Application For
PSCW Certificate of Public Convenience and Necessity
and
WDNR Utility Permit

Plymouth Reliability Project

PSCW Docket No. 137-CE-205

January 2024

ATC
Energizing Your Future

SECTION **PAGE**

AGL	Above ground line
ASR	Antenna Structure Registration
APE	Area of Potential Effect
ASNRI	Area of Special Natural Resource Interest
ATC	American Transmission Company
BMP	Best Management Practices
BNHC	Bureau of Natural Heritage Conservation
CA	Certificate of Authority
CAFO	Concentrated Animal Feeding Operation
CPCN	Certificate of Public Convenience and Necessity
Commission	Public Service Commission of Wisconsin
CTH	County Trunk Highway
DATCP	Department of Agriculture, Trade and Consumer Protection
DBH	Diameter at Breast Height
EMF	Electromagnetic Field
ER	Endangered Resources
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FCL	Forest Crop Law
GIS	Geographic Information Systems
kV	Kilovolt
LDC	Local Distribution Company
MFL	Managed Forest Land
MSL	Mean Sea Level
MISO	Midcontinent Independent System Operator, Inc.
MVA	Megavolt-amperes
NERC	North American Electric Reliability Corporation
NHI	Wisconsin Natural Heritage Inventory
NRCS	Natural Resources Conservation Service
OHWM	Ordinary High-Water Mark
O/ERW	Outstanding/Exceptional Resource Water
PSCW	Public Service Commission of Wisconsin (Commission)
ROW	Right of way

SSVT	Station Service Voltage Transformer
TCSB	Temporary Clear Span Bridge
TPL	Transmission Planning
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
VT	Voltage Transformer
WDNR	Wisconsin Department of Natural Resources
WisDOT	Wisconsin Department of Transportation
WRAM	Wisconsin Rapid Assessment Methodology
WSOR	Wisconsin & Southern Railroad

APPLICATION FOR PSCW CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY AND WDNR UTILITY PERMIT[1]

1.0 PROJECT OVERVIEW

Description

The Plymouth Reliability Project (Project) consists of a new double-circuit 138 kV transmission line from ATC's Elkhart Lake – Saukville 138 kV line (8241) to Plymouth Utilities' new Plymouth #5 Distribution Substation and the installation of two 138 kV line breakers and voltage transformers (VTs), station service voltage transformer (SSVT), bus disconnect switches, and a control enclosure at the Plymouth #5 Substation.

The new line will loop in and out of the Plymouth #5 Substation and the existing 8241 line will be segmented. The segmentation for the 8241 line will be as follows:

8241 (Saukville – Plymouth)
X-180 (Plymouth – Elkhart)

Need

The Project is needed to reliably serve the new load interconnection request at Plymouth Utilities' proposed Plymouth #5 Substation and to improve Plymouth Utilities' distribution reliability.

Cost

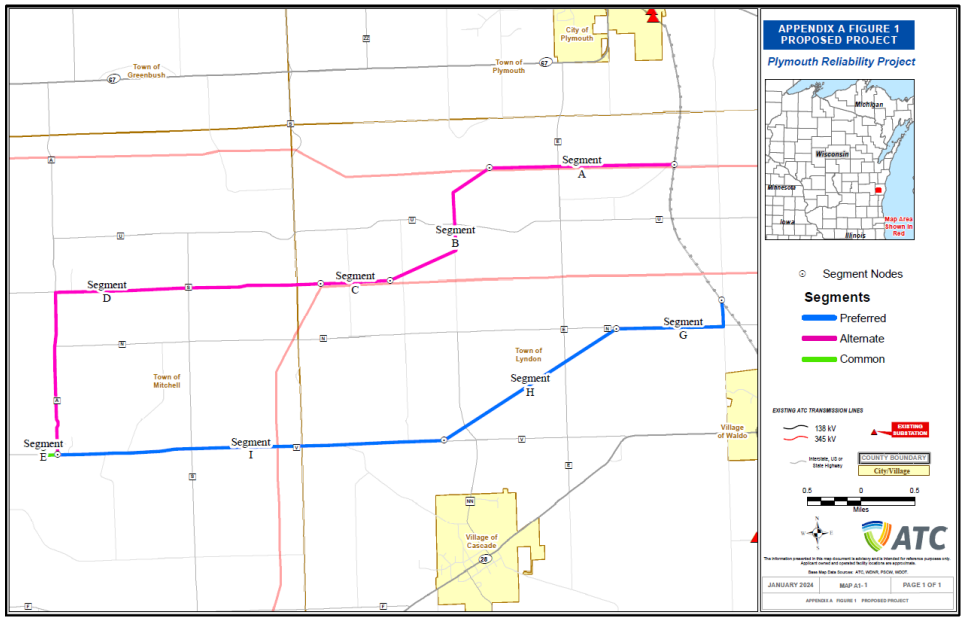
ATC estimates that the Project will cost $33,529,000 for the Preferred Route and $39,231,000 for the Alternate Route.

Schedule

Construction is scheduled to begin in August of 2025 and complete in December of 2025.

[1] This Application was prepared in accordance with the PSCW and WDNR *Application Filing Requirements Transmission Line Projects*, Version 2022, and the *Application Filing Requirements for Substation Projects*, Version 2022 (collectively referred to as the Application Filing Requirements).

Route and Location



1.1 Owners and Investors

American Transmission LLC and its corporate manager, ATC Management Inc., (collectively, ATC or Applicant(s)), which are headquartered at W234 N2000 Ridgeview Parkway Court, Waukesha, Wisconsin 53188, propose to construct the Project, which will be 100%-owned by ATC.

1.2 Agreements

ATC has not entered into any contractual agreements related to this Project with any developer to construct, finance, lease, use, or own transmission facilities.

1.3 Project Location and Endpoints

The Project is located in the Towns of Lyndon and Mitchell in Sheboygan County, Wisconsin. The length of the of the North (Alternate) Route is 8.2 miles and the length of the South (Preferred) Route is 7.0 miles.

1.4 Impacted Cities, Villages, and Townships

The Towns of Lyndon and Mitchell in Sheboygan County are impacted by the proposed Project.

1.5 PSCW Review

1.5.1 Type of Application

Pursuant to the requirements of Wis. Stat. §§ 1.11, 1.12, 196.025, 196.49 and 196.491, and Wis. Admin. Code chs. PSC 4, 111 and 112, ATC hereby applies (Application) to the Public Service Commission of Wisconsin (Commission) for a Certificate of Public Convenience and Necessity (CPCN), together with any other authorization needed, to construct the proposed Project as set forth in further detail below.

Through this Application and pursuant to Wis. Stat. ch. 283 and §§ 30.025(1s), 30.19, 30.123 and 281.36; and Wis. Admin. Code chs. NR 103, 216, 299, and 320, ATC hereby applies to the Wisconsin Department of Natural Resources (WDNR) for a Utility Permit for the Project. The WDNR permits and authorizations necessary to construct the Project are listed in Section 8.

By this filing, ATC confirms its understanding that, through the pre-application process provided for in Wis. Stat. § 30.025(1m), the WDNR, the PSCW, and ATC have conferred and made a preliminary assessment of the Project's scope and alternatives and have identified potentially interested persons. ATC is also aware, in accordance with Wis. Stat. §§ 30.025(1m)(b) & (c), of the information that it is required to provide and the required timing for the submission of this information.

1.5.2 Type of Commission Action

ATC believes this Project is categorized as a Type II action pursuant to Wis. Admin. Code § PSC 4.10(2) and Table 2, subsection (f). Information necessary for the initial preparation of an Environmental Assessment is provided as part of this Application.

1.5.3 Certificate of Public Convenience and Necessity (CPCN) Exemption

This Project does not qualify for a CPCN exemption under Wis. Stat. § 196.491(4)I.

1.5.4 Expedited Review

ATC is not seeking expedited review of this Project.

1.6 Project Details and Project Area Information

1.6.1 Identify if the proposed project is new construction, rebuilding of an existing line, maintenance of an existing line, etc.

The proposed Project consists of a new double-circuit 138 kV transmission line from the 8241 circuit (Saukville-Elkhart) to the new Plymouth #5 Substation and the installation of two 138 kV line breakers and other associated equipment at Plymouth Utilities' Plymouth #5 Substation.

1.6.2 For new or expanded above-ground facilities, such as substations, provide the following:

1.6.2.1. Identify the type of new or expanded facility.

ATC is not constructing or expanding any above ground substation facilities as part of this Project.

1.6.2.2. The location of route(s)the new or expanded facility.

ATC is not constructing or expanding any above ground substation facilities as part of this Project.

1.6.2.3. The size and dimensions of the new facility or expansion of the existing facility, including any new or expanded driveways.

ATC is not constructing or expanding any above ground substation facilities as part of this Project.

1.6.2.4. Total size of the parcel the new or expanded facility would be placed, and the orientation of the facility within the parcel.

ATC is not constructing or expanding any above ground substation facilities as part of this Project.

1.6.2.5. State if the applicant owns the parcel or is in negotiations for purchase of the parcel.

ATC is not constructing or expanding any above ground substation facilities as part of this Project.

1.6.2.6. The current land use and zoning of the parcel.

ATC is not constructing or expanding any above ground substation facilities as part of this Project.

1.6.2.7. Construction procedures to build or expand the facility.

ATC is not constructing or expanding any above ground substation facilities as part of this Project.

1.6.2.8. Describe associated permanent storm water management features that would be constructed, or expansion of or modification to existing storm water treatment facilities. Identify the locations of the point(s) of collection and discharge.

ATC is not constructing or expanding any above ground substation facilities as part of this Project.

1.6.3 Generalized Geology, Topography, Land Cover and Land Use

Generalized Geology

Glaciation has largely determined the physiography, topography, and soils of the region in which the Project is located and is similar for both proposed routes. The Kettle Moraine area rises to 300 or more feet above the lands to the east and west yet is not a continuous divide. Maximum thickness of the drift (sediments transported and deposited by glaciation) is not known because few wells reach bedrock. It is possible that the drift reaches a thickness of 500 feet in some places.

Limestone underlies much of the Kettle Moraine. This formation is 450 to 800 feet thick and dips gently eastward. Its western edge or escarpment extends from Washington Island to the Illinois line near Walworth. It lies 20 miles to the west of Kettle Moraine at Greenbush, is completely covered by the moraine in the Waukesha County area and is 8 miles east of the moraine at Elkhorn. Because of the cover of drift, there are few outcrops in the moraine (History, Kettle Moraine State Forest – Northern Unit. *Wisconsin Department of Natural Resources*, https://dnr.wisconsin.gov/topic/parks/kmn/history. Accessed October 2023).

Topography

The Project area along both proposed routes contains varied topography which is common throughout the Kettle Moraine area. Topographical features include steep-sided ridges, conical hills, and flat outwash plains. Topographic changes in the Project area range from generally

gradual to steep slopes and increase in elevation to the west. Approximately 360 feet of elevation change occurs across the Project area with the highest elevations nearing 1,180 feet Mean Sea Level (MSL) toward the western end of the Project area to 820 feet MSL at the eastern end (History, Kettle Moraine State Forest – Northern Unit. *Wisconsin Department of Natural Resources*, https://dnr.wisconsin.gov/topic/parks/kmn/history. Accessed October 2023).

Land Cover

Land cover is similar for both proposed routes and consists primarily of rural agricultural lands mixed with developed residential roadsides. Other land cover types within the Project area include unmaintained woodlands, wetlands, and roadside grasslands. Increased environmental sensitivities are primarily found along forested areas and waterway crossings within the Project area where development is less extensive.

Land Use

The primary land use within the Project area is for agricultural production. Agricultural practices consist of non-specialty row crops; generally, hay, corn, and soybean production. Pastureland and fallow fields are also present along the proposed routes. The proposed routes have been designed to follow existing utility and transportation corridors including ATC owned transmission lines, a gas pipeline, county highways, and local roadways, where possible. Other land uses include undeveloped woodlands, wetlands, grasslands, and residential properties along town and county highways.

1.6.4 Special or Unique Natural or Cultural Resources

The proposed routes intersect or are located near the following special or unique areas:

- Preferred Route
  - The North Branch Milwaukee River (Class I Trout Stream and Outstanding/Exceptional Resource Water (O/ERW) designated) is intersected by Segment H.
- Alternate Route
  - The Onion River (Class I Trout Stream and O/ERW designated) is intersected by Segment B.
  - The Kettle Moraine North Un–t - Important Bird Area is intersected by approximately 1.3 miles of the Alternate Route (Segment D) at the western end of the Project area.
  - Nichols Creek Wildlife Area is paralleled by approximately 0.6 miles of the Alternate Route (Segments C and D) along the Wildlife Area's northern boundaries. No easement on WDNR owned or managed land is proposed.

- An uncatalogued historic Euro-American cemetery site is intersected by the proposed Right of Way (ROW) (Segment D) as currently mapped. The site consists of a plowed agricultural field with inconsistent records of its existence and no observable evidence of cemetery use based on aerial imagery dating back to 1937. Additional details are provided in Section 6.4 and **Appendix F, Exhibits 5 and 6**.

Waterways are discussed further in **Section 8**.

1.6.5 Areas of Residential Concentrations and Urban Centers

The Project study area is primarily rural in nature and does not cross any urban centers. The closest urban developments to proposed routes are the Village of Waldo along the west boundary of the study area and the Village of Cascade in the south-central portion of the study area. Residential properties are intersected by both proposed routes along town and county highways. However, neither the Preferred nor Alternate Routes cross any notable residential concentrations.

A list of impacted municipalities is included in **Section 1.4**.

1.6.6 Transmission Configuration

Preferred Route:

The Preferred route will be constructed with double-circuit 138 kV weathering steel poles. The route will connect to the existing 8241 circuit where Blueberry Lane crosses the Wisconsin & Southern Railroad. It will head south and parallel Blueberry Lane for approximately 0.2 miles until it reaches the intersection of Blueberry Lane and County Highway N. From there, it will head west and parallel County Highway N for approximately one mile, before turning to the southwest to connect to County Highway V. At County Highway V, the line will parallel the road for approximately 3.8 miles until it turns north to interconnect at the new Plymouth #5 substation. There are several distribution lines that are built roadside that will be removed or relocated. Additional details regarding the proposed transmission configurations are provided in Section 5.3.

Alternate Route:

The Alternate route will be constructed with double-circuit 138 kV weathering steel poles. The route will connect to the existing 8241 circuit where Winooski Road crosses the Wisconsin & Southern Railroad. From there it will parallel the W-1 345 kV line for approximately 1.7 miles, before turning southwest for 0.4 miles. The line will then traverse south for approximately 0.5 miles where it will cross County Highway U and parallel Dooley Road for 0.2 miles. The route

will then head southwest for approximately 0.7 miles where it will meet and parallel the L-SEC31 345 kV line for 0.6 miles. When the L-SEC31 line turns southwest, the Alternate route will continue west for approximately 2.5 miles, and of those 2.5 miles, it will parallel Kettleview Road for 2.2 miles. At the intersection of Kettleview Road and County Highway A, the line will turn south. It will parallel County Highway A for about 1.5 miles, until it reaches the intersection of County Highways A and V. It will then traverse west and parallel County Highway V for approximately 0.1 miles, where it will then turn north and interconnect at the new Plymouth #5 Substation. There are several distribution lines that are built roadside that will be removed or relocated. Additional details regarding the proposed transmission configurations are provided in Section 5.3.

1.6.7 Proposed Project ROW

Preferred Route:

The proposed transmission line will be built on new ROW. The proposed ROW is typically 80 feet wide. Where the line is adjacent to public ROW, a portion of the 80 foot easement will overlap with public ROW. In locations with physical or other constraints, the ROW will be reduced to 60 feet. In locations where there is steep terrain, the easement width will be increased to 110 feet to allow for spanning from edge to edge of hills.

Alternate Route:

The proposed transmission line will be built on new ROW. The proposed ROW is typically 80 feet wide. Where the line is adjacent to public ROW, a portion of the 80 foot easement will overlap with public ROW. In locations with physical or other constraints, the ROW will be reduced to 60 feet. In locations with wide gorges, the easement width will be increased to 110 feet to allow for spanning from peak to peak of hills. Where the line parallels existing 345 kV easements, the new ROW will abut the existing easement.

1.7 Other Agency Correspondence, Permits and Approvals

1.7.1 Agency Correspondence

Copies of ATC correspondence with all applicable government agencies concerning the Project are included in **Appendix H**.

1.7.2 State and Federal Permits/Approvals Required

All state and federal permits and approvals required for this Project and their status are listed below.

Federal			
Agency	**Activity**	**Permit**	**Status**
U.S. Army Corps of Engineers (USACE)	Wetland Impacts	Section 404 of the Clean Water Act	ATC will submit permit application upon receipt of a PSCW order, assumed in January 2025. Permit approval expected in March-April 2025.
USACE	Archaeological Review	Section 106 National Historic Preservation Act	USACE will initiate consultation upon receipt of ATC's permit application.
USACE	Waterway crossing	Section 10 of the Rivers and Harbors Act	Not applicable, no Section 10 waterway crossings.
Federal Aviation Administration (FAA)	Erection of tall structures near airports/heliports	FAA 7460 (Notification)	FAA correspondence is provided as **Appendix H, Exhibits 1 and 2**.
United States Fish and Wildlife Service (USFWS)	Protected species coordination	Incidental Take Authorization-Section 10 of the Endangered Species Act; Migratory Bird Treaty Act; Bald and Golden Eagle Act	USACE will initiate consultation upon receipt of ATC's permit application.

State			
Agency	**Activity**	**Permit**	**Status**
DATCP	Potential use of eminent domain on	Agricultural Impact Notification (AIN)/Agricultural	An Agricultural Impact Notification will be submitted to DATCP concurrent

State			
Agency	**Activity**	**Permit**	**Status**
	more than 5 acres of any farm	Impact statement (AIS)	with the Application, please see **Appendix H, Exhibit 3**.
Wisconsin Dept. of Transportation (WisDOT)	Utility Crossing/Longitudinal Occupancy (roads)	Utility Permit DT 1553	Not applicable
WisDOT	Driveway Construction	DT1504 – Connection to State Trunk Highway	Not applicable
WisDOT	Oversize Loads or Excessive Weights	Wis. Stat. ch. 348 Vehicles – Size, Weight and Load; Wis. Stat. § 348.25-Vehicle Weight and/or Load Permit	Construction has not identified oversize loads or weights. ATC will apply for necessary permits if conditions change.
WisDOT	Utility Crossing/Longitudinal Occupancy Wisconsin & Southern Railroad (WSOR)	Utility Permit DT 2036	Not applicable
Wisconsin Historical Society; State Historical Preservation Officer	Archeological Review of impacts to previously documented cultural resources	Approval of Archaeological Surveys (Wis. Stat. § 44.40 and Section 106 of National Historic Preservation Act)	Pending. The redacted Cultural Resources Literature Review and Architectural History Review is provided as **Appendix F, Exhibits 5 and 6.**
Wisconsin Historical Society; State Historical Preservation Officer	Construction activities within the boundaries of a previously documented burial site.	Request to Disturb Permit (Wis. Stat. § 157.70)	Pending. Permit only applies to the Alternate Route, if ordered.

State			
Agency	**Activity**	**Permit**	**Status**
WDNR	Wetland and Waterway impacts	Utility Permit	Pending. See Section 8.0 and **Appendix F**. GP3 or Individual Permit approval expected in February 2025, following PSCW order.
WDNR	Soil disturbance	Stormwater/Erosion Control – NR 216	ATC will apply upon receipt of a PSCW Order, assumed in January 2025. Permit approval expected in March 2025.
WDNR	Protected Species coordination	Incidental Take Authorization/Permit	The redacted ER Review is provided as **Appendix F, Exhibit 7.** ITA/P will be applied for, if necessary, upon receipt of PSCW Order, assumed in January 2025. ITA/P approval, if necessary, expected in May 2025.
WDNR	Dewatering	WPDES general permit (WI-0049344-4)	General permit coverage (FIN: 64724) for ATC dewatering discharges statewide.

1.7.3 Local Permits

The necessity of seeking local approvals for this utility construction Project is governed by Wis. Stat. § 196.491(3)(i). Upon issuance of a CPCN, local ordinances that would preclude or inhibit

the Project would be preempted by Wis. Stat. § 196.491(3)(i). However, ATC applies for those permits and other authorizations governed by local ordinances (county, town, village or city) that involve matters of public safety. Because the ordinances of the local units of government vary, each construction project may involve different local permits or authorizations. The public safety-related permits or authorizations that ATC generally applies for include road crossing permits, road weight limits, noise abatement ordinances (usually involving hours or times of construction), building permits (for such construction as control houses), and other similar public safety concerns for which permits or authorizations may be required by local ordinance.

Local ordinances also often address siting and location issues for the construction of utility facilities or land use issues including recreational uses and aesthetics. These types of authorizations would require conditional use permits, zoning permits or variances, which often involve quasi-judicial proceedings and the exercise of discretion on the part of the local unit of government on whether the authorization or permit may be granted. Because the Commission's statutory obligation is to address the siting of proposed utility facilities, and to address land use, recreational use and aesthetics in the siting and route selection for transmission lines, ATC does not apply for these types of permits or authorizations. However, ATC works with all local units of government to ensure that the representatives of those units of government affected by ATC's proposed construction projects are informed concerning ATC's proposed construction activities and requests that the local unit of government provide the PSCW and ATC with its comments or concerns regarding the siting and location of the proposed Project.

The following local permits and ordinances would apply to the proposed Project absent the provisions of Wis. Stat. § 196.491(3)(i):

- Sheboygan County: General Zoning and Shoreland/Floodplain Zoning Permit
- Sheboygan County: Erosion Control/Shoreland Erosion Control Permit
- Town of Lyndon: Conditional Use Permit for transmission line construction.

1.7.4 Railroad

No route segments will cross or share railroad ROW. Route segments do intersect with the existing easement corridor for circuits LYNG11 and 8241, which runs parallel and west of a Wisconsin & Southern Railroad (WSOR) corridor. ATC Construction may procure a temporary permit from WSOR due to large cranes operating next to the rail corridor.

1.7.5 Pipeline

Segment H shares ROW with ANR Pipeline Company, owned by TC Energy. See **Appendix H, Exhibit 4** for communications with TC Energy.

1.7.6 WisDOT

No transmission line route segments cross or parallel WisDOT ROW.

1.8 Construction Schedule and Sequence

1.8.1 Construction Schedule

ATC anticipates constructing the Project according to the following schedule:

Project Activity	Preliminary Date
Submittal of PSCW CPCN Application and WDNR Utility Permit	January 2024
PSCW CPCN Approval and Order	February 2025
WDNR Utility Permit Issuance - Anticipated	March 2025
Start Construction	August 2025
Project In-Service	December 2025

1.8.2 Outage Constraints

There are no known outage constraints at this time.

1.8.3 Construction Spreads

Construction will be planned in a single spread.

1.8.4 Construction Sequence

Construction of an overhead transmission line requires several different activities at any given location. Construction sequencing will account for avoidance of protected species habitat and applicable restriction periods (see **Section 9.0**). **Section 5.5.2** describes the major construction activities and approximate sequence, along with the anticipated impacts associated with each activity.

1.9 Project Maps

Consistent with the Application Filing Requirements, a set of Project maps is provided in **Appendix A, Figures 1-7.** The maps showing the Preferred and Alternate routes and other

Project data are provided on aerial photographs and include environmental, parcel, land use, and existing utility/infrastructure data. Also included is environmental information required to support WDNR permitting activities. ATC is providing separately to the Commission, in electronic format, Geographic Information System (GIS) data files supporting the mapping.

1.10 ESRI ArcGIS Data Files

All Project maps were created using ESRI ArcGIS Version 10.8.1. A spreadsheet of each GIS file, including the description of the data, the data source, and the date when the data was generated or collected is provided as part of the GIS data.

1.11 Mailing Lists

The Mailing Lists are provided in Microsoft Excel format to the Commission.

The information used to compile the mailing lists was derived from the Sheboygan County tax parcel data. Data regarding local officials is available from the applicable counties and municipalities. ATC expects that this information is reasonably accurate but recognizes that changes in personnel occur over time.

2.0 PROJECT NEED ANALYSES

2.1 Project Need

Plymouth Utilities notified ATC in November 2022 of a new load interconnection via the Load Interconnection Request Form (LIRF) #40682-1 provided as part of **Appendix D, Exhibit 1**. Separately, Plymouth Utilities has filed an application for a Certificate of Authority (CA) with the PSCW in docket number 4740-CE-106 for construction of the proposed new Plymouth #5 Substation. The Plymouth Utilities Plymouth 5 Best Value Planning (BVP) Report in **Appendix D, Exhibit 1,** in conjunction with information supplied by Plymouth Utilities, was used to determine the best value solution for the area.

Plymouth Utilities projects significant new energy demand starting in 2025. Additional load will also be transferred from their existing Plymouth #2 Substation to the new Plymouth #5 Substation. Plymouth Utilities and ATC studied various distribution and transmission solutions. ATC determined that the transmission solution to loop in the Plymouth #5 Substation from the Elkhart Lake – Saukville 138 kV line (8241) was the best value solution among all the alternatives because it had better power flow results, lower cost, fewer impacts and a better economic performance benefit.

This Project is in MTEP22 Appendix A, ID21925.

2.2 Transmission Network Alternatives

ATC considered two transmission alternatives to address the load interconnection needs. Alternative #1 is the preferred solution. The preferred solution is a loop through substation configuration from the Elkhart Lake – Saukville 138 kV line (8241). Alternative #2 is a loop through substation configuration from the Creekview – Mullet River 138 kV line (X-97).

Both alternatives include a new Plymouth #5 Substation that will be owned by Plymouth Utilities. This substation will have two 138/12.47 kV, 25 MVA distribution transformers, two 138 kV line circuit breakers, and provisions for a future 138 kV bus-tie circuit breaker.

The power flow analysis performed for the transmission solutions demonstrated that the addition of the proposed Plymouth #5 Substation will not adversely impact the power flow performance of the transmission system. The performance was evaluated against North American Electric Reliability Corporation (NERC) Reliability TPL categories P0 through P7. No new limitations were found that required mitigation. The details of the analysis can be found in the Plymouth #5 BVP Report attached in **Appendix D, Exhibit 1**. The transmission solutions also will not negatively impact distribution performance in the area.

2.2.1 Proposed Solution

The preferred solution (Alternative 1) includes connecting the new Plymouth #5 Substation as a 138 kV loop through two-transformer substation with two-line breakers connecting to the Elkhart Lake – Saukville 138 kV line (8241). Please refer to the Project Diagram **(Appendix D, Exhibit 1)**.

No limitations during the contingency analysis were mitigated with this project.

The preferred solution was determined to be the best value solution because it had better power flow results, lower cost, fewer impacts and a better economic performance benefit.

2.2.2 Viable Alternatives Considered

Alternative 2 includes connecting the new Plymouth #5 Substation as a 138 kV loop through two-transformer substation with two-line breakers connecting to the Creekview – Mullet River 138 kV line (X-97). Please refer to the Project Diagram **(Appendix D, Exhibit 1)**.

No limitations during the contingency analysis were mitigated with this alternative.

2.2.3 Discussion of Proposed Solution and Viable Alternatives Considered

The power flow analysis performed for the transmission solutions demonstrated that the addition of the proposed Plymouth #5 Substation will not adversely impact power flow performance of the transmission system. The performance was evaluated against NERC Reliability TPL categories P0 through P7 for 69 kV and above. The details of the analysis can be found in Section 6 of the BVP Report attached in **Appendix D, Exhibit 1**. The transmission solutions will also improve distribution performance in the area. Appendix J of the BVP Report in **Appendix D, Exhibit 1** provides additional information regarding distribution benefits.

According to the Plymouth Utilities LIRF, the customer facility is currently served from the Plymouth 2 Substation. The existing distribution infrastructure is not capable of serving the additional load and large motors at the facility. Plymouth Utilities requests a new transmission source closer to the customer facility to serve the new load. One of the two new distribution transformers will be dedicated to serve the new load. For additional details on the need for the new interconnection substation, please refer to the Plymouth Utilities CA filing in PSCW Docket No. 4740-CE-106.

Of the two studied transmission solutions, the preferred solution was determined to be the best value solution because it had better power flow results, lower cost, fewer impacts and a better economic performance benefit.

2.3 Local Transmission, Distribution, and Distributed Resource Alternatives

2.3.1 Studied Alternatives

ATC did not study any other alternatives beyond the transmission solutions discussed in previous sections. Plymouth Utilities studied various distribution alternatives and found that serving the additional load at a significant distance from existing distribution substations was not feasible. Building a new distribution substation connecting to the transmission system was the only viable solution in their distribution studies. Refer to Appendix J of the BVP Report in **Appendix D, Exhibit 1** for information regarding the distribution studies.

2.3.2 Reasons for Rejecting Studied Alternatives

As described above, Plymouth Utilities' distribution studies indicated that a distribution solution was not adequate, and that a new distribution substation connected to the transmission system was the only feasible solution to address the identified need. Of the two studied transmission solutions, the preferred solution was determined to be the best value solution because it had better power flow results, lower cost, fewer impacts and a better economic performance benefit.

2.4 Non-transmission Options

Plymouth Utilities considered various distribution options. Plymouth Utilities' distribution studies included adding the new load at the end of existing distribution facilities. Plymouth Utilities also considered reconductoring existing distribution out to the new load. The studies showed that all distribution-only options were inadequate from a voltage perspective. Its distribution study concluded that a new distribution substation connected to the transmission system was the only feasible solution.

Per the Plymouth Utilities LIRF, there are no generation or non-transmission options available for this study area. Of the two studied transmission solutions, the preferred solution was determined to be the best value solution because it had better power flow results, lower cost, fewer impacts and a better economic performance benefit.

2.4.1 Energy Conservation and efficiency

Please reference **Section 2.5** of this Application.

2.4.2 Noncombustible Renewable Energy Resources

Plymouth Utilities determined that any noncombustible renewable energy resource project would require large-scale storage to support it. Because of this, noncombustible renewable energy resources were deemed to not be a viable alternative. (See Plymouth Utilities CA application in Docket No. 4740-CE-106).

2.4.3 Combustible Renewable Energy Resources

Plymouth Utilities determined that Combustible Renewable Energy Resources would not be a viable, cost effective and practicable solution. (See Plymouth Utilities CA application in Docket No. 4740-CE-106).

2.4.4 Advanced nuclear energy using a reactor design or amended reactor design approved after December 31, 2010, by the U.S. Nuclear Regulatory Commission

None.

2.4.5 Nonrenewable Combustible Energy Resources:

Plymouth Utilities determined that due to the cost and the timeline associated with the construction of a new nonrenewable combustible power generating station, the construction of new nonrenewable generation does not provide any advantages over the proposed project path. (See Plymouth Utilities CA application in Docket No. 4740-CE-106).

2.5 No-build Options

Plymouth Utilities and ATC are required to serve load in their service territories. The “No-Build” option would not allow Plymouth Utilities or ATC to serve all of their forecasted load reliably. Therefore, the “No-Build” option is not a viable option.

2.6 Energy Conservation and Efficiency, and Demand Response

Plymouth Utilities determined that energy conservation, efficiency, and load response programs are not considered a feasible solution to adequately serve the load in the area. The existing distribution feeders in this area already have multiple sets of voltage regulators, and there is no feasible amount of energy efficiency or demand response measure that could reduce, alter, or eliminate the need for this Project. Plymouth Utilities also partners with Focus on Energy, and through Focus on Energy offers information regarding energy efficiency, renewable energy, and incentive programs for residential and business customers. (See the Plymouth Utilities CA application in Docket No. 4740-CE-106).

2.7 Market Efficiency Projects

The need for the proposed Project is not based on market efficiency. Therefore, a market efficiency study was not performed.

2.8 Modeling Information

Data files containing power flow modeling information described in **Appendix D, Exhibit 1** are being provided separately with a request for confidentiality. ATC used Power System Simulator for Engineering (PSSE) models for the power flow analysis included in the Plymouth #5 BVP Report.

2.9 Area Load Information

General area load information, including discussion of the annual growth rates, is contained in Section 4.2 of the BVP Report **(Appendix D, Exhibit 1)**.

2.10 Generation and Resource Retirements

As of the date of this application, no generator retirements or additions in MISO's Generator Interconnection Queue will impact the need for the Project.

2.11 Regional Transmission Organization Information

ATC provides transmission service under the terms of the MISO Open Access Transmission and Energy Markets Tariff. The Project was approved in Appendix A in the Midwest Transmission Expansion Plan for 2022 (MTEP22, ID#21925) and is classified as Other because of load growth. There is no cost sharing under the Tariff for this classification.

3.0 MAGNETIC FIELDS

Under ATC's direction, a magnetic field study was performed (EMF Report) by Electrical Consultants Inc., which is provided as **Appendix G, Exhibit 1**. The EMF Report provides the magnetic field calculations for the typical proposed line configurations on the Alternate (North) and Preferred (South) routes and was prepared following the guidance set forth in the Application Filing Requirements. Calculations were performed using PLS CADD, developed by Bentley Systems. All figures and tables referenced in Sections 3.1 through 3.3 below are contained in the attachments to the EMF Report.

3.1 Magnetic Field Profiles

The EMF profile of the proposed transmission line within any route will vary depending on the presence or absence of existing transmission or distribution facilities, as well as other factors. The EMF Map in Attachment C of the EMF Report, **Appendix G, Exhibit 1**, provides the location of each typical facility configuration and its associated EMF profile. Corresponding figures and tables can be found in Attachments D and E of the EMF Report, **Appendix G, Exhibit 1**, which detail the existing and proposed magnetic field results within 300 feet of the proposed transmission centerline.

3.2 Magnetic Field Scenario

The tables provided in the EMF Report provide the estimated magnetic field levels at 80% and 100% of peak load for one- and ten-years post construction, out to 300 feet from the configuration centerline. As applicable, the tables have been modified to account for estimated present magnetic field levels for existing facilities.

3.3 Assumptions

Magnetic field modeling assumptions are provided on each of the figures included in the EMF Report. Each figure represents a typical condition that exists on the proposed alignment. Typical configurations were defined as any configuration, transmission or distribution, more than 2,500 feet in length. Facilities whose configurations were less than 2,500 feet were assigned to the predominant configuration in the area. The figures identifying the facility configuration along the line segments contain the modeling assumptions including the conductor Phase ID and phase angles, a pole design diagram identifying the dimensions of pole arms and conductor locations, the horizontal distance from the conductors to the poles, and the height of all conductors above ground at mid-span. Where underground electric lines exist, the assumed distance below the ground surface is shown. The figures also provide the estimated current levels for the year of estimated in service and 10 years post construction.

4.0 PROJECT COSTS

4.1 Transmission Route and Substation Costs

The following table provides the total cost estimate of each route alternative and substation site combination. The dollars are based on the projected in-service year. To align with Commission guidance, ATC presents these costs as a +10%/-30% estimate. ATC will continue, however, to minimize ratepayer impact by seeking to limit cost wherever possible.

Plymouth No. 5 Cost Table		
	Preferred Route	Alternate Route
Transmission Line		
Material	$6,277,000.00	$7,861,000.00
Labor/Other	$21,543,000.00	$25,661,000.00
Subtotal	$27,820,000.00	$33,522,000.00
Plymouth No 5 Substation		
Material	$1,960,000.00	$1,960,000.00
Labor/Other	$2,296,000.00	$2,296,000.00
Subtotal	$4,256,000.00	$4,256,000.00
Precertification	$1,453,000.00	$1,453,000.00
Total Project Cost	$33,529,000.00	$39,231,000.00

*The estimated Project costs above do not include AFUDC. ATC has received MTEP Appendix A approval from MISO for this project which allows for CWIP (Construction Work in Progress) in Rate Base treatment and no AFUDC costs.

4.2 For 345 kV projects: Provide a summary table of total costs (transmission and substation) for each proposed route, broken down by the following voltage classes.

This subsection does not apply to this Application.

5.0 ROUTING AND SITING INFORMATION

5.1 Routing and Siting Factors

Overview of Routing Process

To identify the routes proposed in the Application, ATC used a robust routing and siting process. The routing process began with assembling a multidisciplinary routing team. The routing team included professionals experienced in high voltage transmission line routing, project management, environmental and cultural resources, engineering, permitting, real estate, construction, and agency and public outreach. The routing team began by identifying routing guidelines and a study area for the Project. Routing guidelines identify the engineering requirements for the Project (e.g., preferred ROW width) and the high-level considerations used to inform selection of segments and route alternatives (e.g., transmission line siting priorities in Wis. Stat. § 1.12(6)), as described below:

System Planning Requirements

- Meet the electrical need and requirements in an economic and reliable way.

Engineering Requirements/ Planning Considerations

- ROW width of 80 foot minimum for line that is not associated with other infrastructure corridors.
- For lines adjacent to transportation ROW, the preferred centerline would be located 5-10 feet outside of the roadway ROW, with a preferred width of 45 to 50 feet, depending on pole location.
- Parallel circuits are required to maintain appropriate fall distances from one another:
  - For 345 kV, fall distance is typically 150 to 200 feet.
  - For 138 kV, fall distance is typically 90 to 100 feet.
- Evaluate paralleling existing utility corridors (primary), transportation corridors (secondary), and recreational trails (tertiary).
- Span lengths are typically 600-700 feet but can be altered if needed.
- Minimize route length, circuity, cost, and special design requirements.
- Minimize slopes steeper than 20%.
- Avoid open water expanses greater than 1,000 feet.
- Avoid underground fiber.
- Avoid poor soils (e.g., marshes).

Impacts to the Natural Environment and Land Use

Where possible:

- Maximize the sharing or paralleling of existing ROW unless paralleling interferes with the safe operation or maintenance of the new line or existing facility.
- Maximize following existing section and quarter section lines, and property lines.
- Minimize the removal or substantial interference with existing residences and planned residential areas.
- Minimize the removal of existing barns, garages, commercial buildings, and other non-residential structures.
- Minimize interference with the use and operation of existing schools, recognized places of worship, cemeteries, and facilities used for cultural, historical, and recreational purposes.
- Minimize interference with economic activities, including dairy (CAFO), agricultural and silvicultural activities, including interference with pivot irrigation and irrigation canals.
- Minimize the crossing of environmentally and culturally sensitive lands, such as recreation lands, reserve program lands, designated battlefields and other designated historic sites, Wisconsin historic sites/structures, archeological sites, national, county, and state forests and parks, nature preserves, conservation lands and easements, large reservoirs and large wetland complexes, critical habitat, and other unique or distinct natural resources.
- Where crossings of sensitive lands are unavoidable, maximize the use of existing crossings.
- Avoid geologically unstable or highly erosive areas.
- Minimize substantial visual impact on residential areas and public resources.
- Minimize interference with regulated airspace associated with FAA regulated and private airfields and flight paths.
- Avoid interference with existing/future land uses (planned developments/road construction activities).
- Avoid subdividing parcels (parallel parcel lines) when possible.

ATC then collected geo-referenced data reflecting a broad array of opportunities and sensitivities for the study area using publicly available data sets. Routing opportunities include pre-existing linear corridors (e.g., existing high voltage transmission lines), while routing sensitivities include land uses and environmental features that are considered when siting a transmission line (e.g., occupied residences, forested wetlands). These data addressed 75 criteria, grouped for convenience into four categories: environmental, land use, social, and engineering (see **Table 5.1-1** below). Using the siting guidelines and this robust dataset, the routing team created a segment network comprised of unique segments to connect the Project endpoints. These segments were selected to minimize impacts on sensitivities and take advantage of routing opportunities. Members of the routing team then conducted a field

reconnaissance from public road ROWs to verify presence of sensitive receptors (e.g., residences), environmental features, and other aspects of the built and natural environmental that might influence transmission line routing. Two separate field reconnaissance visits were made to the study area; the first included an initial review to document sensitive receptors within the study area during the segment network review, and the second included field review by senior siting personnel to review the alternative routes and document any observable changes to the study area since the initial visit. Field reconnaissance refined the data used later in the analysis of the Project. For example, during field reconnaissance, members of the routing team observed residences that had been built but that were not yet visible on aerial photography. Upon completion of field reconnaissance, segments were updated to further take advantage of opportunities and minimize sensitivities. The segments were then analyzed and compared using the established quantitative criteria **(Table 5.1-1**) to identify the most optimal segments to carry forward to full-length alternative routes. Through this process, five alternative routes were created, and then analyzed and compared by the routing team to identify the routes proposed in the Application.

The siting process generally consisted of:

1. Development of a project study area in which data was collected to inform ATC about the existing environmental, land use, social, and engineering opportunities and sensitivities between the established project end points.
2. Identification of potential route corridors between established end points meeting the routing priorities defined in Wis. Stat. § 1.12(6). These priorities are to be used consistent with economic and engineering considerations, reliability of the electric transmission system, and protection of the environment. The siting priorities include, in order of priority:
    a. Existing utility corridors.
    b. Highway and railroad corridors.
    c. Recreational trails to the extent the facilities may be constructed below ground and do not significantly impact environmentally sensitive areas.
    d. New corridors.
3. Possible transmission line segments and routes are screened against several criteria, including those specified in Wis. Stat. § 196.491(3)(d), to determine the route alternatives proposed in the Application. To the extent practical, these criteria include, but are not limited to the following, which are not listed in order of priority, nor assigned weighted values:
    - Location of existing linear infrastructure.
    - Use of existing ROWs to minimize the need for additional facility ROW (corridor sharing).
    - Locations of cemeteries, community facilities (schools, day care facilities, places of worship, and hospitals).

- County and state road expansion plans.
- Community and landowner impacts.
- Ability to minimize impacts to environmental and natural resource features, including wetlands, waterways, and woodlands.
- Archeological, tribal, and historic resources.
- Location of airports, airstrips, and heliports.
- Avoiding recreational areas and state forest lands.
- Avoiding high-density residential areas.
- Conformance with existing and proposed land use patterns.
- Design modifications or construction practices to overcome terrain or other physical challenges.
- Maintaining compatibility with local agricultural practices.

These elements were evaluated for their presence in the Project area and their relative sensitivity to the construction, operation, and maintenance of a transmission line. These considerations were refined using collected data, and field reconnaissance. In total, data were quantified for 75 individual criteria.

4. Performing a multidisciplinary review and evaluation considering and balancing the quantitative as well as qualitative factors discussed above along with design, engineering, economic, and operational considerations, to identify the routes contained within the Application.

Identifying the Project Study Area

The routing team identified a study area that encompassed all likely corridors that would meet the system configuration requirements. The study area encompassed the Project endpoints (Existing 8241 138 kV line and proposed Plymouth #5 Substation) and a diverse range of possible corridors that could connect the endpoints. The Project study area was approximately 43 square miles and was bounded by the Kettle Moraine State Forest – Northern Unit to the west; the existing 8241 138 KV transmission line to the east; Sumac Road to the north; and Country Road W to the south. The study area was crossed east/west by State Highway 28 and was split north/south by the North Branch Milwaukee River.

Identifying Preliminary Route Alternatives

ATC began the route development process by identifying existing linear features such as transmission lines, other utilities, highways, and railroads consistent with the siting priorities established in Wis. Stat. § 1.12(6). After initial desktop data acquisition, ATC developed a draft network of 26 preliminary segments that connected the Project endpoints while minimizing sensitivities and taking advantage of routing opportunities. Data compilation continued

iteratively throughout the segment network development phase. Field reconnaissance was an important element tool to verify the presence or absence of opportunities and sensitivities. As local information was gathered, new data needs were identified, and segments were refined accordingly.

Based on the information identified at this stage of the process, segments were removed to minimize interactions with large area sensitivities (e.g., WDNR property) and added to provide additional options that paralleled local roads and county highways. The resulting segment network included 36 segments that were then analyzed using the 75 evaluation criteria. This process allowed the routing team to compare segments with each other, combine segments into longer assemblages, and ultimately eliminate segments that did not perform as well in the analysis. This analysis was based on a potential centerline and assumed an 80-foott ROW, and proximities of varying distances depending on individual criteria. The objective was to reduce the number of segments such that those remaining were more suitable for routing a new transmission line and could be combined into full length routes. Comparisons became successively more complex and covered longer distances, as strings of segments with common starting and ending nodes were evaluated.

Over the course of this iterative review process, the routing team completed 11 multi-segment comparisons. Preferred segments were selected because, for example, they impacted fewer wetlands, required less tree clearing, paralleled more roads, and other factors that were unique to each comparison. As a result of this analysis, 11 segments were removed from further consideration. The remaining final 25 Segments were combined into five routes.

Proposed Routes

The routing team then reviewed the five full-length routes using the Wis. Stat. § 196.491(3)(d) criteria and an analysis of qualitative and quantitative factors based on a potential centerline and assumed 80-foot ROW for each route. As a result of this analysis, ATC identified two routes, as shown in **Appendix A, Figure 1**, designated as the proposed routes—the Preferred Route (South) and the Alternate Route (North). The routes and associated route segments are identified in more detail on the maps contained in **Appendix A, Figures 3 and 4**. The two proposed routes are superior to all other route variations evaluated by ATC. The two routes were identified to best meet the siting criteria identified in Wis. Stat. § 196.491(3)(d), while minimizing environmental, land use, social, and engineering considerations within the study area.

Table 5.1-1: Applicant Analysis Criteria

Analysis Criteria
Environmental Criteria
Forested wetlands in ROW (acres)
Herbaceous wetlands in ROW (acres)
Forested upland in ROW (acres)
Water crossings by centerline (total count)
Water crossing: canal/ditch (count)
Water crossing: stream/river: ephemeral (count)
Water crossing: stream/river: intermittent (count)
Water crossing: stream/river: perennial (count)
Water crossing: waterbody (count)
Waterbody crossings by centerline (feet)
Floodplain crossed by centerline (feet)
USFWS Critical Habitat within 1,000 feet of centerline (acres)
Rusty Patched Bumble Bee High Potential Zone intersected by the ROW (acres)
Wisconsin NHI EO Record with protected state/federal status (threatened/endangered) within 1 mile of centerline (count)
Potential contaminated lands within 500 feet of centerline (count)
Land Use Criteria
Length of route paralleling controlled access highways (percent of total length)
Length of route paralleling highways without controlled access (percent of total length)
Length of route paralleling local roads (percent of total length)
Length of route paralleling ATC-owned electric transmission utilities (percent of total length)
Length of route paralleling other-owned electric transmission utilities (percent of total length)
Length of route paralleling railroad ROW (percent of total length)
Length of route paralleling other utility corridors(e.g., natural gas pipeline) (percent of total length)
Length of route paralleling recreational trails (percent of total length)
Protected lands, total within ROW (acres)
Protected lands, total within 500 feet of ROW (acres)
Federal lands (and state military lands) crossed by ROW (acres)
Federal lands (and state military lands) within 500 feet of ROW (acres)

State lands crossed by ROW (acres)
State lands within 500 feet of ROW (acres)
Local public lands crossed by ROW (acres)
Local public lands within 500 feet of ROW (acres)
Native Lands crossed by ROW (acres)
Native Lands within 500 feet of ROW (acres)
Military Operating Areas and Restricted Use Airspace crossed by ROW (acres)
Military Operating Areas and Restricted Use Airspace within 1,000 feet of ROW (acres)
Center pivot irrigation systems within ROW (count)
Confined Animal Feeding Operations (CAFO) within one half mile of ROW (count)
Agricultural buildings within 300 feet of centerline (count)
Agricultural land within ROW (acres)
Developed land within ROW (acres)
Business/commercial buildings within 500 feet of centerline (count)
Industrial buildings within 500 feet of centerline (count)
Recreational Areas within 1,000 feet of ROW (count)
Mining activities within 1,000 feet of ROW (count)
Renewable energy facilities within 0.5 miles of ROW (count)
MET tower locations within 0.5 miles of ROW (count)
Communication towers within 1,000 feet of ROW (count)
Oil/gas above-ground facilities within ROW (count)
Oil/gas wells within 1,000 feet of ROW (count)
Social Criteria
Residential buildings within ROW (count)
Residential buildings within 300 feet of ROW (count)
Residential buildings within 300-500 feet of ROW (count)
Unique property owners crossed by ROW (count)
Parcels crossed by ROW (count)
Community facilities within 1000 feet of ROW (count)
NRHP listed cultural resources within 1000 feet of centerline (count)
State listed/eligible resources within 1000 feet of centerline (count)
Known archaeological sites within ROW (count)
Historic districts within 1 mile of centerline (count)
Historic/Scenic Byways crossed by centerline (count)
Historic Trails crossed by centerline (count)
Cemeteries within or adjacent (1000 ft) to ROW (count)

Engineering Criteria
345kV or higher electric transmission line crossings (count)
245 or lower kV electric transmission line crossings (count)
Pipeline crossings (count)
Highway, interstate or railroad crossings (count)
Airports and heliports within 20,000 feet of ROW (count)
Span lengths in excess of 700 ft (count)
Turn angles greater than 20 degrees (count)
Depth to bedrock less than 60 inches crossed by centerline (miles)
Geological karst features within ROW (acres)
Geological springs/seeps features within ROW (count)
Quaternary faults within ROW (count)
Slope greater than 20% crossed by centerline (miles)
Total segment/route length (miles)

In advance of filing the Application, meetings were held with members of the boards for the towns of Mitchell and Lyndon to discuss generally the need for both the transmission line and the new Plymouth Utilities Substation, the Project timeline, the routing and siting process generally, and copies of the landowner outreach mailing were provided. Additionally, conversations took place with various town of Mitchell residents living close to the proposed substation location as part of Plymouth Utilities' meetings regarding approval of the substation location by the Town of Mitchell.

5.2 Easements and Existing Utility Infrastructure

For both the Preferred and Alternate routes, a new easement is planned to overlay an existing 71-foot-wide ROW for ATC circuits 8241 and LYNG11. That ATC ROW is west and adjacent to a WSOR corridor. The new easement will add additional rights in the overlapping easement area for new ATC facilities. No modifications or location changes are necessary for the existing easements. ATC will use its standard high-voltage easement for this Project as shown in **Appendix E, Exhibit 3**.

The construction effort to tie the new transmission line into circuit 8241 does not present any unusual challenges.

5.3 Route Segments

The Project routes have been broken into various segments to provide more detailed information about affected areas. Maps of the proposed segments are shown in **Appendix A,**

Figures 1-7. Proposed length and ROW widths of each segment are shown in **Appendix B Table 1**.

ATC performed preliminary engineering to develop structure types and configurations suitable to each section of line in each segment. The majority of the 138 kV double-circuit structures will be tubular steel monopoles and will have a weather steel finish. Typical structure drawings are provided in **Appendix C, Figure 1**. Selection of structure types may be modified during final design. Segment characteristics are summarized in the following table:

Table 5.3.1-1 Route Characteristics

Segment	Structure Type[1.]	Transmission Configuration and Number of Structures	Transmission Conductor	Span Length	Affected Existing Distribution[2.]	ROW Details
A (1.7 Miles)	Steel monopole typically 70’ to 80’ above ground line (AGL)	Double-Circuit 15 STR	New TP 477 kcmil ACSR “Hawk”	Typically 500’ to 800’ feet.	No Local Distribution Company (LDC) facilities will be relocated	Parallels the W-1 345kV Transmission line ROW. 80’ width typical ROW.
B (1.6 Miles)	Steel monopole typically 65’ to 100’ AGL	Double-Circuit 15 STR	New TP 477 kcmil ACSR “Hawk”	Typically 550’ to 800’ feet.	Approximately 0.3 miles of WE facilities will be relocate	Shares the road ROW for 0.3 miles. 1.3 miles cross country. 80’ width typical ROW.
C (0.6 Miles)	Steel monopole typically 75’ to 95’ AGL	Double-Circuit 4 STR	New TP 477 kcmil ACSR “Hawk”	Typically 600’ to 1100’ feet.	No LDC facilities will be relocated	Parallels the L-SEC31 345kV Transmission line ROW. 80’ width for 0.4 miles. 110’ width for 0.3 miles.
D (4.0 miles)	Steel monopole typically	Double-Circuit 35 STR	New TP 477 kcmil ACSR “Hawk”	Typically 550’ to	Approximately 1.6 miles of Plymouth Utilities	Shares the road ROW for 3.8 miles. 0.2 miles cross

	70’ to 100’ AGL			800’ feet.	facilities will be relocated	country. 80’ typical width.
E (Alternate) (0.2 miles)	Steel monopole typically 75’ to 90’ AGL	Double-Circuit 3 STR	New TP 477 kcmil ACSR “Hawk”	Typically 150’ to 400’ feet.	Approximately 0.2 miles of Plymouth Utilities facilities will be relocated	Shares road ROW for 0.1 miles and 0.1 miles of cross country. 80’ typical width.
(1.2 miles)	Steel monopole typically 75’ to 95’ AGL	Double-Circuit 11 STR	New TP 477 kcmil ACSR “Hawk”	Typically 600’ to 700’ feet.	Approximately 1.0 miles of WE facilities will be relocated	Shares the road ROW for entire segment length. 80’ typical width.
H (1.9 miles)	Steel monopole typically 75’ to 95’ AGL	Double-Circuit 17 STR	New TP 477 kcmil ACSR “Hawk”	Typically 500’ to 700’ feet.	No LDC facilities will be relocated	Cross country for entire segment length. 80’ typical width.
I (3.6 miles)	Steel monopole typically 75’ to 100’ AGL	Double-Circuit 31 STR	New TP 477 kcmil ACSR “Hawk”	Typically 450’ to 850’ feet.	Approximately 0.1 miles of WE facilities and 1.8 miles of Plymouth Utilities will be relocated	Shares the road ROW for entire segment length. 80’ typical width. 110’ width for 0.2 miles.
E (Preferred) (0.2 miles)	Steel monopole typically 70’ to 85’ AGL	Double-Circuit 3 STR	New TP 477 kcmil ACSR “Hawk”	Typically 150’ to 550’ feet.	Approximately 0.2 miles of Plymouth Utilities facilities will be relocated	Shares road ROW for 0.1 miles and 0.1 miles of cross country. 80’ typical width.

1. On the Alternate Route, approximately 75% of the structures will be direct-embedded, and 25% of the structures will be on drilled concrete piers. Typical foundation diameter will be approximately nine feet.

2. On the Alternate Route, approximately 90% of the distribution is owned by Plymouth Utilities and 10% is owned by WE Energy. Approximately 30% is single phase and 70% is three phase. Where distribution coincides with the transmission ROW, it is proposed to be relocated.

3. On the Preferred Route, approximately 80% of structures will be direct-embedded, and 20% of the structures will be on drilled concrete piers. Typical foundation diameter will be approximately nine feet.

4. On the Preferred Route, approximately 65% of the distribution is owned by Plymouth Utilities and 35% is owned by We Energies. Approximately 30% is single-phase and 70% is three-phase. Where distribution coincides with the transmission ROW it is proposed to be relocated.

5.4 Impact Tables

The following tables are included in **Appendix B**.

Table 1 – General Route Impacts

Table 2 – Land Cover

Table 3 –Federal, State, Local, and Tribal Lands

Table 4 – Distances of Schools, Daycare Centers, and Hospitals from ROW Centerline

Table 5 – Distances of Residential Buildings from ROW Centerline

Table 6 – Estimated Magnetic Field Data

Table 7 – Route Impact Summary

The information contained in in **Appendix B**, **Tables 1** through **5** and **7,** was developed from a combination of sources including available reference data, aerial photography, and field observations along the Project routes. These sources were utilized to measure and calculate impacts using GIS software.

The information contained in **Appendix B**, **Tables 1** through **5** and **Table 7,** was developed from a combination of sources including available reference data, aerial photography, and field

observations along the Project routes. These sources were utilized to measure and calculate impacts using GIS software.

The reference data includes county tax parcel data obtained in 2023, state managed lands information from the WDNR, roads and road width data from WisDOT, pipeline mapping from National Pipeline Mapping System, and sensitive receptor datasets from the Wisconsin Department of Public Instruction, Wisconsin Department of Health Services, and Homeland Infrastructure Foundation-Level Data. Aerial imagery sources include the Sheboygan County (Accessed 2023), National Agricultural Imagery Program (Accessed 2023), ESRI World Imagery and World Imagery basemaps, and Google Earth, Maps, and Street View (sourced from ©2023 Google and its data suppliers). As a supplement, aerial imagery from several recent dates were also viewed in Pictometry, a licensed imagery-based system that provides high resolution, two- or four-way oblique views of the ground surface.

Table 1 – General Route Impacts

The general ROW requirements and ROW sharing characteristics for the Project are presented in **Appendix B, Table 1**. The Project was broken into eight segments to facilitate analysis. The Alternate Route is approximately 8.2 miles in length, includes a total of 80.5 acres of ROW, and contains Segments A through D and E. The Preferred Route is approximately 7.0 miles in length, includes a total of 68.0 ROW acres, and contains Segments G through I and E. Segment E is common to both proposed route options. Segment F was removed during the initial planning and design process. GIS software was used to determine lengths, and the new and shared ROW widths.

Proposed Routes were designed to follow existing utility easements and transportation corridors to the extent practicable. Approximately 22% of the Alternate Route and approximately 32% of the Preferred Route occurs within existing utility and/or transportation corridors.

The type and extent of existing ROW was determined from the following sources in conjunction with aerial photography and field observations:

- Utility Easement: Existing ATC owned utility easement widths were determined from review of easement agreements. Existing easement along the pipeline corridor (Segment H) was estimated based on aerial photograph interpretation (e.g., fence lines, differences in vegetation).
- Road: Within the Project study area, parcel data did not define the extent of the local road ROW. The ROW width was estimated based on aerial photograph interpretation and immediately adjacent parcel data.

Table 2 – Land Cover

Land cover data was obtained in 2023 and was reviewed along proposed routes. Additional land cover analysis was completed by review of aerial photography and field observations, where accessible. Field work along the two proposed routes was completed August 23 to August 29, September 28, and October 25, 2023 and included aquatic resource identification and direct land cover observation. Land cover was digitized using GIS software to quantify the area by category within the ROW of the Preferred and Alternate Routes. The area of each identified land use was quantified using GIS software and the resulting acreages were summed by land cover category by segment for both proposed routes.

The results of this review, broken down by segment, are presented in **Appendix B, Table 2**. Land cover identified within the Project study area consisted of Crop Land, Grassland, Forested Upland, Forested Wetland, Non-Forested Wetland, and Developed/Urban categories. For the purpose of this table, land cover analysis of forested lands includes both forested and shrub lands per the Application Filing Requirements instruction (reference Wiscland 2 Land Cover User Guide 2016). A summary of land cover analysis results is provided in the table below.

Table 5.4-1 – Summary Land Cover Analysis Results

Land Cover	% of Alternate Route	% of Preferred Route
Crop Land	39%	34%
Specialty Agriculture	0%	0%
Grassland	22%	37%
Forested Upland	15%	14%
Forested Wetland	6%	2%
Non-Forested Wetland	8%	2%
Developed/Urban	11%	12%

Table 3 –Federal, State, Local and Tribal

County parcel data obtained in 2023 was used to identify federal, state, local, and tribal lands along the Project ROW. Road ROW was not included in this evaluation. This information is provided in **Appendix B, Table 3**.

No tribal lands, American Indian reservations, or federally or state owned (or managed) lands are present within the ROW of either proposed route.

Table 4 – Distances of Schools, Daycare Centers and Hospitals from ROW Centerline

The presence of sensitive receptors (schools, daycare centers, nursing homes, and hospitals) within 300 feet of the Project centerline were determined using GIS measurements and field verified to the extent practicable**.**

There are no schools, daycare centers, nursing homes or hospitals within 300 feet of the Project centerline of either proposed route option. This information is provided in **Appendix B, Table 4**.

The following databases were used to identify these facilities:

- Locations of licensed family and group childcare centers were provided by the Wisconsin Department of Children and Families (downloaded on November 3, 2023, current as of July 22, 2022).
- Public and private school locations were provided by the Wisconsin Department of Public Instruction (downloaded on November 3, 2023, current as of October, 13, 2023).
- Hospital locations were provided by the Wisconsin Department of Health Services (downloaded on November 3, 2023, current as of May 3, 2023).

Table 5 – Distances of Residential Buildings from ROW Centerline

Residential building types (homes and apartments) and the distance of these buildings from the centerline were determined using GIS measurements and field verified to the extent practicable. This information is provided in **Appendix B, Table 5**. Residential buildings were tallied according to five distance categories from the ROW centerline: 0–25 feet, 26–50 feet, 51–100 feet, 101–150 feet, and 151–300 feet.

There are a total of 41 homes within 300 feet of the Alternate Route centerline and a total of 49 homes within 300 feet of the Preferred Route centerline. No apartment buildings are present within 300 feet of either proposed route. Homes within the five distance categories are summarized in the table below.

Table 5.4-2 – Distances of Residential Buildings from Route Centerline

Distance	Alternate Route	Preferred Route
0 - 25 feet	0	0
26 - 50 feet	3	4
51 - 100 feet	6	13
101 - 150 feet	17	13
151 - 300 feet	15	19

Table 6 – Estimated Magnetic Field Data

Please see **Appendix G, Exhibit 1**

Table 7 – Route Impact Summary

Table 7 presents a summary of impacts along the proposed routes, including total route length and ROW acreage; upland and wetland acreage within the Project ROW; and residential buildings within 300 feet of the route centerline. This information is provided in **Appendix B, Table 7**. No new analyses were performed; the data is a summary of the information in Tables 1-5.

5.5 Construction Impacts

5.5.1 Construction Sequence

Construction of an overhead transmission line requires several different activities at any given location. Section 5.5 describes the major construction activities and approximate sequence, along with the anticipated impacts associated with each activity.

5.5.2 Construction Impacts by Phase

Surveying and staking of ROW

This activity will have minimal impact, typically completed by a two-person crew travelling by foot, ATV, or pick-up truck.

Clearing of ROW

To facilitate construction equipment access and ensure safe clearances between vegetation and the transmission line, all vegetation will be cleared for the full width of the ROW. Vegetation will be cut at or slightly above the ground surface using mechanized mowers, harvesters, or by hand. Root stocks will generally be left in place, except in areas where stump removal is necessary to facilitate the movement of construction vehicles or required by the landowner. Where permission of the landowner has been obtained, stumps of tall-growing species will be treated with an herbicide to discourage re-growth.

Temporary staging of poles and other materials along ROW

This activity will have minimal impact. Trucks, loaders, and cranes are needed to unload poles and other materials near each work location.

Installation of erosion control BMPs

Erosion control best management practices (BMPs) will be location specific and installed prior to all anticipated ground disturbance. Where unexpected ground disturbance occurs, BMPs will be installed immediately after the disturbance occurs. Site topography is varied along proposed Routes and includes steep slopes (≥20% grade) with greater potential for erosion (displayed in **Appendix A, Figure 3**). Increased attention will be given to the planning, installation, and maintenance of stabilization measures where ground disturbances are proposed along steep slopes and upslope of wetlands and open water resources. This may include, but is not limited to, perimeter erosion control and surface stabilization measures.

Foundation installation and/or excavation for transmission structures

Excavation or drilling is required for all structures, whether they are direct-embedded, reinforced concrete foundations, or micropiles.

In general, the excavated holes for each type of foundation will range from 4 to 10 feet in diameter and may be 15 to 35 feet in depth, or greater depending on soil conditions. The method of installation, diameter, and depth of the foundation will vary depending on the soil capability and structure loadings.

- For direct-embedded poles (no concrete foundation required), a hole is excavated to the appropriate depth. The base of the structure is placed into the excavated hole, and the area around the pole is backfilled with clean granular fill.
- For structures requiring a reinforced concrete foundation, a hole is drilled or excavated, and a rebar cage and anchor bolts are placed into the excavation. The excavation is then filled with concrete to a point where the rebar cage and anchor bolts are covered leaving a typical one-to-two-foot reveal of the foundation above grade with exposed threaded anchor bolts. The complete caisson is allowed to cure.

Micropile foundations (or micropiles) are similar in form and installation to drilled-pier foundations, except that micropiles are installed in groups, are much smaller in diameter (typically between 5-15 inches) and can be installed at depths of up to 200 feet using rotary drilling rigs. Adjustment of micropile diameter, depth, and number can provide support for very large loading capacities.

Excess soils from excavations may be spread in the ROW in upland areas and stabilized or hauled to an offsite disposal location, depending on the setting and the property owner's requirements.

In areas where groundwater seeps into the excavation, or where water is needed to hold the hole during drilling, it may be necessary to dewater the excavation. Depending on site conditions, the water may be de-silted and discharged to an upland area where it is allowed to re-infiltrate or removed from site via a tank truck.

Typical equipment for this phase of construction includes pick-up trucks, dump trucks, back hoes, drill rigs, cranes, vacuum trucks, tanker trucks and concrete trucks.

Structure setting

After the direct-embed base is set or the caisson is cured, the remainder of the steel pole structure (or sections) is mounted to the base. Typical equipment for this phase of construction are cranes, bucket trucks, pick-up trucks and dump trucks. Please see **Appendix C, Exhibit 1** for typical structure drawings.

Wire stringing and clipping

After all the structures within a wire pull segment are set, the wires are pulled and clipped into place. This requires access to each structure with either a bucket truck or helicopter. Wire set up areas containing reel trailers, wire pullers, and related equipment are located at each end of the wire pull.

Cleanup and Restoration of ROW

Upon completion of construction, cleanup and site restoration is completed. This includes removing construction mats, Temporary Clear Span Bridges (TCSBs), and other material or debris from the ROW, and any necessary seedbed preparation and seeding. Typical equipment for these activities includes mat trucks, bobcats, pickup trucks and other light duty vehicles.

Transmission line construction will be confined to the ROW, the access routes, and the laydown and staging areas. ATC will utilize existing roads or ROW, and arranged access locations where roadways are not present. Most disturbances will likely occur in the area immediately surrounding transmission line structures. In areas where access cannot be gained from existing roads, some disturbance from vehicular traffic may also occur. Disturbance at these areas may include clearing of vegetative cover, soil compaction, vehicular tracking, and some topsoil disturbance.

5.5.3 Unique Construction Methods

Unique construction methods are not anticipated for this Project.

5.5.4 Special Construction Methods in Agricultural Lands, Grasslands, Surface Waters, or Wetlands

Please see **Sections 6.2, 7.4, and 8.1.**

5.5.5 Dewatering Methods

Dewatering may be required for the installation of some concrete foundations or directly embedded structures. Dewatering operations shall meet the requirements described in WDNR Technical Standard 1061 – Dewatering Practices for Sediment Control. Dewatering BMPs such as discharging to an internally drained area, using temporary or portable settling basins/tanks, or using geotextile filtering practices may be used to reduce impacts from dewatering operations. If the selected BMP is not adequately removing sediment to meet the performance criteria, the dewatering operations will be stopped, and the treatment method altered before resuming to prevent impacts to regulatory water features or off-ROW areas.

5.5.6 Substation Construction Impacts

The Plymouth #5 Substation improvements involve installation of various outdoor substation equipment including, but not limited to, control enclosure, circuit breakers, switches, and voltage transformers.

ATC's construction at the Plymouth #5 Substation will consist of drilled pier foundations ranging in size from two to eight feet in diameter and four to forty feet in depth. The foundations will be installed to support transmission line dead-end structures, static masts, bus, and equipment support structures. Slabs-on-grade eight feet by eight feet and up to three feet thick will be used for 138 kV circuit breakers. Conduit for control and communication cables and grounding conductor will be installed prior to the placement of the final layer of crushed rock surfacing.

5.6 Staging Areas and Temporary Work Space

ATC has identified three construction laydown areas for the Project. In limited cases, a smaller temporary workspace consisting of a matted work pad will be necessary just outside the ROW to facilitate conductor stringing operations. This includes three work pads immediately adjacent to the ROW along the Alternate Route (two in Segment D and one at the corner of Segments A and B). All stringing operations along the Preferred Route are currently planned within the ROW. A site map depicting the proposed laydown areas is provided in **Appendix A, Figure 6**. Off-ROW stringing setup areas are depicted in **Appendix A, Figure 3.**

Laydown yard locations have been selected based on their proximity to the proposed routes. Preference was given to locations where either existing improved parking lots were present, or where active quarries and gravel pits had the necessary capacity to store equipment and

personnel during various construction phases. These sites were selected with the intention that no further expansion or ground disturbances would be needed.

Laydown Yard	Address	Description
County S Yard (Laydown 1)	N5821 CTH-S, Plymouth, WI 53073	Improved gravel lot
County N Yard (Laydown 2)	W7081 CR-N, Plymouth, WI 53073	Active quarry/gravel pit
State HWY 28 Yard (Laydown 3)	N2113 WIS-28, Cascade, WI 53001	Active quarry/gravel pit

If additional staging areas or temporary workspaces are required, ATC will notify the Commission of these new construction locations and will submit the necessary information to the PSCW prior to establishing any such areas in accordance with Wis. Admin. Code § PSC 111.71.

5.7 Off ROW Access Roads

ATC construction access plans have been developed such that minimal access from outside proposed routes or existing ATC ROW is necessary to construct the Project. Off-ROW access will consist of a temporary matted access lane to be removed and restored upon Project completion. At this time, off-ROW access is needed at only one location to construct the Alternate Route at the intersection of CTH A and CTH V (Segments D and E). No off-ROW access is currently planned to construct the Preferred Route. Access will otherwise occur entirely from within the proposed or existing ATC ROWs, unless the contractor can arrange for voluntary alternative access that minimizes cost, environmental impacts, or landowner impacts. A site map depicting proposed off-ROW access is provided in **Appendix A, Figure 3**.

Once construction is complete, any off-ROW disturbances will be restored to pre-construction conditions. Depending upon landowner negotiations and requirements, any improvements made to the access paths may be left in place. No permanent off-ROW access is proposed. Off-ROW laydown yards and staging areas are discussed above in **Section 5.6**.

If additional off-ROW paths are identified, ATC will complete an environmental review of these paths and submit the necessary information to the PSCW prior to establishing any such areas in accordance with Wis. Admin. Code § PSC 111.71.

5.8 Substation Site Information

5.8.1 Description, Diagrams, Graphics

Please see **Section 5.5** for a description of the work being performed in the Plymouth Utilities #5 Substation.

5.8.2 Associated Transmission and Distribution Line Work

Transmission and distribution circuits will be new construction on the substation site and will interconnect to existing facilities offsite. The transmission circuits will be double-circuit steel poles and will match the transmission line configuration in other areas of the Project. An 80 foot ROW will be required for the newly constructed transmission line. New distribution circuits will connect to the north side of the substation. The distribution will require ROW easements near the edge of the east and west side of the site.

6.0 NATURAL RESOURCE IMPACTS

6.1 Forested Land

Forested areas along the routes were quantified as part of the land cover impact analysis (Section 5.4) and the resulting acreages are provided in the Land Cover table (**Appendix B, Table 2**). Forested lands are defined as an upland area of land covered with woody perennial plants reaching a mature height of at least six feet tall with definite crown (closure of at least 10%). For the purposes of the Application Filing Requirements, forested lands do not include narrow windbreaks located between agricultural areas but does include shrublands and forested riparian areas. The following tree size classification system was used:

- Saplings refer to live trees from one to five inches diameter at breast height (dbh).
- Pole timber ranges from five to nine inches dbh (softwoods) and from five to 11 inches dbh (hardwoods).
- Saw timber is greater than nine inches dbh (softwoods) and greater than 11 inches dbh (hardwoods).

6.1.1 Impacted Woodlands

The Project will impact forested lands along both the Preferred and Alternate Routes. Impacts will occur as a result of vegetation clearing for the new ROW, with an average clearing width of 80 feet. The ROW will then be maintained in perpetuity via routine vegetation management practices to ensure that the area remains free of woody vegetation that would be incompatible with electric transmission lines. No woodland impacts are planned outside of the ROW for either proposed route option. No woodland impacts are planned for off ROW access.

The establishment of a hazard tree buffer along both the Preferred and Alternate Routes will result in additional tree removal as a part of the Project. The hazard tree buffer includes a total width of 300 feet. Hazard trees are defined as a tree that has been assessed and found to be likely to fail and cause an unacceptable degree of injury, damage, or disruption. Hazard trees pose a high or extreme risk. Hazard tree removal is sparse and selective in nature and does not result in a loss of forested land. Removal of hazard trees has not been included within this assessment as the impact is negligible.

The Alternate Route contains approximately 16.14 acres of woodlands within the limits of the proposed 80 foot ROW. Dominant tree and shrub species generally consist of sugar maple (*Acer saccharum*), box elder (*Acer negundo*), American basswood (*Tilia americana*), white pine (*Pinus strobus*), and common buckthorn (*Rhamnus cathartica*). Other species present consist of oaks, spruce, cherry, aspen, maples, willows, honey suckle, and elms. These species comprise a range

of size classifications as determined during field surveys. These woodlands are within the private property of individual landowners.

The Preferred Route contains approximately 9.56 acres of woodlands within the limits of the proposed ROW. Dominant tree and shrub species generally consist of box elder, basswood, common buckthorn, green ash (*Fraxinus pennsylvanica*), and red pine (*Pinus resinosa*). Other species present include aspen, elms, hickory, cherry, honey suckle, buckthorn, and maple. These species also include a range of size classifications as determined during field surveys. These woodlands are within the private property of individual landowners.

Trees and brush will be cleared for the full width of the ROW to facilitate construction equipment access and ensure safe clearances between vegetation and the transmission line. Clearing will be completed in advance of or concurrent with transmission line construction. Vegetation will be cut at or slightly above the ground surface using mechanized mowers, sky trims, processors, harvesters, or by hand. Rootstocks will generally be left in place except in areas where stump grinding is necessary to facilitate the movement of construction vehicles, or if requested by the landowner.

Engineering design and the final selection of access routes will attempt to minimize impacts to forested lands. A summary of the forest types, amount of acres to be cleared, average size of trees, ownership, and use are shown in **Table 6.1.1-1** below by segment.

Table 6.1.1-1 Tree Clearing Summary

Segment	Type of Woods	Acres to clear	Average size of trees	Dominant Species	Ownership / Use
Alternate Route					
A	Forested Wetland	3.68	Pole Timber	Sugar Maple, Common Buckthorn, American elm, Cottonwood, Oak sp. and Honeysuckle	Private / Recreation
	Upland Forest	1.08			
B	Forested Wetland	1.36	Pole Timber	Sugar Maple, Oak sp., White Pine, Box Elder and Basswood	Private / Recreation
	Upland Forest	0.87			
C	Forested Wetland	0.0	Pole Timber		Private / Recreation

	Upland Forest	3.47		Sugar Maple, Oak sp., Box Elder, White Pine, and Basswood	
D	Forested Wetland	0.06	Pole Timber	Sugar Maple, Oak sp., Box Elder, Spruce sp., White Pine, Aspen sp., Hickory sp., Cherry sp., and Basswood	Private / Recreation
	Upland Forest	5.44			
E	Forested Wetland	0.0	Pole Timber	Pine sp.	Private / Recreation
	Upland Forest	0.18			
Preferred Route					
E	Forested Wetland	0.0	Pole Timber	Pine sp.	Private / Recreation
	Upland Forest	0.18			
G	Forested Wetland	0.0	-	-	Private / Recreation
	Upland Forest	0.0			
H	Forested Wetland	1.58	Pole Timber	Sugar Maple, Red Pine, Basswood, Common Buckthorn, and Box Elder	Private / Recreation
	Upland Forest	1.62			
I	Forested Wetland	0.0	Pole Timber	Sugar Maple, White Pine, Green Ash, and Box Elder	Private / Recreation
	Upland Forest	6.18			

6.1.2 Managed Forest Law and Forest Crop Law

ATC obtained information from the WDNR identifying quarter-quarter (40 acre) sections in which all or some portion of the land is enrolled in the Managed Forest Land (MFL) or the Forest Crop Law (FCL) programs. MFL properties exist along the Preferred and Alternate Routes

and are summarized below in **Table 6.1.2-1**. No FCL enrolled properties were identified along either proposed route.

Table 6.1.2-1 MFL Parcel Table

Type	Segment	Order Number	Approximate Forested Clearing (acres)	Order Expiration Date	Location
Alternate Route					
MFL	A	60-033-1999	0.05	12/31/2023	T14-R21E-S04, Part of the SW of the NE
Preferred Route					
MFL	H	60-011-2019	0.11	12/31/2068	T14-R21E-S16, Part of the SW of the NW

The full extent to which program participation may be affected cannot be determined based on the information available to ATC. If the proposed easement area does not encumber the forested areas on the parcel, there would be no impact to the program. During the easement negotiation process, conflicts between the terms and conditions of the MFL Program Agreement and ATC's proposed easement, if any, will be addressed. If any landowner would be unable to continue in the program, or if the level of participation is impacted, ATC will compensate the landowner as appropriate. Due to conflicts between transmission line easements and the obligations of the landowner under the terms and conditions of this program, the land in the easement area may have to be removed from the MFL.

6.1.3 Mitigating Minimizing Construction Impacts In and Around Forested Lands

The Preferred and Alternate Routes will both require the clearing of woody vegetation within the proposed ROW. Tall-growing woody vegetation that may interfere with safe construction and safe and reliable operation of the transmission line will not be allowed to persist and will be controlled. Woody vegetation may be chipped and scattered over the ROW in non-agricultural upland areas. Chipping will only occur in wetlands or floodplains such that chipped material is thinly scattered in a manner that does not impede revegetation, alter surface elevations, and/or obstruct the natural flow of water, in compliance with wetland permit requirements. Chipped material derived from onsite locations may be spread as mulch in upland areas to provide surface protection from erosion along access paths. Upon abandonment of access routes, mulch will be spread evenly so that it does not hinder revegetation. Section 6.3 (Invasive Species) describes tree clearing timing restrictions and slash

management procedures to prevent the spread of invasive species and disease-causing organisms.

Woody vegetation will be removed periodically through routine vegetation management activities throughout the operational life of the transmission asset.

6.2 Grasslands

Grasslands are defined as lands covered by non-cultivated herbaceous (non-woody) vegetation predominated by perennial grasses and forbs.

6.2.1 Grasslands Impacted by the Project

Grassland areas along the Preferred and Alternate Routes were quantified as part of the impact analysis (Section 5.4) and the resulting acreages are provided in the Land Cover table in **Appendix B, Table 2**. Grasslands identified along the Preferred and Alternate Routes consist primarily of old fields and roadside grasslands (dominated by herbaceous vegetation) that are not in agricultural production and include upland road ROW.

The proposed ROW along the Alternate Route intersects approximately 17.72 acres of grassland. Dominant grass species generally consist of smooth brome (*Bromus inermis*), Kentucky bluegrass (*Poa pratensis*), and yellow foxtail (S*etaria pumila*). Other species present include orchard grass, goldenrods, Queen Anne's lace, and poison ivy. These grasslands are within the private property of individual landowners or public road ROW.

The Preferred Route intersects approximately 25.07 acres of grassland. Dominant grass species generally consist of smooth brome and Kentucky bluegrass. Other species present include chicory, goldenrods, and Queen Anne's lace. These grasslands are within the private property of individual landowners or public road ROW.

Table 6.2.1-1 below summarizes grasslands within each route segment.

Table 6.2.1-1 Grassland Impacts Summary

Segment	Type	Dominant Species	Grassland Acreage	Ownership / Use
Alternate Route				
A	Roadside and Old Field	Smooth Brome, Canada Goldenrod, and Kentucky Bluegrass	1.37	Private
B	Roadside	Smooth Brome, and Timothy	2.12	Private
C	Old Field	Smooth Brome, Canada Goldenrod, and Common Yarrow	0.67	Private
D	Roadside and Old Field	Kentucky Bluegrass, Smooth Brome, Yellow Foxtail, Common Ragweed, and Canada Goldenrod	13.14	Private
E	Roadside	Kentucky Bluegrass and Smooth Brome	0.60	Private
Preferred Route				
E	Roadside	Kentucky Bluegrass, Smooth Brome	0.60	Private
G	Roadside	Smooth Brome, Kentucky Bluegrass, and Tall Fescue	6.22	Private
H	Roadside	Kentucky Bluegrass and Smooth Brome	2.58	Private
I	Roadside and Old Field	Smooth Brome, Canada Goldenrod, and Queen Anne's lace	15.67	Private

6.2.2 Mitigating and Minimizing Construction Impacts in and Around Grasslands

Impacts to grasslands from construction activities will be mitigated and minimized throughout Project implementation. This may be achieved through carefully planned access routes, avoidance when possible, limited access widths, and the use of construction matting to minimize the potential for ground disturbance. BMPs to prevent the introduction and spread of

invasive species will be followed and are detailed in **Section 6.3**. BMPs will also help further minimize construction impacts to grasslands.

6.3 Invasive Species

6.3.1 Invasive Species/Disease-Causing Organisms

The Project area was evaluated for regulated invasive plant species during field investigations completed during the 2023 growing season. Survey areas are depicted on the wetland report figures. The general location and composition of invasive plant species present along the Preferred and Alternate Routes were documented during environmental field surveys. The general locations of regulated invasive plant species will be shared with the Project team to help with avoidance and implementation of invasive species BMPs.

Regulated invasive plant species were commonly observed along both routes and are typical of roadside, agricultural, and developed areas. It is assumed these species are present within Project areas that were not accessible at the time of field survey. Overall, ten invasive plant species were noted. Of these, eight species fall into the "Restricted" category, while two fall into the "Prohibited/Restricted" category of Wis. Admin. Code ch. NR 40. The observed species include:

Species observed	NR 40 Status
Autumn olive (*elaeagnus umbellata*)	Restricted
Glossy buckthorn (*Frangula alnus)*	Restricted
Common buckthorn (*Rhamnus cathartica*)	Restricted
Common reed (*Phragmites australis*)	Prohibited/Restricted
Wild parsnip (*Pastinaca sativa*)	Restricted
Honey suckle (*Lonicera maackii)*	Prohibited/Restricted
Dame's rocket (*Hesperis matronalis)*	Restricted
Crown vetch (*Coronilla varia*)	Restricted
Multiflora rose (*Rosa multiflora*)	Restricted
Spotted knapweed (*Centaurea biebersteinii*)	Restricted

The Project's location in Sheboygan County is within the established state distribution of Oak wilt disease (*Bretziella fagacearum*) and is a quarantine county for emerald ash borer (*Agrilus planipennis*). The Project's location is also within established quarantined Gypsy moth (*Lymantria dispar*) areas.

6.3.2 Mitigation Methods

BMPs will be used to comply with Wis. Admin. Code ch. NR 40 and Commission requirements. The intent of these practices is to prevent the introduction of invasive species to uninfected areas and limit the spread of invasive species already present onsite.

Additionally, these practices will minimize the potential introduction, spread or transport of invasive species to off-site locations. General BMPs that may be used during construction are presented below.

- Avoidance through construction timing and alternative access.
- Installation of environmental signage for contractor awareness of invasive species populations.
- Proper management of construction vehicles and materials (i.e., storage, cleaning).
- Minimizing ground disturbance.
- Placement of a barrier between construction vehicles and plants (i.e., construction matting).
- Proper storage and disposal of plant materials.
- Promotion of native regeneration.

To minimize the spread of oak wilt, ATC will avoid cutting or pruning oak trees during the restricted times outlined in Wis. Admin. Code § PSC 113.051 (April 15 – July 1).

Standard practices that minimize the spread of emerald ash borer include avoiding the movement of ash wood from emerald ash borer quarantine areas to non-quarantine areas, as per Wis. Admin. Code § ATCP 21.17. Similarly, standard practices to avoid the spread of the gypsy moth include avoiding movement of wood from gypsy moth quarantine areas to non-quarantine areas, as per Wis. Admin. Code § ATCP 21.10. If cut vegetation cannot be left on-site, alternative plans will be developed to meet the requirements.

6.4 Archaeological and Historic Resources

Pursuant to Wis. Stat. § 44.40, a review of the proposed transmission line routes and a one-mile buffer known as the Study Area was conducted to determine the potential presence of archaeological and historic sites. ATC's consultant, Stantec, conducted an archival and literature review of previously recorded architectural/historic resources, archaeological sites, and burials/cemeteries along the proposed Project routes. To assess the potential effects of the Project on archaeological sites, cemetery/burial sites, and architectural/historic resources, the Archaeological Site Inventory, the Architecture and History Inventory and associated files, and

the national and state registers of historic places were reviewed. The Archaeological Report Inventory was also reviewed to determine whether prior archaeological surveys had occurred along any part of the proposed Project Routes.

Due to confidentiality requirements, reports documenting archaeological and architectural history literature review and reporting have been redacted (**Appendix F, Exhibits 5 and 6**). Unredacted copies of the Cultural Resource Literature Review and the Architecture and History Review have been submitted to the PSCW Historic Preservation Officer under separate cover.

6.4.1 Construction Location List

The proposed Project routes span the Towns of Lyndon and Mitchell in Sheboygan County. The Alternate Route is located in Town 14 North, Range 20 East, sections 10, 11, 12, and 15, as well as Town 14 North, Range 21 East, sections 3, 4, 5, 7, and 8. The Preferred Route is located in Town 14 North Range 20 East, sections 13, 14, 15, 22, and 23, as well as Town 14 North, Range 21 East, sections 10, 15, 16, 17, and 18. These Routes are represented on the Cascade, Wisconsin and Plymouth South, Wisconsin 7.5' United States Geological Survey (USGS) topographic quadrangles. Figures depicting archaeological and historic sites (redacted) within the Project's archaeological and architectural area of potential effect (APE) are provided within the Cultural Resource Literature Review and the Architecture and History Review, included in **Appendix F, Exhibits 5 and 6**.

6.4.2 Wisconsin Historic Preservation Database Results

The Wisconsin Historic Preservation Database was accessed in September 2023 to help determine the boundaries, historic significance, and integrity of cultural resources within the Project's Study Area.

Results of the Cultural Resource Literature Review (**Appendix F, Exhibit 5**) indicate that 22 previously recorded cultural resources (9 architectural, 5 archaeological, and 8 sites which have cemetery/burial components) fall within the proposed Project's Study Area (one mile buffer from proposed routes). In addition, one non-burial archaeological site is mapped near the Preferred Route option and one cemetery/burial site occurs within the archaeological APE of the Alternate Route option. Results of the Architecture and History Review (**Appendix F, Exhibit 6**) indicate that nine historic architectural resources have been previously recorded within the Study Area, none of which will be impacted by proposed routes.

6.4.3 Project Impacts

Results of the Cultural Resources Literature Review (**Appendix F, Exhibit 5**) find that two known archaeological sites are within close proximity to the APE of proposed routes:

- Site 1: This non-burial site is adjacent to the Preferred Route ROW and has not been evaluated for inclusion in the National Register of Historic Places. This site has an unknown cultural affiliation and has been previously disturbed by agricultural management and road construction. The Preferred Route avoids this site as currently designed. Therefore, the site is unlikely to be negatively impacted by the Project.
- Site 2: This mapped burial site is intersected by the APE of the Alternate Route along segment D. The burial is classified as a historic Euro-American cemetery and is not catalogued. The site consists of a plowed agricultural field with inconsistent records of its existence and no observable evidence of cemetery use based on aerial imagery dating back to 1937. Should the Alternate Route option be selected for the Project's construction, then it is recommended that either the Project's archaeological APE within the mapped cemetery site be subjected to archaeological survey, or that any ground disturbance within the site's boundaries be monitored by a Qualified Archaeologist. Either of these actions will require Request to Disturb a Burial Site permitting to comply with Wis. Stat. § 157.70.

None of the historic architecture sites identified within the architectural APE will be directly or indirectly impacted by either proposed route as currently designed.

6.4.4 Project Mitigation Measures

ATC will continue to seek opportunities to avoid or minimize impacts to cultural resources, to the extent practicable, through engineering and construction planning and implementation measures.

Engineering measures will focus on detailed design of proposed routes and evaluating opportunities to modify designs such that impacts are avoided or further minimized. Construction measures may include:

- Careful planning of access routes in a manner that avoids known cultural sites.
- Installation of timber matting or use of low-pressure tracked equipment to minimize equipment access disturbance.
- Installation of environmental signage notifying construction crews of sensitive resources and a requirement for modified construction practices.

Prior to start of construction, all crew members will receive Project specific training, which includes direction for avoidance and/or minimization of impacts to cultural resources as well as plans to address any unanticipated archaeological discovery. Routine environmental construction monitoring, to be conducted throughout the course of Project implementation, will document Project activities in the vicinity of cultural resources and help to identify and

avoid potential issues in the field. An onsite archaeological monitor may also be required depending on permit conditions.

6.4.5 Burial Site Disturbance

One mapped burial site (described above as "Site 2" under Project Impacts) is present within the APE of the Alternate Route along Segment D. ATC assumes that any Project disturbance within the boundaries of the mapped site will require a Burial Site Disturbance Authorization/Permit and may require an archaeological monitor be present during ground disturbing construction activities. Either of these actions will require Request to Disturb a Burial Site permitting to comply with Wis. Stat. § 157.70.

6.4.6 Unanticipated Archaeological Discoveries

An Unanticipated Archaeological Discoveries Plan is provided as **Appendix F, Exhibit 1**. Prior to start of construction, all crew members will receive Project specific training that includes direction for avoidance and/or minimization of impacts to cultural resources as well as plans to address any unanticipated archaeological discovery.

6.4.7 Native American Human Burial Sites

No Native American human burial sites or significant archaeological sites are mapped within the Project's archeological APE.

6.5 Conservation Easements

The Project does not intersect any known conservation easements based on a review of conservation easement data available from the National Conservation Easement Database, Protected Areas Database of the United States, The Nature Conservancy Lands, the Wisconsin Department of Natural Resources and the Wisconsin Department of Agriculture Natural Resources Conservation Service Easements.

The title search information has not been completed for the Project. Upon receipt of a PSCW order, title searches will be completed. If additional information regarding conservation easements is discovered during the easement acquisition process, ATC will work with the landowner to accommodate the existing agreement or make them whole.

6.6 Restoration

Throughout Project implementation, inspections will be conducted on a routine basis to monitor disturbance to soils and vegetation and track the need for re-vegetation and

restoration activities in accordance with Wis. Admin. Code Ch. NR 216 and the Wisconsin Pollution Discharge Elimination System (WPDES) general permit conditions. Documentation of inspections describing the re-vegetation progress and corrective measures taken will be maintained where applicable.

Site restoration, including re-vegetation where necessary, will be completed as soon as practicable upon completion of construction. The need for and approach to site restoration and re-vegetation will be based on the degree of disturbance caused by construction activities and the ecological setting of each location. The actual restoration activities completed will be dependent on post-construction site conditions and landowner concerns. In areas where seed is needed to facilitate re-vegetation, the seed mix used will be appropriate to the surrounding area (and similar to pre-construction conditions), and the seed bed will be adequately prepared to ensure successful germination. Seed mixes will not contain invasive species.

A restoration plan for disturbed sites will be developed based on the level of ground disturbance and the site setting. In some cases, re-growth of vegetation in disturbed areas may be allowed to occur without supplemental seeding. In cases where there is no sign of re-growth of pre-existing vegetation in the first month of the subsequent growing season, an assessment will be made and, if necessary, an appropriate seed mix will be properly applied. The sites that are seeded will be monitored to track seed germination and plant growth.

Upon completion of restoration, ATC will monitor each work location and access route to ensure stabilization and re-vegetation occurs. If regulated by Wis. Admin. Code ch. NR 151, monitoring will continue until vegetative cover reaches 70%. If required by the WDNR Utility Permit, additional monitoring of wetland vegetation will be completed.

The invasive species located along the Project ROW and the BMPs to avoid the spread of invasive species are discussed in Section 6.3. Inspections will be completed to verify that no new regulated invasive plant species are introduced as a result of the Project and that existing populations were not further spread by the Project.

6.7 Contaminated Sites

Contaminated sites were identified using the Wisconsin Remediation and Redevelopment Database (WRRD), http://dnr.wi.gov/topic/Brownfields/WRRD.html and the Historic Registry of Waste Disposal Sites, http://dnr.wi.gov/topic/Landfills/registry.html. The presence of contaminated sites within two miles of the Project centerline were determined using GIS measurements.

The Alternate Route includes ten closed sites and known landfill/historic waste sites within two miles. There are no known open sites within two miles of the Alternate Route.

The Preferred Route includes 21 closed sites and four landfill/historic waste sites within two miles. There are no known open sites within two miles of the Preferred Route.

There are no known sites occurring within 1,000 feet of the proposed ROW for the Preferred or Alternate Routes. This information is provided in **Appendix F, Exhibit 2**.

6.8 Floodplains

The Project includes limited work occurring within floodplains along both the Preferred and Alternate Routes. This work will include clearing for the new ROW, new structure installation, and construction matting placed to facilitate construction access. Permanent fill in floodplains will be limited to the footprint of the new poles and reduction in flood storage will be negligible. Based on preliminary design assumptions, the Alternate Route will have two structures in floodplains and the Preferred Route will have two structures in floodplains. Floodplains along proposed routes are displayed on **Appendix A, Figure 3**.

The Project will avoid or minimize floodplain impacts to the extent practicable through the engineering design of this Project, the use of specific construction techniques, and implementation of BMPs and ATC's standard environmental protection practices. When construction activities are complete, the matting will be removed, and the ground surface will be restored to pre-existing conditions to the extent practicable.

ATC has not reached out to the local floodplain zoning authority but does supply the applicable local governments with information and requests that they provide the PSCW and ATC with their comments or concerns regarding the siting and location of the proposed Project. ATC will review floodplain areas and address comments from the local units of government as necessary.

7.0 COMMMUNITY IMPACTS

7.1 Communication with Potentially Affected Public

ATC identified all potentially impacted landowners on the proposed route options, as well as those landowners within 300 feet of any potential route centerline. In lieu of open houses, direct communication with these landowners will take place through a comprehensive Project notification mailing (a copy is provided as **Appendix E, Exhibit 1**), emails and phone conversations. ATC will collaborate on messaging with Plymouth Utilities. In addition, a Project web page will be established that provides additional resources, including a Project map/map book, FAQs, direct contact information for Project representatives, and PSCW docket information. All Project mailings will include references to the website as well as the ATC Local Relations contact for more information.

7.2 Community Issues

ATC is not aware of any specific community issues. However, ATC will monitor concerns throughout Project development and respond accordingly. ATC anticipates that the issues, if raised, will largely relate to easement acquisition, construction traffic, property access and restoration. ATC will work with stakeholders for the duration of the Project to address and minimize the impacts of these issues.

7.3 Land Use Plans

Existing land use plans are provided in **Appendix A, Figure 7.**

7.4 Agriculture

Agricultural land uses were identified along both the Preferred and Alternate Routes by aerial photography and field observations. Agricultural land cover is classified as properties actively used for cultivation of crops and specialty crops (tree plantations, orchards, cranberry bogs, etc.). Other passive agricultural uses like pasture lands or fallow/old fields are categorized as grasslands. Fields or other areas with no evidence of recent tillage or agricultural production were not included as agricultural land.

7.4.1 Type of Farming

The primary farming practice along both proposed routes is non-specialty row crops; generally, corn, soybean, alfalfa, and hay crops. The amount and type of agricultural land use along the proposed routes, by route segment, are detailed in **Appendix B, Table 2**. No specialty agricultural land use is present along either of the proposed routes.

The total agricultural land use along the Alternate Route is 31.59 acres or approximately 39% of the proposed ROW. The total agricultural land use along the Preferred Route is 23.15 acres or approximately 34% of the proposed ROW.

7.4.2 Agricultural Practices affected by Farming

All segments along the Preferred and Alternate Routes contain lands that are currently under a form of agricultural production. Cropland is the only agricultural practice that will be affected by the Project, as no specialty agriculture has been identified within either the Preferred or Alternate Route ROW. Due to agricultural BMPs of crop rotation, fallow years, and the planting of non-harvested cover crops, the type of crop affected at the time of construction is unknown at this time.

No irrigation systems are known to occur within the proposed Project area. Drainage tile may be present but has not been confirmed. Temporary impacts during construction may include crop loss, soil compaction, and damages to drain tiles. ATC will work with landowners to address drain tile concerns throughout the project planning and implementation phases.

The only permanent impact to agriculture will occur as a result of transmission structures placed within active agricultural land. Currently, 33 transmission structures are proposed to be installed within agricultural fields along the Alternate Route and 24 structures are proposed within agricultural fields along the Preferred Route. Impacts from construction will be minimized through the mitigation measures presented in **Section 7.4.4**.

7.4.3 Farmland Preservation Program

The Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP), indicates that much of the Project area along the Preferred and Alternate Routes fall within the A-1 Prime Agricultural District. However, there are no parcels currently enrolled in the Farmland Preservation Program along the Preferred and Alternate Routes.

7.4.4 Mitigation of Construction Impacts – Agricultural Lands

As standard practice, ATC seeks to minimize construction impacts on agricultural lands. ATC will minimize impacts to agricultural lands through careful consideration of agricultural impacts during the routing and siting process and through the use of carefully planned construction access routes, timber matting for vehicle/equipment access and work pads to distribute equipment loads over a larger surface area and minimize compaction of soils. ATC will work with landowners through the design process to locate structures such that impacts to drain tiles are avoided or minimized to the extent practicable. Following construction, ATC will work with landowners to restore agricultural lands to pre-existing conditions through soil de-compaction,

repair of drain tile if necessary, and appropriate compensation for any loss in productivity. ATC plans to hire an experienced Agricultural Specialist to work with farmers through negotiations, construction and restoration.

Upon receipt of a PSCW order, ATC will coordinate with each agricultural landowner regarding farm operation, locations of farm animals and crops, current farm biological security practices, landowner concerns, and coordination of construction access routes.

7.4.5 Drainage Districts

The DATCP mapping for Wisconsin Drainage Districts does not identify drainage districts of any status along either proposed route.

7.4.6 Agricultural Impact Statement (AIS) Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP)

ATC has consulted with DATCP representatives and is submitting an Agricultural Impact Notification to DATCP concurrent with the filing of this Application. Please refer to **Appendix H, Exhibit 3** for correspondence with DATCP.

7.4.7 Neutral-to-Earth (NEV) and Induced Voltage

ATC has identified confined animal dairy operations within one-half mile of the Project centerlines and identified agricultural buildings within 300 feet of the Project centerlines as summarized in **Table 7.4.7-1**.

Table 7.4.7-1

Segment	Agricultural Buildings within 300 feet	Dairy Operations within ½ mile
A	1	
B		2
C		
D	13	
E		
G	9	2
H	3	2
I	14	1

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

field coupling between the facilities. Facilities potentially affected by the proposed Project include pipelines as well as distribution facilities at multiple segment locations as discussed in **Section 5.3**.

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

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

ATC will design and construct the proposed facilities to minimize the potential for induction issues. See **Section 5.3** for locations where electric distribution lines will be relocated to eliminate physical conflicts with the Project or to increase separation with the proposed transmission line. Additionally, ATC has identified potentially impacted facilities and will work with the owners to address their concerns. This includes coordinating with the LDCs to perform pre- and post-construction testing in accordance with established protocols of potentially impacted facilities to ensure that no adverse impacts result.

7.5 Residential and Urban Areas

There are 48 homes located within 300 feet of the Preferred Route ROW, 40 homes within 300 feet of the Alternate Route ROW, and one home within 300 feet of Segment E, common to both routes. No residences are within the ROW of either proposed route.

Anticipated impacts to residences and the planned mitigation are described below:

Noise

The majority of the proposed transmission lines are located in non-residential areas. The equipment noise levels of the laydown yards will be consistent with local truck traffic and equipment. The construction noise levels along transmission line routes, including the substation site, will be equivalent to highway traffic and truck equipment throughout the remaining Project.

Noise will be intermittent and not out of the ordinary for general truck traffic. Most truck and equipment noise will be from 7:00 am to 6:00 pm, Monday through Friday. Most trucks will leave the designated laydown yards each day during this time.

When undertaking construction activities around residences, ATC will be cognizant of the residents and will limit work hours in that area, specifically during the early morning hours.

Dust

ATC will be performing drilling operations for the installation of transmission structures and will not be creating large spoil piles in relation to this work. Dust impacts will be minimized in residential areas. In addition, ATC will clean up daily any dirt or mud that may be tracked onto private driveways, access roads, local roads or the highway.

Duration of Construction

Construction is anticipated to begin in August 2025 and end in December 2025.

Time-of-Day Construction

Construction work will generally occur Monday through Friday during daylight hours. Weekend work is also a possibility. No night work is anticipated at this time.

Road Congestion

Construction vehicles will use public roads to access the ATC ROW. There may be occasions when construction vehicles are parked on roads during construction. ATC will minimize the number and amount of time vehicles are parked on the roads. All current traffic control measures will be adhered to while equipment is on a public roadway.

Impacts to Driveways

The only driveways ATC and its contractor anticipate using are driveways on which ATC receives specific landowner permission to travel or park equipment. ATC will ensure residence driveways are not blocked with equipment.

7.6 Aesthetic Impacts

No photos simulations were requested by Commission Staff. No scenic roads were identified in the Project area.

7.7 Parks and Recreation Areas

No parks or recreation areas are present within the Project area of either of the proposed routes. While portions of the Alternate Route do parallel WDNR owned or managed properties, routing and siting efforts specifically avoided the need for any easement acquisition on publicly owned lands.

7.8 Airports

7.8.1 Location of Private and Public Airstrips

ATC identified one heliport within five miles of the proposed route centerlines. A list of the heliport and their corresponding locations are provided in **Table 7.8.1-1**.

Table 7.8.1-1 – Airport Information

Segment	Airport Name	Distance from Centerline	Type Airport / Use	City
A	Aurora Valley View Medical Center	2.3 miles	Heliport / Private	Sheboygan

7.8.2 Description of Airports

Under the provisions of 14 C.F.R. Part 77 (Part 77), the FAA's objective is to ensure safe and efficient use of the navigable airspace for public use and military airports and heliports. To accomplish this objective, the FAA conducts aeronautical studies of proposed and existing structures provided to the FAA in Form 7460-1, Notice of Proposed Construction or Alteration. The criteria for filing a notice are defined in Part 77.9. Part 77 does not typically apply to private use facilities, except those that have FAA approved plans or procedures. Nevertheless, ATC used the same imaginary surface requirements that the FAA enforces on public use airports when evaluating the proposed route corridors and potential impacts to private use facilities. The description of facilities and evaluation of impacts is discussed below.

The Aurora Valley View Medical Center (57WI) heliport is a privately-owned heliport in Sheboygan, Wisconsin. The latitude/longitude of the helipad is 43.7444 N/ 87.9677 W. The helipad has an elevation of 878 ft. The helipad is approximately 2.3 miles from Segment A on the Alternate route and 3.7 miles from Segment G on the Preferred route. The proposed alignment does not impact the FAA imaginary surface requirements.

7.8.3 Impact to Aircraft Safety

The Project is governed by Wis. Stat. §§ 196.491(3)(i). Where structure heights meet FAA requirements but would otherwise be further restricted by height limitation zoning ordinances, ATC is not subject to those zoning ordinances but will work with the impacted local units of government to reasonably address their concerns.

7.8.4 Potential Construction Limitations and Permit Issues

ATC used the FAA Notice Criteria Tool to determine which structures in the Project would require filing with the FAA. The FAA Notice Criteria Tool has been checked for all proposed structure locations. Portions of the proposed alignments require notice to the FAA either due to proximity or height. Each structure was checked in the Notice Criteria Tool at a height of 199 feet. For locations that would require filing for a height of 199 feet or less, the "Height Exceeded By" value in the Notice Criteria Tool was compared to the expected height of the structure and determined to be below the stated height. Structures will be filed for the actual height on the ordered route once design is completed. Documentation of the FAA Notice Criteria Tool checks along with a summary of checks performed and results are included in **Appendix H, Exhibits 1** and **2**.

7.9 Communication Towers

7.9.1 Communication Interference

A preliminary communication interference study was performed for both route options. To identify any communication towers adjacent to the proposed routes, a 10 km radius was utilized for analysis. The following communications were identified in the report: land mobile, commercial, broadcast, microwave, paging base stations, cell, antenna structure registration, and AM and FM towers. Each route option has its own potential interference with communication, but once in detailed design, further analysis will be conducted to determine the scope of interference, if any, and the associated mitigation options. Refer to **Appendix D, Exhibit 2** for the interference study report.

The type of communication tower/facility will determine the types of interference that might be encountered with the addition of a transmission line. Based on the types of facilities that were found to be located within 10 km of the proposed routes, the following are potential interference types that might occur, however further studies during detailed engineering will be required to either confirm or disprove the interference impacts.

<u>Communication Tower Noise Interference:</u>

Radio frequency noise interference occurs when transmission line hardware is exposed to weather for long periods of time, typically years. Impurities in rain will build calcium deposits on line hardware which can result in high frequency spark gap emissions. Since new line hardware is designed and manufactured using modern production techniques, spark gap emissions are rare in new transmission line construction. If the transmission line does exhibit a level of corona discharge that requires correction this can be remedied. Remedies for corona discharge include: Locating and correcting improperly installed transmission line hardware; when

necessary, providing additional noise shielding of antennas on the communication tower by relocating the affected antennas to the opposite side of the tower.

Microwave Signal Obstruction:

All microwave antennas emit a unidirectional polarized signal which can be obstructed when man-made objects, such as steel poles, are placed within 0.6F1 (First Fresnel zone) of the parabolic antenna's cone of radiation. Other factors that are also considered to determine if microwave tower reliability will be affected include the diameter of the transmission line pole, pole height, microwave antenna height above ground level, and distance from the communication tower to the transmission line pole (Fraunhofer region). Microwave signals are not affected by transmission line conductors. During detailed engineering, a situational analysis can be completed to determine if any transmission line pole obstructions exist. If obstructions do exist, there are several ways to remedy the issue. Remedies include: Remounting the microwave antenna elsewhere on the communication tower, if possible, to reestablish line of

sight clearance to the far end communication tower (note: Federal Communications Commission (FCC) license modification is required when raising a microwave antenna more than five feet above its licensed height on the tower; and relocating the transmission line pole. During ATC's inspection, no microwave facilities were found near the proposed lines which would need modification at this time, and network engineers would plan new facilities to avoid the lines.

Transferred Ground System Voltage:

Energized transmission line segments built within 500 feet of an existing communication tower site may increase the risk of transmission line noise conduction into sensitive electronic equipment due to the potential difference between ground systems. This condition may also increase the risk to human safety if a transmission line to ground fault were to occur. Detailed design analyses will address and recommend corrective grounding measures for all communication tower sites susceptible to this condition. For any issues determined during detailed design, remedies could include: Modifying the tower site ground system to rectify this condition; and providing additional transmission line ground conductors to balance the impedance between ground systems. Based on the initial FCC database research completed, ATC determined that there are two facilities on the Preferred route that might be susceptible to this condition.

Paging Base Stations, Cell, and AM Facilities:

The FCC database research found paging base stations, cell, and AM facilities within 10 km of the proposed transmission routes. ATC does not anticipate potential interference with these facilities by the proposed transmission line route options. Typically, AM facilities have the

potential for interference from transmission lines, such as distortion of the AM antenna radiation pattern, however, the only AM facility within the 10 km radius is in Plymouth and is two km away from the Alternate Route. This distance should prevent issues for the AM station's near field radiation pattern. Paging base stations (PAG) are only transmitters (no receivers), therefore paging base stations are not susceptible to radio frequency interference of any type.

Due to the ultra-high frequency bands that cell services operate in they do not have the potential of radio frequency interference from the installation of a transmission line. Antenna Structure Registrations (ASRs) are applications made to the FAA for communication towers that exceed 200 feet in height as they can pose dangers to aircraft at that height. ASRs do not indicate the type of communication facility the tower might be supporting, if any.

7.9.2 GIS Location Information

In order to determine the types of communication towers adjacent to the proposed transmission line routes, a research of available FCC databases was conducted and all communication towers within a 10 km distance were determined. A location map showing all facilities within the 10 km range and accompanying tables which indicate facility type, owner, location, and distance to the proposed routes can be found in **Appendix D**, **Exhibit 2**. The types of facilities that were found within 10 km of the proposed routes were as follows: Land Mobile (LM Private), Commercial (LM Com), Broadcast (LM Bcast), Microwave (MICRO), Paging Base Stations (PAG), Cell (CELL), Antenna Structure Registration (ASR) and AM and FM towers.

7.10 Community Income

This section is not applicable to this Project because the proposed facilities are designed for operation at less than 345 kV.

8.0 WATERWAY/WETLAND PERMITTING ACTIVITIES

8.1 Waterway Activities

Waterways were identified within the Project area through a combination of wetland determination field investigations and review of multiple years of high-resolution aerial imagery, topographic data, and existing hydrologic data sets (WDNR 24K Hydrography layer). Field investigators and geospatial analysts used their best professional judgement to identify waterway routes and ordinary high-water mark (OHWM) widths. No waterbodies were identified within the Project area. A summary of all waterways intersecting the Preferred and Alternate Routes is provided in **Appendix F, Table 2**, with additional details provided in the Wetland Delineation Report (**Appendix F, Exhibit 4**).

8.1.1 Proposed Waterbody or Waterway Crossings

The proposed routes intersect multiple waterways. One named perennial waterway (Onion River) is intersected by the Alternate Route and one named perennial waterway (North Branch Milwaukee River) is intersected by the Preferred Route. Two additional unnamed intermittent waterways are intersected by the Alternate Route and one unnamed intermittent waterway is intersected by the Preferred Route. These waterways were identified through a combination of field observations and aerial reviews.

The Preferred and Alternate Routes intersect multiple waterways, as identified and summarized below in **Table 8.1.1-1**. Additional information about each waterway can be found in **Appendix F, Table 2**.–**Table 8.1.1-1 - Summary of Waterway Crossings**

Number of Waterways Crossed	
Alternate Route	**Preferred Route**
3	2

8.1.2 Waterway Special Classifications

The Onion River (intersected by the Alternate Route) is classified as a Trout Stream and O/ERW. The Onion River generally flows east before eventually flowing into the Sheboygan River. This segment of the River is classified as a cool-cold mainstem and headwater having fair general conditions. The river may be impacted by the impoundment and presence of private fish ponds on major spring sources, and siltation from agricultural runoff.

The North Branch Milwaukee River (intersected by the Preferred Route) is classified as a Trout Stream and O/ERW. The North Branch Milwaukee River generally flows south before eventually

flowing into the Milwaukee River. This segment of the river is classified as a cool-cold mainstem and headwater and cool-warm mainstem and as having poor general conditions. It is known to be impaired for phosphorus levels and degraded biological community.

Waterways designated as Wild and Scenic Rivers are not present along the Preferred or Alternate Routes.

Methods for minimizing impacts to O/ERWs and trout streams are the same as those described in Section 8.1.5. Site specific erosion control BMPs/construction site erosion and sediment control technical standards will be determined prior to construction. No equipment access or work below the OHWM is proposed as part of this Project. Following TCSB removal, banks will be restored to stable conditions. All stockpiled spoils, supplies, or materials will be isolated from the waterway to prevent impacts beyond the work area. Any disturbance to the bed or banks of waterways will be reported to the environmental monitor and stabilized immediately. Any disturbance within 75 feet of the OHWM of a waterway will be stabilized within 24 hours of construction completion.

Potential impacts to the designated waterways have been minimized during preliminary pole spotting by placing structures such that they would not be immediately adjacent to these designated waterways. If a route is approved, during final design additional attention will be given to avoiding structure spotting adjacent to these waterways.

8.1.3 Navigability Determination Request

A Navigability Determination Request has not been submitted to WDNR for these waterways. At this time, all waterways are assumed to be jurisdictional.

8.1.4 Waterway Impacts

Project construction plans will avoid vehicle/equipment crossing of waterways to the extent practicable during implementation. Traditional TCSBs, in accordance with WDNR General Permit conditions, will be used where vehicle/equipment crossing of waterways is necessary. No other waterway activities or work below the OHWM is proposed as part of this Project.

Based on preliminary access routes, ATC anticipates that waterways may require vehicle/equipment crossing by TCSBs; these include two waterway crossings along the Alternate Route and two along the Preferred Route. The need for TCSB crossings will be determined based on field conditions. No waterways wider than 35 feet (measured from OHWM to OHWM) will be crossed with a TCSB. No other waterway equipment crossings are proposed. **Appendix F, Table 2**, summarizes all wetlands and waterways in the Project area, and identifies those areas where TCSBs are proposed to allow for safe and efficient construction access along the ROW.

8.1.5 Mitigating Construction Impacts – Waterway Crossings

For both the Preferred and Alternate Routes, the number of potential temporary stream crossings has been minimized in areas where construction can be completed by accessing the ROW on either side of the stream, from adjacent roads, or by use of existing bridges, culverted drives, or existing ford crossings. ATC will work with private landowners to identify alternative access routes to further reduce the use of stream crossings, when practicable. No culverts or permanent bridges are proposed.

Appropriate erosion control measures will be installed and maintained where soil disturbance occurs near waterways and at temporary waterway crossings until construction disturbances are restored and conditions are permanently stabilized. Other mitigation methods including invasive species prevention (**Section 6.3**) and re-vegetation and restoration plans (**Section 6.6**) will be employed during construction to further reduce potential impacts to waterways.

8.1.6 Open-cut Trenching in Waterways

No waterways will be open-cut trenched or directionally bored for the Project. No direct impacts to waterways or work below the OHWM is proposed.

8.1.7 Directional Boring in Waterways

No waterways will be open-cut trenched or directionally bored for the Project. No direct impacts to waterways or work below the OHWM is proposed.

8.1.8 TCSB Installation and Removal

Where necessary and authorized by the WDNR, the TCSB will be placed to avoid in-stream disturbance. Each TCSB will consist of construction mats and/or steel I-beam frames, or other similar material, placed above the OHWM on either side of the stream banks to completely span the waterway. Matting will be placed using appropriate equipment such as rubber-tired grapple trucks or excavators. Preparation for setting the bridge may include minor blading or excavation confined to the minimum area necessary for safe bridge installation. Removal of low-growing trees, shrubs, and other shoreline vegetation will be kept to a minimum. The TCSB will be secured to a fixed anchor and inspected routinely while it is installed. Proper erosion control measures will be implemented and maintained during and after the utilization of the temporary crossing. Erosion controls may consist of silt fence, straw logs/bales, or other devices to prevent runoff or siltation into the waterway.

Once construction has been completed in the area and access across the waterway is no longer required, the TCSB and associated materials will be removed, and the area restored. Depending

upon the level of disturbance, restoration may include minor grading/leveling to restore pre-existing topography, installation of seed, and stabilizing the banks with erosion control measures such as erosion mats and straw logs. Temporary erosion control measures will be maintained until permanent stabilization goals have been achieved.

Depending on the construction activity duration and access needs at a location, a fisheries waiver from the WDNR will be requested if construction is planned during the spawning restriction window. These proposed crossings require approval by the WDNR under Wis. Stat. § 30.123. These waterways are less than 35 feet wide at the OHWM and the crossings are designed to meet the standards and conditions for TCSB crossings in Wis. Admin. Code § NR 320.06. Wis. Admin. Code § NR 320.04 indicates that bridges spanning navigable waterways shall maintain a clearance of not less than five feet unless all the following conditions specified in NR 320.04(3) are met:

- The waterways likely have little or no navigation or snowmobile use;
- The waterways are not anticipated to have navigational use other than lightweight craft;
- A portage is provided over or around the bridges or culverts; and
- The reduced clearance would not be detrimental to the public interest.

Where the conditions specified in Wis. Admin. Code Chapter § NR 320.04(3) are met, waterway crossings will not require a five-foot minimum clearance.

8.1.9 Vegetation Management – Waterway Crossings

Vegetation cleared around waterways during TCSB installation and ROW clearing may include shrub and forested types. Standard ATC vegetation management procedure is to enforce a buffer along waterways (typically 35 feet) where only hand cutting is permitted and mowing with heavy equipment is restricted to avoid ground disturbances near waterways. Vegetation management will selectively remove woody vegetation within these waterway buffers and will leave the existing herbaceous vegetation largely intact. Vegetation management occurs primarily above the ground surface and will not impact root structures within waterway buffers. The ROW will then be maintained in perpetuity via routine vegetation management practices to ensure that the area remains free of incompatible woody vegetation.

8.1.10 Permanent Culverts, Bridges, and Storm Water Ponds

No culverts or permanent bridges will be installed within or across waterways. No construction of storm water ponds is proposed.

8.2 Wetland Activities

8.2.1 Wetland Identification

ATC's environmental consultant, Stantec, completed field surveys to identify aquatic resources within the Project area for both the Preferred and Alternate Routes during August and September 2023. Field survey was conducted within the public ROW and where access was granted by existing utility easements. Where access permissions were not granted, wetlands were investigated both from adjacent accessible areas and through additional review of desktop resources to identify all wetland and waterway areas contained within the proposed ROW and all off-ROW work areas for both proposed routes. These surveys were completed in the field using a combination of both wetland delineation and determination methods. Where formal delineation was conducted, surveys were completed using the criteria and methods outlined in: the United States Army Corps of Engineers (USACE) Wetland Delineation Manual (USACE 1987); the Interim Regional Supplement to the Corps of Engineers 1987 Wetland Delineation Manual: Northcentral/Northeast Region (2008); subsequent guidance documents (USACE 1991, 1992); the Guidelines for Submitting Wetland Delineations in Wisconsin to the St. Paul District Corps of Engineers (USACE 1996); the Guidance for Offsite Hydrology/Wetland Determinations (MN BWSR 2016); and the Basic Guide to Wisconsin's Wetlands and their Boundaries (Wisconsin Department of Administration Coastal Management Program 1995). Additional detail regarding field survey methodology is provided in the Wetland Delineation Report (**Appendix F, Exhibit 4**). No Wisconsin Rapid Assessment Methodology (WRAM) forms were completed as part of the delineation.

WDNR wetland boundary confirmation is requested as part of the Commission's review of the proposed Project. ATC believes all information necessary to confirm wetland communities and their boundaries is provided within this Application and Appendices.

8.2.2 Wetland Inventory

Wetland areas along the Preferred and Alternate Routes were quantified as part of the impact analysis (Section 5.4) and the resulting acreages are provided in the Land Cover table in **Appendix B, Table 2**. In general, the Alternate Route contains approximately 12.94 acres of wetland, and the Preferred Route contains approximately 3.49 acres of wetland. Additional detail on the wetlands identified along the Preferred and Alternate Routes are provided in the Wetland Delineation Report (**Appendix F, Exhibit 4**). Proposed wetland impacts are detailed in the WDNR Tables (**Appendix F, Tables 1 and 2**) and are depicted on **Appendix A, Figure 3**. The proposed routes intersect multiple wetlands, as identified and summarized below in **Table 8.2.2-1**.

Table 8.2.2-1 - Summary of Wetlands by Route

Alternate Route		
Wetland Community	**Total Square Feet w/in ROW**	**Total Acreage w/in ROW**
Seasonally Flooded Basin (farmed wetlands)	161,306	3.70
Fresh Wet Meadow (including degraded)	148,248	3.40
Shallow Marsh	33,304	0.77
Shrub-Carr	52,734	1.21
Hardwood Swamp	125,481	2.88
Floodplain Forest	42,856	0.98
Preferred Route		
Wetland Community	**Total Square Feet w/in ROW**	**Total Acreage w/in ROW**
Seasonally Flooded Basin (farmed wetlands)	14,900	0.34
Fresh Wet Meadow (including degraded)	68,361	1.57
Shallow Marsh	0	0.00
Shrub-Carr	58,579	1.35
Hardwood Swamp	0	0.00
Floodplain Forest	10,120	0.23

8.2.3 Wetland Functional Values

Alternate Route

The majority of wetlands identified along the Alternate Route are low quality (degraded) to medium quality fresh wet meadow dominated by reed canary grass (*Phalaris arundinacea*), farmed wetlands, or medium quality hardwood swamps and shrub-carr communities. Many of these wetlands have formed as a direct result of the historic disruption of natural drainage features by farming practices and road construction activities and have low plant diversity. Vegetation within the wet meadow wetlands consists primarily of fast-growing adventitious species, such as reed canary grass, hybrid cattail (*Typha X glauca*), and giant goldenrod (*Solidago gigantea*). Other dominant species observed within wet meadow wetlands includes a mix of sedges and bulrush.

Several wetlands along the Alternate Route are also forested and/or shrub dominated wetlands with dominant tree species that include green ash, boxelder, and quaking aspen (*Populus tremuloides*), American Elm (*Ulmus americana*), swamp white oak (*Quercus bicolor*), and black

willow (*Salix nigra*). The shrub layer was dominated by boxelder, willows, dogwoods, and common buckthorn. Dominant herbaceous species include reed canary grass, cattails, lake sedge, and giant goldenrod. Specific characteristics of wetlands are summarized in the Wetland Delineation Report (**Appendix F, Exhibit 4**).

General functional value of wetlands along the Alternate Route is low to medium. Roadside and farmed wetlands have low functional values based on limited plant diversity and wildlife habitat use. Most wetlands contain low to medium plant diversity because of the presence of invasive species and may serve as limited wildlife habitat. Human use is restricted for the majority of wetlands given the inaccessibility of the area. Flood storage is also limited due to the historic changes made in the area to shed water.

One wetland complex (W-24 and W-25) associated with the Onion River may serve as moderate wildlife and fish spawning habitat although the forested area is impacted by invasive species resulting in limited diversity of vegetation. Human use may occur for fishing or other recreational activities based on adjacent access from WDNR lands.

Preferred Route

The majority of wetlands identified along the Preferred Route are low (degraded) quality to medium quality fresh wet meadow communities dominated by reed canary grass and farmed wetlands or medium quality hardwood swamps and shrub-carrs communities. Many of these wetlands have formed as a direct result of the historic disruption of natural drainage features by farming practices and road construction activities and have low plant diversity. Vegetation within the lower to medium quality wet meadow communities consists primarily of fast growing adventitious species, such as reed canary grass, hybrid cattail, giant goldenrod. Other dominant species observed within wet meadow wetlands includes a mix of sedges, bulrush, and jewel weed.

One wetland along the Preferred Route consists of medium quality shrub/floodplain forest wetland associated with the North Branch of the Milwaukee River. Dominant tree and shrub species include ash and willows. Dominant herbaceous species include reed canary grass. Specific characteristics of wetlands are summarized in the Wetland Delineation Report (**Appendix F, Exhibit 4**).

Similar to the Alternate Route, the general functional value of wetlands along the Preferred Route is low to medium. Roadside and farmed wetlands have low functional values based on limited plant diversity and limited wildlife habitat. Most wetlands contain low to medium plant diversity because of the presence of invasive species and may also serve as limited wildlife habitat. Human use is restricted for the majority of wetlands given the inaccessibility of the area. Flood storage is also limited due to the historic changes made in the area to shed water.

W-08 and W-09, associated with the North Branch of the Milwaukee River, may serve as moderate wildlife and fish spawning habitat. Human use may occur for fishing or other recreational activities, but it is limited given no public access.

Existing functional values of wetlands along both Routes may be temporarily impacted by transmission line construction including equipment access, ROW clearing, pole installation, and other construction activities. Forested and shrub wetland areas that exist within the proposed ROW will be cleared and converted to herbaceous wetland communities. The ROW will be maintained as an herbaceous community in perpetuity through routine vegetation management cycles. The wetland conversion may affect the functional value of the wetland because of a change in plant community, but forested and shrub areas will remain intact immediately outside of the ROW. Wildlife use may be temporarily reduced during times when construction is actively working in the area. Permanent fill in wetlands will be limited to the footprint of the new poles and loss and fragmentation or reduction in flood storage will be negligible. The Project will avoid or minimize wetland impacts to the extent practicable through the engineering design of the Project, the use of specific construction techniques, and implementation of BMPs and ATC's standard environmental protection practices. Following construction, all temporarily impacted wetlands will be restored to pre-existing conditions through re-vegetation and restoration plans.

8.2.4 "Significant" or "High-Quality" Wetlands

The wetland communities identified during field surveys (Section 8.3) were evaluated to determine which wetlands can be considered Areas of Special Natural Resource Interest (ASNRI) as described in Wis. Admin. Code § NR 1.05 (**Appendix F, Table 2**). The field identified wetlands were also reviewed to determine if any of the following wetland community types were present: deep marsh, northern or southern sedge meadow not dominated by reed canary grass, wet or wet-mesic prairie not dominated by reed canary grass, fresh wet meadows not dominated by reed canary grass, coastal marsh, interdunal or ridge and swale complex, wild rice-dominated emergent aquatic, open bog, bog relict, muskeg, floodplain forest, and ephemeral ponds in wooded settings. Some aerially interpreted wetlands may not be included in this evaluation due to the difficulty in remotely assessing wetland quality.

Three wetland complexes along the Project have been identified as ASNRI. Wetlands are considered ASNRI when they fall within (entirely or in part), or are contiguous with, one or more of the designated special features listed in NR 103.04 (e.g., trout streams, state wildlife areas or parks, etc.). However, despite their association with these special features, not all ASNRI-designated wetlands are significant or of high quality; many are affected by historical and/or ongoing land use practices (e.g., agriculture, development, etc.) that have caused degraded conditions such as altered hydrology or infestation with invasive plant species. The first wetland areas (W-24 and W-25) located along the Alternate Route are designated as

special feature due to their adjacency to the Onion River (trout steam/OERW); however, the wetland area is a floodplain forest with medium/low plant diversity due to the presence of invasive species. Wetland W-16 is a wet meadow located along the existing 8241 transmission ROW associated with construction of the Preferred Route. W-16 is designated as special feature due to its adjacency to the Onion River (trout steam/OERW) and being a wet meadow not dominated by reed canary grass. The third wetland area (W-08 and W-09), located along the Preferred Route, is designated as special feature due to its adjacency to the North Branch of the Milwaukee River (trout steam/OERW). This wetland area is a floodplain forest/shrub-carr viewed from adjacent road ROW with willows, ash, and reed canary grass present.

Floodplain forest wetland types are associated with the Onion River on the Alternate Route and the North Branch of Milwaukee River on the Preferred Route.

8.2.5 Wetland Impacts

Table 8.2.2-1, above, summarizes the total area of each wetland community that is intersected by the proposed routes. **Table 8.2.5-1**, below, summarizes the total number of wetlands crossed by each of the Preferred and Alternate Routes. Not all wetlands crossed by the ROW will be impacted as preliminary designs and construction plans have been developed to avoid and minimize impacts to wetlands to the extent practicable. A detailed inventory of wetland crossings is provided in the WDNR Waterway/Wetland Environmental Inventory table (**Appendix F, Table 2**) and are illustrated on the Environmental Features and Access Plan map set (**Appendix A, Figure 3**). Each separate wetland crossing was counted individually. Thus, any given wetland complex may be crossed more than once, depending on its configuration.

Table 8.2.5-1 – Total Wetlands Crossed by Route

Alternate Route	Preferred Route
25	16

Conceptual structure locations were developed to evaluate the potential impacts to wetlands and to help develop preliminary construction access plans. Wetland impacts will be re-examined during the detailed design phase with the objective of reducing impacts to the extent practicable. **Appendix F, Table 1** summarizes all structures proposed within wetlands as they are currently designed. The Alternate Route has nine structures proposed within wetland resulting in 417 square feet (0.01 acres) of permanent fill. The Preferred Route has three structures proposed within wetland resulting in 189 square feet (0.004 acres) of permanent fill.

To conservatively estimate wetland impacts by the Project, impact calculations have assumed that new structures will be installed as currently designed. However, the final design of the

Project will attempt to locate new structures outside of wetlands or at the edge of wetlands when possible.

Temporary timber matting and placement of TCSBs will be required to gain vehicle/equipment access to complete the necessary scope of work. Conservative estimates of temporary wetland impacts associated with matting include 176,994 square feet (4.06 acres) along the Alternate Route and 45,349 square feet (1.04 acres) along the Preferred Route.

Impacts will occur as a result of vegetation clearing for the new ROW to shrub and forested wetlands. Conservative estimates of wetland conversion impacts associated with clearing include 221,071 square feet (5.08 acres) along the Alternate Route and 68,700 square feet (1.58 acres) along the Preferred Route. Conversion impacts were based forested lands identified by impact tables and are defined as land covered with woody perennial plants reaching a mature height of at least six feet tall with definite crown (closure of at least 10%). For purposes of wetland permitting, wetland conversion may be defined differently. Table 8.2.5-2 below summarizes the total wetland impacts by community along the Preferred and Alternate Routes.

Table 8.2.5-2 – Wetland Impacts by Route

Alternate Route			
Wetland Community	**Permanent Fill** (ft^2)	**Temporary Fill** (ft^2)	**Conversion** (ft^2)
Seasonally Flooded Basin (farmed wetlands)	265	62,235	0
Fresh Wet Meadow (including degraded)	0	43,066	0
Shallow Marsh	0	8,830	0
Shrub-Carr	38	16,966	52,734
Hardwood Swamp	114	37,743	125,481
Floodplain Forest	0	8,154	42,856
TOTAL:	417	176,994	221,071
Preferred Route			
Wetland Community	**Permanent Fill** (ft^2)	**Temporary Fill** (ft^2)	**Conversion** (ft^2)
Seasonally Flooded Basin (farmed wetlands)	0	3,649	0
Fresh Wet Meadow (including degraded)	113	18,228	0

Shallow Marsh	0	0	0
Shrub-Carr	38	16,741	58,580
Hardwood Swamp	0	0	0
Floodplain Forest	38	6,730	10120
TOTAL:	189	45,349	68,700

8.2.6 Construction Matting in Wetlands

Matting will be placed prior to or during construction and will be removed after construction completion. ATC anticipates that matting will be left in place for greater than 60 days between May 15 and November 15, although attempts will be made to reduce this matting duration to the extent feasible. When construction activities are complete, the matting will be removed, and the ground surface restored to the previous condition to the extent practicable. Wetland areas in which ground disturbance occurs may be seeded with an annual cover crop to stabilize soils. Generally, wetland areas will be allowed to naturally revegetate, however, native seed mixes most closely resembling existing conditions may be used in areas where revegetation rates are low. The restoration plan for wetlands with matting placement exceeding 60 days between May 15 and November 15 is provided in **Appendix F**, **Exhibit 3**.

8.2.7 Open-cut Trenching in Wetlands

No wetlands will be open-cut trenched, plowed, or directionally bored for the Project.

8.2.8 Directional Boring in Wetlands

No wetlands will be open-cut trenched, plowed, or directionally bored for the Project.

8.2.9 Plowing in Wetlands

No wetlands will be open-cut trenched, plowed, or directionally bored for the Project.

8.2.10 Equipment Access in Wetlands

Access and construction within wetlands are necessary as part of this Project. Where access through wetlands is needed, one or more of the following methods will be used to reduce soil and vegetation disturbance: completing construction during dry or frozen conditions, utilizing equipment with low ground pressure tires or tracks, and/or using construction matting. Therefore, no discharge of fill from soil mixing and/or soil rutting is anticipated.

8.2.11 Vegetation Management in Wetlands

Trees and brush will be cleared for the full width of the ROW to facilitate construction equipment access and ensure safe clearances between vegetation and the transmission line. New transmission line ROW development will require clearing of incompatible woody vegetation to an average ROW width of 80 feet. Forested and shrub wetland areas that exist within the 80 foot corridor will be cleared and converted to herbaceous wetland communities. The ROW will be maintained as an herbaceous community in perpetuity through routine vegetation management cycles.

Clearing will be completed in advance or concurrent with transmission line construction. Vegetation will be cut at or slightly above the ground surface using mechanized mowers, sky trims, processors, harvesters, or by hand. Rootstocks will generally be left in place except in areas where stump grinding is necessary to facilitate the movement of construction vehicles, or if requested by the landowner.

Deposition of cut vegetation and woody debris provides effective temporary surface stabilization but can also act as wetland fill when those deposits prevent revegetation, alter surface elevations, and/or obstruct water flow. Thoughtful management of cut or chipped vegetation and woody debris is necessary to ensure clearing in forested wetlands does not result in deposition of wetland fill.

Complete removal of all chipped vegetation from wetlands is not feasible due to the density of woody material present along the proposed Project routes. Removal of all woody material would pose an increased risk of wetland impact resulting from more frequent and increased equipment use and access within wetlands, plus additional cost (equipment, labor, time).

ATC will implement wetland impact minimization measures during forested wetland clearing activities to prevent deposition of wetland fill and so that the site can be successfully restored and revegetated following construction. These measures consist primarily of efforts to minimize the volume and depth of cut vegetation deposited in wetlands so that it does not act as wetland fill. These efforts are outlined below.

- Cut vegetation which is mowed/chipped will be thinly scattered in a manner that allows for rapid decomposition and does not impede vegetative growth. Thinly scattered chipped vegetation is a loose, biodegradable material, providing effective temporary surface stabilization and readily allowing for infiltration and surface flow of water within wetlands. Where necessary, woody material will be removed from wetland areas as needed to minimize deposition of chipped vegetation.
    - Larger woody material, which cannot readily be mowed, will generally be removed from wetland areas for offsite disposal.

- Wetland areas will be monitored over the duration of the Project to ensure wetland impact minimization measures are followed and that site restoration and revegetation is successful following construction completion. Routine environmental monitoring will ensure compliance with impact minimization requirements and that performance standards for wetland revegetation are achieved.
- In the event that routine environmental monitoring identifies revegetation impeded, surface elevations altered, and/or water flow obstructed from wood chip placement, the Project's environmental monitor will immediately notify and work with the construction and/or vegetation management contractors to develop and implement plans to address the concern. These plans may include physical removal, further scattering of chipped material, and supplemental seeding applications.

8.2.12 Wetland Impact Minimization

The Project will avoid or minimize wetland impacts to the extent practicable through the engineering design of this Project, the use of particular construction techniques, and implementation of BMPs and ATC's standard environmental protection practices. These efforts may include, but are not limited to, spotting structures outside of wetland areas or near their edges, avoiding access through wetlands, using construction matting or low-ground pressure equipment, and/or accessing during dry or frozen conditions, placement of construction matting to help minimize soil and vegetation disturbances and distribute axle loads over a larger surface area thereby reducing the bearing pressure on wetland soils. Wetland access routes will not require permanent fill. Temporarily impacted wetlands will be restored to pre-existing conditions through re-vegetation and restoration plans, discussed in **Section 8.2.14** and the Matting Restoration Plan (**Appendix F, Exhibit 3**).

If construction is proposed in a wetland that has dry, stable, and cohesive soils, or that is frozen, construction will proceed in a manner similar to upland construction. If the wetland soils are not saturated at the time of construction and can support both tracked and/or rubber-tired equipment, construction mats will be used when needed to minimize impacts and stabilize the area to support construction vehicles.

Final construction access plans will consider opportunities to minimize temporary construction impacts to wetlands to the extent practicable by the following techniques:

- Attempts will be made to avoid access through wetlands that occur in only a portion of the ROW.
- Previously existing access routes within wetlands will be utilized when possible.
- Access from uplands at either end of certain wetlands may be used so travel through the entire length of wetland is not necessary.

- Complete all necessary construction activities during the same mobilization so that each wetland is only temporarily impacted and restored once.

To mitigate the spread of invasive species in wetlands, appropriate protection measures will be implemented. These measures, detailed in Section 6.6, could include avoidance of infested areas, removal or control of small populations of invasive plants, scheduling of construction activities during the invasive plant's dormant period, or cleaning of equipment prior to accessing non-infested areas.

8.2.13 Environmental Monitoring

To ensure compliance with environmental standards and to reduce impacts to the environment, an environmental monitor will be on site periodically during construction to help maintain compliance with permitting conditions. Additional details about monitoring during construction and restoration are described in **Sections 8.2.11, 8.2.14**, and the Matting Restoration Plan provided in **Appendix F, Exhibit 3**.

8.2.14 Wetland Restoration

When construction and restoration activities are complete, the matting will be removed, and the ground surface restored to the pre-existing condition to the extent practicable. Wetland areas in which ground disturbance occurs may be seeded with an annual cover crop to stabilize soils. Generally, wetland areas will be allowed to naturally revegetate, however, native seed mixes most closely resembling existing conditions may be used in areas where revegetation rates are low. The Matting Restoration Plan for these wetlands is provided in **Appendix F, Exhibit 3**.

ATC will monitor restoration and revegetation progress within all wetland (and upland) areas in accordance with Wis. Admin. Code Ch. NR 216 and Wisconsin Pollution Discharge Elimination System (WPDES) general permit conditions. The project will be considered permanently stabilized once all project disturbances have been restored and a uniform perennial vegetative cover with a density of at least 70% of its pre-existing condition has been established.

8.3 Mapping Wetland and Waterway Locations, Impacts, and Crossings

Environmental Access Plan Maps are provided in **Appendix A, Figure 3**. This figure set depicts the Project scope as well as field identified wetlands and waterways, construction access and matting plans, and proposed TCSB locations. Environmental maps depicting delineated wetlands and waterways, WDNR mapped wetlands and waterways, and mapped hydric soils are provided as an attachment to the Wetland Delineation Report provided in **Appendix F,**

Exhibit 3. These maps include the required wetland and waterway mapping information as listed below.

- Delineated wetlands.
- Wisconsin Wetland Inventory and hydric soils.
- DNR mapped waterways.
- Delineated waterways.
- Proposed temporary clear span bridge locations (labeled to correlate with WDNR Table 1 (see **Appendix F, Table 1**)).
- Existing transmission lines.
- Proposed transmission line routes with segment naming.
- Proposed structure locations and numbering.
- Construction access plans.
- Off-ROW staging areas and temporary work spaces.
- Locations for other Chapter 30 activities such as grading or riprap (labeled to correlate with WDNR Table 1 (see **Appendix F, Table 1**)).

9.0 ENDANGERED, THREATENED, SPECIAL CONCERN SPECIES AND NATURAL COMMUNITIES

9.1 WNDR Endangered Resources Review

A Certified Endangered Resources (ER) Review covering the Preferred and Alternate Routes and proposed laydown yard areas was submitted to the WDNR Bureau of Natural Heritage Conservation (WDNR-BNHC) on September 28, 2023. The WDNR-BNHC approved the ER Review and provided concurrence and recommendations on November 21, 2023. Due to its confidential status, a redacted version of this review has been provided in **Appendix F, Exhibit 7**. The WDNR Natural Heritage Inventory (NHI) database was accessed to identify all state-listed rare species (threatened, endangered, or special concern), natural communities, and other natural features with documented element occurrences within one mile of the Project segments for terrestrial and wetland species, and within two miles for aquatic species. In addition to providing an inventory of rare species and communities, the ER Review also outlines the required follow-up actions necessary to prevent impacts to state-listed threatened and endangered animal species, federally-listed plants and animals, as well as follow-up actions that are recommended to help conserve rare species, communities, or other natural features that are not legally protected or are exempt from protection by the Project (i.e., special concern animal species, threatened, endangered, and special concern plant species, and natural communities).

9.2 NHI Occurrences

Appendix F, Exhibit 7, contains a redacted copy of the Certified ER Review that discusses all NHI element occurrence records based on a query of the WDNR-NHI database on November 6, 2023.

A total of 35 element occurrences (a species or community may have multiple occurrences within applicable range) were queried from the NHI database and are included in the ER Review. Records of protected species within one- and two-mile buffers of the Project area include two state threatened mussel species and four state threatened bird species. Records lacking legal protection include one state special concern bee species, one state special concern plant species, one state special concern salamander species, two state special concern dragonfly species, one state special concern bee species, six natural communities, one high potential zone for a federally listed bee, and one “other” category (also a natural community). No observations of federally protected species are recorded within applicable one- and two-mile buffers of the Project area. Use of active quarries or improved lots for laydown yard activities (**Section 5.6**) is the only activity proposed within the high potential zone, therefore no impacts to suitable habitat for the federally protected bee are anticipated.

ATC plans to conduct presence/absence surveys along both the Preferred and Alternate Routes for the four protected bird species during their nesting period in spring to summer of 2024. Survey results will be submitted to the WDNR-BNHC and will inform follow-up actions required to construct the Project. Required actions and ATC's approach to the subject bird species are discussed further in **Section 9.3.1**. No other biological surveys or habitat assessments are currently planned.

9.3 Species as Identified in the Completed ER Screening and/or Field Assessments

9.3.1 Required Follow-up Actions

Based on the approved ER Review, follow-up actions are required to avoid impacts to protected bird and mussel species. Required actions include:

- Birds
    a. Assume the birds are present on the Project site and avoid all disturbances to the Project site during the species-specific nesting period. If the Project cannot completely avoid all areas of suitable habitat during this time frame, contact DNR to discuss other options. Or,
    b. Do not assume the birds are present on the site and have a qualified biologist conduct surveys to determine if they are present.
        - If the species is not found on the site as a result of the surveys, the Project will not have any restrictions related to the species.
        - If surveys identify the presence of the bird(s), option (a) must be followed. Survey results must be submitted to the DNR Endangered Resources program.
- Mussels
    a. Implement erosion control BMPs in areas where soil disturbance occurs within 300 feet of waterways.

Avoidance measures for the protected bird species consist of avoiding impacts to suitable habitat during their typical nesting period (window for nesting avoidance for the four subject bird species is from April 1 to August 20). However, it is unlikely that impacts to suitable habitat can be completely avoided during this period, given an aggressive target construction schedule that is necessary to meet the Project's purpose and need. Therefore, rather than assuming presence, ATC plans to conduct biological surveys to determine the presence or absence of the four bird species along both the Preferred and Alternate Routes in spring to summer of 2024. If any of the subject bird species are found to be present, ATC will work with the WDNR-BNHC to develop Project specific conservation measures. ATC intends to work with WDNR during the PSCW's Application review process to develop plans for Project implementation and, if deemed necessary, apply for Incidental Take Permitting upon the PSCW issuance of an order.

Avoidance measures for the protected mussel species will be implemented as needed to prevent impacts to waterways. Although limited crossings of small tributaries by TCSB may be necessary, no direct impacts to the bed or banks of waterways are proposed.

9.3.2 Recommended Actions

Based on the approved ER Review, additional follow-up actions are recommended to avoid impacts to species lacking legal protection. Recommended actions include:

- Plants
    a. Conduct site surveys to confirm presence/absence of the species and fence off areas of occupied habitat, or
    b. Conduct work above ground (avoiding impacts to the root system) during winter or under frozen ground conditions.
- Additional Recommendations
    a. The ER Review also contains additional recommendations for specific types of erosion matting, where necessary, to minimize potential impacts to wildlife.

ATC plans to implement additional recommendations regarding erosion mat materials and will consider recommended avoidance measures for the special concern plant species where practicable. If the plant species is identified within the Project area, ATC will fence off or otherwise avoid occupied habitat to the extent practicable.

9.3.3 Justification for Follow-up Actions that Cannot be Met

ATC intends to incorporate all required and recommended follow-up actions to the extent practicable. See **Sections 9.3.1** and **9.3.2** for additional details.

9.4 Provide Communications with DNR and U.S. Fish and Wildlife Service, as Applicable

See **Appendix H, Exhibits 5-7** for WDNR correspondence related to the approved ER Review. Coordination with federal entities will occur during the PSCW's Application review process.