_Collisions_2012watermarkLR.pdf.

Atwell. 2017a. Bald eagle & raptor nest aerial survey summary report. Dodge County Wind Project. Dodge County, Minnesota (Atwell #16002517). Lakewood (CO).

Atwell. 2017b. Dodge County Wind technical avian data summary: targeted loggerhead shrike & Henslow's sparrow inventory survey (summer 2017).

Atwell. 2017c. Dodge County Wind Technical Avian Data Summary: Hybrid Eagle & Avian Migration Use Survey Data Summary (Partial Late-Spring Migration 2017 only).

Auch RF. 2016. Western Corn Belt Plains Ecoregion Summary. US Geological Survey. https://landcovertrends.usgs.gov/gp/eco47Report.html.

Becker GC. 1983. Fishes of Wisconsin. Madison (WI): The University of Wisconsin Press.

Bevanger K. 1994. Bird interactions with utility structures: collision and electrocution, causes and mitigating measures. Ibis. 136(4):412–425.

Bolt, Beranek and Newman Inc. 1984. Electric power plant environmental noise guide, volume 1. 2nd Edition. Edison Electric Institute.

CEDA [Community and Economic Development Associates]. 2019. Comprehensive plan. Dodge County, MN. https://www.co.dodge.mn.us/Comprehensive%20Plan%20Final%20Adopted%20Version.pdf.

Dodge County. 2017. Dodge County Zoning Ordinance. http://www.co.dodge.mn.us/EnvironmentalServices/Chapter%2016%20%20Performance%20Standards%206-3-15.pdf.

Dodge County. 2019. Sunrise & sunset trails. https://www.co.dodge.mn.us/departments/parks_and_trails/index.php.

eBird. 2020. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca (NY). http://www.ebird.org.

Eliason B. 1996. Statewide survey and habitat protection for the loggerhead shrike in Minnesota. Final report submitted to U.S.F.W.S. Partnerships for Wildlife program. Minnesota Department of Natural Resources - Natural Heritage & Nongame Research Program. https://files.dnr.state.mn.us/eco/nongame/projects/consgrant_reports/1996/1996_eliason.pdf.

EPRI. 1982. Transmission Line Reference Book - 345 kV and Above. Second Edition. Palo Alto, California: Electric Power Research Institute.

Erickson WP, Johnson GD, Young Jr. DP. 2005. A summary and comparison of bird mortality from anthropogenic causes with an emphasis on collisions. USDA Forest Service Report No.: PSW-GTR-191. https://www.fs.fed.us/psw/publications/documents/psw_gtr191/psw_gtr191_1029-1042_erickson.pdf.

Explore Minnesota. 2020. Tourism & Minnesota's economy 2020 fact sheet. Explore Minnesota for the Tourism Industry. https://mn.gov/tourism-industry/assets/FactSheet_2020_FINAL_tcm1135-419901.pdf.

FCC [Federal Communications Commission]. 2018. Homeland Infrastructure Foundation-Level Data. TV Broadcast Contours. https://hifld-geoplatform.opendata.arcgis.com/datasets/tv-broadcast-contours/explore?location=6.984954%2C-15.994213%2C2.82.

FEMA [Federal Emergency Management Agency]. 2018. FEMA Flood map service center. http://msc.fema.gov/portal/.

FHWA [Federal Highway Administration]. 2006. Construction Noise Handbook. https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/.

Foo C. 2020. 2020 raptor nest survey, Dodge County Wind Energy Project, transmission line, Dodge County, Minnesota. Golden Valley (MN): Western EcoSystems Technology, Inc. (WEST).

Foo C, Pickle J. 2021. 2021 eagle nest survey, Dodge County Wind Energy Project, Dodge and Steele counties, Minnesota. Golden Valley (MN): Western EcoSystems Technology, Inc. (WEST).

HDR [HDR Engineering Inc]. 2017. Avian use report. Dodge County Wind Project. Dodge County Wind LLC. Dodge and Steele counties, Minnesota.

Hudak J, Hobbs E, Brooks A, Sersland CA, Phillips C. 2002. Mn/model: a predictive model of precontact archaeological site location for the State of Minnesota final report 2002. Minnesota Department of Transportation. http://www.dot.state.mn.us/mnmodel/P3FinalReport/final_report.html.

ISO [International Organization for Standardization]. 1996. ISO 9613-2 acoustics – attenuation of sound during propagation outdoors – part 2: general method of calculation. https://www.iso.org/standard/20649.html.

Jirsa MA, Boerboom TJ, Chandler VW, Mossler JH, Runkel AC, Setterholm DR. 2011. S-21 geologic map of Minnesota-bedrock geology. https://conservancy.umn.edu/handle/11299/101466.

Leverett F. 1932. Quaternary geology of Minnesota and parts of adjacent states. Washington (DC): U.S. Department of the Interior Professional Paper. https://pubs.usgs.gov/pp/0161/report.pdf.

Markhart E. 2021. Technical memorandum. Dodge County Wind Energy Project Sullivant's milkweed screening. Golden Velley (MN): Western EcoSystems Technology, Inc. (WEST).

Markhart E, Voth M. 2021. Technical memorandum. Sullivant's milkweed 2021 presence/absence survey results. Dodge County Wind Energy Project – transmission line. Golden Valley (MN): Western EcoSystems Technology, Inc. (WEST).

Marous & Company. 2021. Market Impact Analysis. Dodge County Wind. Dodge and Steele County, Minnesota.

McNab WH, Avers PE. 1994. Ecological Subregions of the United States: Section Descriptions. WO-WSA-5. Washington, DC: USDA Forest Service.

MDA [Minnesota Department of Agriculture]. 2016. AgroEcoregions, Minnesota. Minnesota Geospatial Commons. https://gisdata.mn.gov/dataset/agri-agroecoregions.

MDA [Minnesota Department of Agriculture]. 2020a. Voluntary best management practices to control pests without pesticides. https://www.mda.state.mn.us/voluntary-best-management-practices-control-pests-without-pesticides.

MDA [Minnesota Department of Agriculture]. 2020b. Pesticide best management practices. https://www.mda.state.mn.us/pesticide-fertilizer/pesticide-best-management-practices.

MDH [Minnesota Department of Health]. 2019. Minnesota well index. https://apps.health.state.mn.us/cwi/#.

Minnesota Department of Public Safety. 2015. Minnesota 2014-2015 Minnesota Statewide Communication Interoperability Plan (SCIP). https://dps.mn.gov/divisions/ecn/programs/armer/Documents/MN%20SCIP%202014-2015%20for%20Publication.pdf.

Minnesota U of, MDA [Minnesota Department of Agriculture]. 1998. Minnesota river basin agroecoregions regions (agroec). http://mrbdc.mnsu.edu/metadata/agroec.html.

MNDNR [Minnesota Department of Natural Resources]. 2001. Figure 1: Minnesota Ground Water Provinces.
http://files.dnr.state.mn.us/natural_resources/water/groundwater/provinces/gwprov.pdf.

MNDNR [Minnesota Department of Natural Resources]. 2016a. Designated wildlife lakes. Minnesota Geospatial Commons. https://gisdata.mn.gov/dataset/env-designated-wildlife-lakes.

MNDNR [Minnesota Department of Natural Resources]. 2016b. Rare Species Guide. http://www.dnr.state.mn.us/rsg/index.html.

MNDNR [Minnesota Department of Natural Resources]. 2018. Calcareous fens. https://files.dnr.state.mn.us/natural_resources/water/wetlands/calcareous_fen_fact_sheet.pdf.

MNDNR [Minnesota Department of Natural Resources]. 2020a. Groundwater provinces. https://www.dnr.state.mn.us/groundwater/provinces/index.html.

MNDNR [Minnesota Department of Natural Resources]. 2020b. MBS site biodiversity significance ranks. https://www.dnr.state.mn.us/eco/mcbs/biodiversity_guidelines.html.

MNDNR [Minnesota Department of Natural Resources]. 2020c. MBS sites of biodiversity significance. Minnesota Geospatial Commons. https://gisdata.mn.gov/dataset/biota-mcbs-sites-of-biodiversity.

MNDNR [Minnesota Department of Natural Resources]. 2020d. *Lespedeza leptostachya* Engelm. Prairie bush clover. Minnesota Department of Natural Resources Rare Species Guide. http://dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDFAB27090.

MNDNR [Minnesota Department of Natural Resources]. 2020e. *Parthenium integrifolium* wild quinine. Rare Species Guide. https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDAST6V060.

MNDNR [Minnesota Department of Natural Resources]. 2021a. Ecological classification system: ecological land classification hierarchy. http://www.dnr.state.mn.us/ecs/index.html.

MNDNR [Minnesota Department of Natural Resources]. 2021b. Wildlife management areas. http://www.dnr.state.mn.us/wmas/index.html.

MNDNR [Minnesota Department of Natural Resources]. 2021c. Minnesota scientific and natural areas find by map. https://www.dnr.state.mn.us/snas/map.html.

MNDNR [Minnesota Department of Natural Resources]. 2021d. Buffer mapping project. http://www.dnr.state.mn.us/buffers/index.html.

MNDNR [Minnesota Department of Natural Resources]. 2021e. Public waters inventory (PWI) maps. http://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html.

MNDNR [Minnesota Department of Natural Resources]. 2021f. *Asclepias sullivantii* Engelm. ex Gray Sullivant's milkweed. Minnesota Department of Natural Resources Rare Species Guide. https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDASC021X0.

MNDNR [Minnesota Department of Natural Resources]. 2021g. Iron Horse Prairie SNA. Scientific and Natural Areas. https://www.dnr.state.mn.us/snas/detail.html?id=sna01018.

MNDNR [Minnesota Department of Natural Resources]. 2021h. *Eryngium yuccifolium* rattlesnake master. Rare Species Guide. dnr.state.mn.us/rsg/profile.html?action=elementDetail&selectedElement=PDAPI0Z0V0.

MNDNR [Minnesota Department of Natural Resources]. 2021i. Natural heritage information system. Natural Heritage & Nongame Research. http://www.dnr.state.mn.us/nhnrp/nhis.html.

MNDNR [Minnesota Department of Natural Resources]. 2021j. MBS site biodiversity significance ranks. Minnesota Biological Survey. https://www.dnr.state.mn.us/eco/mcbs/biodiversity_guidelines.html.

MNDNR [Minnesota Department of Natural Resources], USFWS [U.S. Fish and Wildlife Service]. 2020. Townships containing documented northern long-eared bat (NLEB) maternity roost trees and/or hibernacula entrances in Minnesota. https://files.dnr.state.mn.us/eco/ereview/minnesota_nleb_township_list_and_map.pdf.

MnDOT [Minnesota Department of Transportation]. 2001. Geologic map of Minnesota. https://www.dot.state.mn.us/materials/geologydocs/quaterweb.pdf.

MnDOT [Minnesota Department of Transportation]. 2002a. County Pit Maps: Dodge County Minnesota. http://www.dot.state.mn.us/materials/maps/copitmaps/dodge.pdf.

MnDOT [Minnesota Department of Transportation]. 2002b. General highway map Mower County Minnesota. https://www.dot.state.mn.us/materials/maps/copitmaps/mower.pdf.

MnDOT [Minnesota Department of Transportation]. 2019. Utility accommodation & coordination manual.

MnDOT [Minnesota Department of Transportation]. 2018. Aggregate sources - viewing with Google Earth. Minnesota Department of Transportation ASIS Map - Google Earth. https://www.dot.state.mn.us/materials/asis_GE.html.

MnDOT [Minnesota Department of Transportation]. 2020a. Annual average daily traffic locations in Minnesota. Minnesota Geospatial Commons. https://gisdata.mn.gov/dataset/trans-aadt-traffic-count-locs.

MnDOT [Minnesota Department of Transportation]. 2020b. Pesticide guidance. MnDOT Office of Environmental Stewardship. https://www.dot.state.mn.us/roadsides/vegetation/pdf/pesticide-guidance.pdf.

MnDOT [Minnesota Department of Transportation]. 2020c. Pesticide management on MnDOT property. MnDOT Policies. https://www.dot.state.mn.us/policy/operations/op011.html.

Mower County. 2002. Mower County comprehensive plan. https://www.co.mower.mn.us/201/PW-Planning-and-Administration.

Mower County. 2003. Mower County zoning ordinance. https://www.co.mower.mn.us/DocumentCenter/View/1168/Mower-County-Zoning-Ordinance-PDF.

MPCA [Minnesota Pollution Control Agency]. 2016. Minnesota's Impaired Waters List. https://www.pca.state.mn.us/water/minnesotas-impaired-waters-list.

MPCA [Minnesota Pollution Control Agency]. 2018. Minnesota air monitoring sites. https://www.pca.state.mn.us/air/minnesota-air-monitoring-sites.

MPCA [Minnesota Pollution Control Agency]. 2020a. About air quality data. https://www.pca.state.mn.us/air/about-air-quality-data.

MPCA [Minnesota Pollution Control Agency]. 2020b. Minnesota's air monitoring network. https://www.pca.state.mn.us/air/minnesotas-air-monitoring-network.

MPCA [Minnesota Pollution Control Agency]. 2021a. What's in my neighborhood. Minnesota Geospatial Commons. https://gisdata.mn.gov/dataset/env-my-neighborhood.

MPCA [Minnesota Pollution Control Agency]. 2021b. Annual AQI summary reports; Annual AQI days: compare years in one region (chart). https://www.pca.state.mn.us/air/annual-aqi-summary-reports.

MRLC [Multi-Resolution Land Characteristics Consortium]. 2019. National land cover database. https://www.mrlc.gov/data?f%5B0%5D=category%3Aland%20cover&f%5B1%5D=region%3Aconus&f%5B2%5D=year%3A2016.

National Audubon Society. 2021. Important bird areas. Audubon. http://www.audubon.org/important-bird-areas.

NatureServe. 2020. NatureServe explorer [web application]. NatureServe, Arlington, Virginia. http://explorer.natureserve.org/.

Normandeau Associates, Inc. 2014. Bat monitoring final report for the Dodge County Wind Resource Area, Dodge County, Minnesota. Gainesville (FL).

NPS [National Park Service]. 2021. National register of historic places. https://npgallery.nps.gov/nrhp.

NRCS [Natural Resources Conservation Service]. 2018. Description of STATSGO2 Database. USDA NRCS Soils. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/geo/?cid=nrcs142p2_053629.

NRCS [Natural Resources Conservation Service]. 2021. Description of STATSGO2 Database. USDA NRCS Soils. https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/survey/geo/?cid=nrcs142p2_053629.

Omernik JM, Gallant A. 1988. Ecoregions of the Upper Midwest States. http://nepis.epa.gov/Adobe/PDF/2000IBN4.PDF.

Pardieck KL, Ziolkowski, Jr. DJ, Lutmerding M, Aponte VI, Hudson M-AR. 2020. North American breeding bird survey dataset 1966 - 2019: U.S. Geological Survey data release. Laurel (MD): USGS Patuxent Wildlife Research Center. https://doi.org/10.5066/P9J6QUF6.

Pfannmuller L, Niemi G, Green J, Sample B, Walton N, Zlonis E, Brown T, Bracey A, Host G, Reed J, et al. 2017. The first Minnesota breeding bird atlas (2009-2013). https://mnbirdatlas.org/.

Revisor of Statutes, State of Minnesota. 2017. 7009.0080 Minnesota Ambient Air Quality Standards. https://www.revisor.mn.gov/rules/pdf/7009.0080/2017-01-27%2015:41:50+00:00.

Silva JM, Olsen RG. 2002. Use of Global Positioning System (GPS) receivers under power-line conductors. IEEE Transactions on Power Delivery. 17(4):938–944. doi:10.1109/TPWRD.2002.803791.

Tuma M, Foo C. 2020. December 2020 raptor nest survey, Dodge County Wind Energy Project transmission line, Dodge County, Minnesota. Prepared for NextEra Energy Resources, LLC, Juno Beach, Florida. Golden Valley (MN): Western EcoSystems Technology, Inc. (WEST). December 21, 2020.

U.S. Census Bureau. 2021. 2015 - 2019 ACS 5-year data profile. American Community Survey. https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/2019/.

U.S. Congress. 1940. Bald and Golden Eagle Protection Act. 16 U.S. Code 668-668c.

USDA [U.S. Department of Agriculture]. 2017. 2017 census of agriculture, county profile. Dodge County, Minnesota. National Agricultural Statistics Service. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Minnesota/cp27039.pdf.

USDA [U.S. Department of Agriculture]. 2019. Web soil survey. Natural Resources Conservation Service. http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm.

USDOT [U.S. Department of Transportation]. 2021. Clear zones. Federal Highway Administration. https://safety.fhwa.dot.gov/roadway_dept/countermeasures/safe_recovery/clear_zones/.

USEPA [U.S. Environmental Protection Agency]. 2020. Summary of the Clean Air Act. Laws & Regulations. https://www.epa.gov/laws-regulations/summary-clean-air-act.

USEPA [U.S. Environmental Protection Agency]. 2021a. NAAQS table. https://www.epa.gov/criteria-air-pollutants/naaqs-table.

USEPA [U.S. Environmental Protection Agency]. 2021b. EPA WATERS GeoViewer. USEPA Water Data and Tools. https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=ada349b90c26496ea52aab66a092593b.

USFWS [U.S. Fish and Wildlife Service]. 2007. National bald eagle management guidelines. https://www.fws.gov/southdakotafieldoffice/NationalBaldEagleManagementGuidelines.pdf.

USFWS [U.S. Fish and Wildlife Service]. 2015. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat With 4(d) Rule.

http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/FRnlebFinalListing02April2015.pdf.

USFWS [U.S. Fish and Wildlife Service]. 2009. Prairie bush clover (*Lespedeza leptostachya*) fact sheet. Midwest Region Endangered Species. https://www.fws.gov/midwest/endangered/plants/prairiebushclover/prairieb.html.

USFWS [U.S. Fish and Wildlife Service]. 2020a. IPaC - information for planning and consultation. Environmental Conservation Online System (ECOS). https://ecos.fws.gov/ipac/.

USFWS [U.S. Fish and Wildlife Service]. 2020b. Northern long-eared bat final 4(d) rule: white-nose syndrome zone around WNS/Pd positive counties/districts. https://www.fws.gov/Midwest/endangered/mammals/nleb/pdf/WNSZone.pdf.

USFWS [U.S. Fish and Wildlife Service]. 2020c. National wetlands inventory. US Fish and Wildlife Service - NWI Wetland Mapper. http://www.fws.gov/wetlands/Data/Mapper.html.

USGS [U.S. Geological Survey]. 2020. National hydrography dataset. https://www.usgs.gov/core-science-systems/ngp/national-hydrography/national-hydrography-dataset.

USGS [U.S. Geological Survey]. 2021. Land cover data download. Gap Analysis Program (GAP). https://www.usgs.gov/core-science-systems/science-analytics-and-synthesis/gap/science/land-cover-data-download?qt-science_center_objects=0#qt-science_center_objects.