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

Dodge County Distribution Interconnection Project

PSCW Docket No. 137-CE-210

November 2024

ATC
Energizing Your Future

SECTION **PAGE**

ACEC	Adams-Columbia Electric Cooperative
AFR	Application Filing Requirements
AFUDC	Allowance for Funds Used During Construction
AIN	Agricultural Impact Notification
AIS	Agricultural Impact Statement
APE	Area of Potential Effects
ASNRI	Areas of Special Natural Resource Interest
ASR	Antenna Structure Registration
ATC	American Transmission Company LLC and ATC Management Inc.
Applicant	American Transmission Company LLC and ATC Management Inc.
BESS	Battery Energy Storage System
BMP	Best Management Practices
BVP	Best Value Planning
CPCN	Certificate of Public Convenience and Necessity
Commission	Public Service Commission of Wisconsin
CWIP	Construction Work in Progress
DATCP	Department of Agriculture, Trade and Consumer Protection
Dbh	Diameter at Breast Height
EMF	Electromagnetic Field
EMF Report	Electromagnetic Field Report
ER	Endangered Resources
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FPP	Farmland Preservation Program
GIS	Geographic Information Systems
IPaC	Information Planning and Consultation
kV	Kilovolt
LDC	Local Distribution Companies
LIRF	Load Interconnection Request Form
MISO	Midcontinent Independent System Operator, Inc.
MSL	Mean Sea Level
MTEP	MISO Transmission Expansion Plan
NERC	North American Electric Reliability Corporation
NHI	Wisconsin Natural Heritage Inventory
NRCS	Natural Resources Conservation Service

OHWM	Ordinary High-Water Mark
PAG	Paging Transmission Towers
Project	Dodge County Distribution Interconnection Project
PSCW	Public Service Commission of Wisconsin (Commission)
PSSE	Power System Simulator for Engineering
RC	Reliability Coordinator
ROW	Right-of-way
SHPO	State Historical Preservation Officer
TARA	Transmission Adequacy and Reliability Assessment
TCSBs	Temporary Clear Span Bridges
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WDNR	Wisconsin Department of Natural Resources
WisDOT	Wisconsin Department of Transportation
WPA	Waterfowl Production Area
WPDES	Wisconsin Pollution Discharge Elimination System
WPL	Wisconsin Power & Light Co.
WRRD	Wisconsin Remediation and Redevelopment Database
WSOR	Wisconsin & Southern Railroad

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

1.0 PROJECT OVERVIEW

Description

The Dodge County Distribution Interconnection Project (Project) involves the expansion of the existing 138 Kilovolt (kV) North Randolph Substation in the town of Randolph and the construction of a new 138 kV substation near the city of Beaver Dam (Manhattan Substation).

A new double-circuit 138 kV line will be constructed from the North Randolph Substation to the Manhattan Substation. The existing 138 kV line (X-47) will be rebuilt from the North Randolph Substation to the new Manhattan Substation, where X-47 will be segmented to the North Beaver Dam Substation.

The Project also includes rerouting of the existing transmission lines around the North Randolph Substation and minor modifications at the substation remote ends. These substations include North Beaver Dam, Green Lake, Staff and Academy.

In addition, two new 138 kV double-circuit lines will be constructed from the Manhattan Substation to two new customer-owned substations. These facilities will all be located on the customer's property.

Need

The Project is needed to reliably serve a load interconnection request by Wisconsin Power & Light Co (WPL) to serve a new large load addition in the Beaver Dam area.

Cost

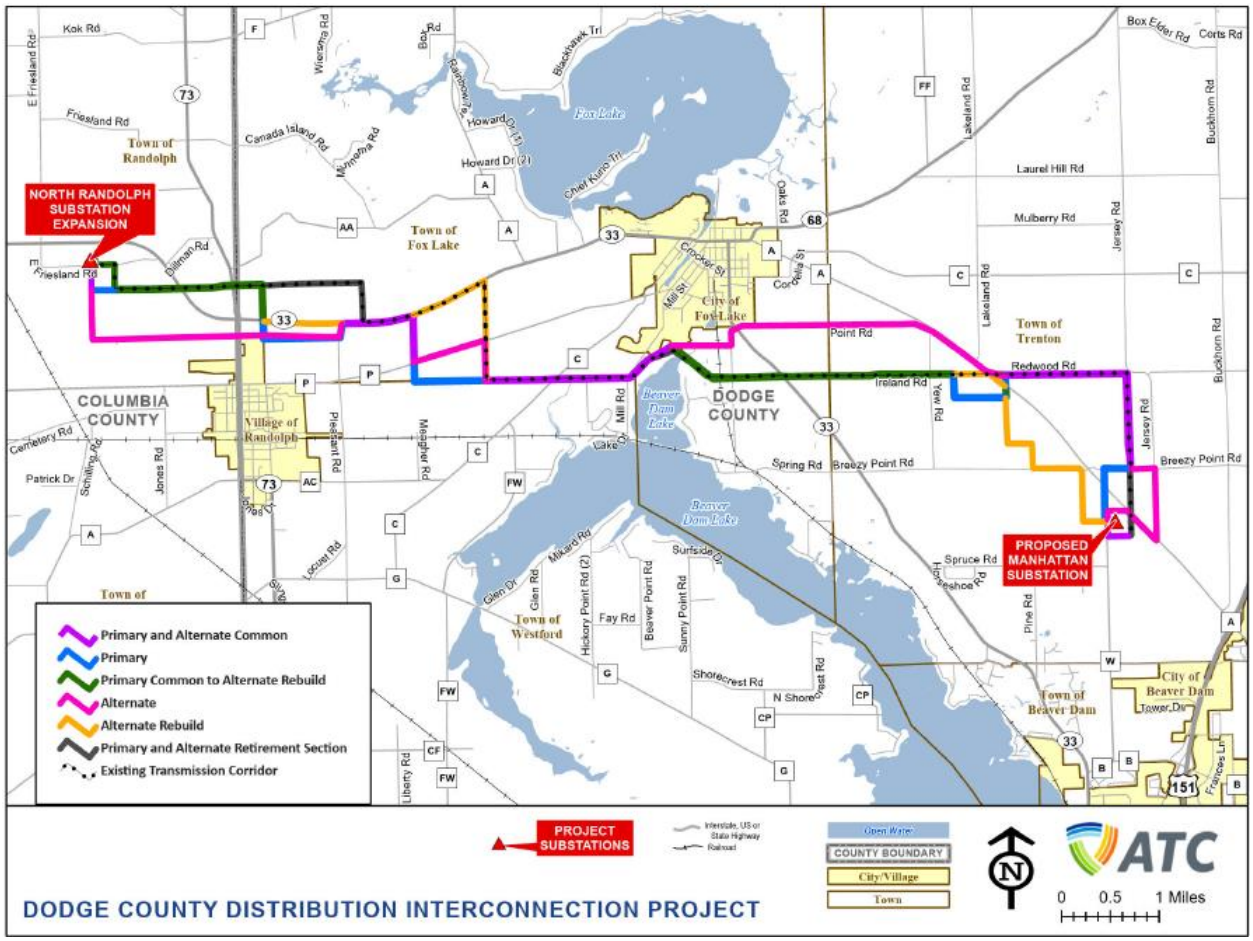
ATC estimates that the Project will cost $191,106,000 for the Preferred Route or $198,575,000 for the Alternate Route.

Schedule

Construction is scheduled to begin in January of 2026 and be completed in July of 2027.

[1] This Application was prepared in accordance with the PSCW and WDNR *Application Filing Requirements Transmission Line Projects*, Version 2024, and the *Application Filing Requirements Substation Projects*, Version 2024 (collectively referred to as the Application Filing Requirements).

Route and Location



1.1. Owners and Investors

American Transmission Company LLC and ATC Management Inc., its corporate manager, (collectively, ATC or Applicant), 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 involves constructing a new double-circuit 138 kV transmission line and rebuilding the existing 138 kV transmission line (X-47) from the North Randolph Substation located in the town of Randolph, Columbia County to the new Manhattan Substation located in the town of Trenton, just northwest of the city of Beaver Dam, Dodge County, Wisconsin.

The Preferred Route, where all three lines share the same corridor, is approximately 15 miles in length. The Alternate Route consisting of a new double-circuit 138 kV transmission line is approximately 15.5 miles in length and the rebuild route of the existing X-47 is approximately 14 miles in length. The endpoints for both proposed routes are the North Randolph and Manhattan Substations.

Both the Preferred and Alternate Routes would include two double-circuit 138 kV lines approximately 1-1.5 miles in length extending on the customer property from the Manhattan Substation to two customer owned substations.

1.4. Impacted Cities, Villages, and Townships

County	Municipality
Columbia	Town of Randolph
	Village of Randolph
	Town of Columbus
Dodge	Town of Fox Lake
	Town of Trenton
	Town of Westford
	City of Fox Lake
	Village of Randolph
	City of Beaver Dam

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 (the Commission or the PSCW) 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. 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 information submissions.

1.5.2. Type of Commission Action

The Project is categorized as a Type II action pursuant to Wis. Admin. Code § PSC 4.10. Information necessary for the initial preparation of an Environmental Assessment (EA) 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)(c).

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 Project involves expanding the existing North Randolph Substation, constructing and interconnecting the new Manhattan Substation, and remote end work at the existing Academy, Green Lake, Metomen, North Beaver Dam, and Staff Substations.

The Project involves the construction of a new double-circuit 138 kV transmission line and the rebuild of the existing 138 kV transmission line (X-47) from the North Randolph Substation in the town of Randolph in Columbia County, Wisconsin to the Manhattan Substation in the city of Beaver Dam in Dodge County, Wisconsin.

The Preferred Route has both the new 138 kV double-circuit and X-47 following (mostly) a shared corridor, with the corridor being approximately 15 miles in length.

The Alternate Route has the double-circuit and X-47 following (mostly) different corridors. The double-circuit is approximately 15.5 miles, and the rebuild of X-47 is approximately 14 miles in length. Both the Preferred and Alternate options will route through the town of Randolph and the village of Randolph in Columbia County, and the towns of Fox Lake, Trenton, and Westford, the city of Fox Lake and the village of Randolph in Dodge County.

Two new 138 kV double-circuit transmission lines will be constructed on the customer property from the Manhattan Substation to two new customer substations. The two double-circuit lines are approximately 1.2 and 1.4 miles in length.

The Project also includes rerouting of the existing transmission lines around the North Randolph Substation and minor remote end modifications

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.

1.6.2.2. The location of the new or expanded facility.

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

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.

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

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

1.6.2.7. Construction procedures to build or expand the facility.

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.

The information requested in **Sections 1.6.2.1 through 1.6.2.8** is provided in **Table 1.6-1**. Zoning information is provided in **Appendix A, Figures 5a and 5b**.

Table 1.6-1

	1.6.2.1	1.6.2.2	1.6.2.3	1.6.2.4	1.6.2.5	1.6.2.6	1.6.2.7	1.6.2.8
Substation (Location)	Type	Location	Size (Dim)	Total Parcel Size and Orientation	Ownership	Current Land use	Construction Procedures	Stormwater Management
North Randolph	Expansion	Town of Randolph, Columbia County	Irregular shaped substation expansion area is approximately 313,000 SF	ATC seeks to purchase approximately 7.2 total acres for substation expansion area	ATC, Dykstra Farm, Inc.	Substation, Ag. Land	See **Section 5.8**	See **Section 5.8**
Manhattan	New Substation	Town of Trenton, Dodge County	Substation fenced area is approximately 417 feet X 380 feet, or 158,460 SF. The driveway is approximately 240 feet x 24 feet, or 5,760 SF. The Customer is responsible for the new substation and driveway graded footprints.	The customer is responsible for development of the property	The proposed substation parcel is under a purchase option sufficient to support the proposed substation. The customer is responsible for purchase of the parcel. Ownership may be transferred to ATC after the Project is approved and construction commences.	Ag. Land, Residential	See **Section 5.8**	See **Section 5.8**

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. The Project area includes bedrock in the Sinnipee Group and the Ancell Group. The Sinnipee Group consists of dolomite with some limestone and shale and includes Galena, Decorah, and Platteville Formations. The Ancell Group consists of orthoquartzitic sandstone with minor limestone, shale, and conglomerate, and includes Glenwood and St. Peter Formations (United States Geological Survey (USGS), 2024).

The surficial geology consists of glacial deposits, originating from the Green Bay Lobe, made up of calcareous loamy tills with areas of outwash sands and gravel and silty lacustrine materials (WDNR, 2024).

Topography

The Project area along both proposed routes contains undulating topography between approximately 880-1,000 feet Mean Sea Level (MSL) with topographical features including the flat lake plains and till plains to moraines and drumlins. There is about 120 feet of elevation change across the Project area, with the lowest elevations near Beaver Dam Lake and the wetlands associated with the Cambra Creek watershed. The highest elevations occur on the western terminus of the Project area in the town of Randolph and the eastern terminus near the city of Beaver Dam (Dodge County Web Map and Columbia County Tax Parcel Application, 2024).

Land Cover

Land cover is similar for both proposed routes and consists primarily of rural agricultural lands mixed with rural roadsides, waterways, restored wetlands, and grasslands. Increased environmental sensitivities are primarily found along waterway crossings and public recreational lands within the Project area.

Land Use

The primary land use within the Project area is agricultural production. Agricultural practices consist of row crops of corn and soybean production, but pasture, hay fields, and fallow farm fields are also present along the proposed routes. The proposed routes are designed to follow existing utility and transportation corridors including ATC-owned transmission lines, highways, and local roadways. Other land uses include farmed wetlands, restored wetlands and grasslands, gravel pits, lakes and waterways, and residential properties. The proposed substations in the town of Trenton and the town of Randolph are on land zoned as Agricultural Land Use.

1.6.4. Special or Unique Natural or Cultural Resources

The Preferred and Alternate Routes are abutting or are located adjacent to the following special or unique areas:

- The United States Fish and Wildlife Service (USFWS) - Dodge County Waterfowl Production Area is abutting the Preferred and Alternate Routes, Segment A14 and B24A, respectively, common retire Segment R36, is located within this property.
- Natural Resources Conservation Service (NRCS) Wetlands Reserve Program properties are abutting the common retire Segment R33. The Preferred Route Segment A2C and Alternate Route Segment C25D were routed outside of these areas.
- A WDNR Glacial Habitat Restoration Area is abutting the common retire Segment R33.
- Mill Creek, in the vicinity of the Project, is noted as a Wadable Nursery Water/Smallmouth Bass Stream. Additionally, it is designated under Wis. Admin. Code NR 26.01 as a fish refuge.
- There are thirty-three archaeological or cemetery/burial sites and seven historic/architectural sites within one mile of the Project. Additional details are provided in **Section 6.7** and **Appendix F**.

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

1.6.5. Areas of Residential Concentrations and Urban Centers

The Project area is primarily rural with the Preferred and Alternate Routes being within the extraterritorial zoning jurisdiction of the city of Beaver Dam, the city of Fox Lake, and the village of Randolph. Rural residential properties occur along the Preferred and Alternate Routes along town and county highways. However, there are no substantial residential developments crossed by either the Preferred or Alternate Routes.

The impacted municipalities are also listed in **Section 1.4.**

1.6.6. Transmission Configuration

Preferred Route:

The Preferred Route will be constructed with both single-circuit and double-circuit 138 kV weathering steel poles, primarily following the existing X-47 alignment. The lines will begin at the North Randolph Substation and run south for 0.6 miles to the end of Hutchinson Road. Then turn east for 1.5 miles, crossing Highway 33 and Highway 73. Then turn south for 0.5 miles, crossing Highway 33. Then turn east for 1.8 miles, paralleling Highway 33. Then turn south for 0.7 miles, crossing County Road P. Then turn east for 2.2 miles, crossing County Road C, paralleling West Fox Road. Then jog around the north end of Beaver Dam Lake for 1.0 mile. Then turn east for 2.5 miles, crossing Spring Road, replacing connection into Fox Lake Substation, crossing Highway 33, paralleling Ireland Road, crossing Yew Road, until hitting a quarry. Then jog for 1 mile around the south side of the quarry, crossing County Road A. Then turn east for 1.3 miles, crossing County Road A, and paralleling Redwood Rd. Then turn south, then west, then south for 1.8 miles crossing Breezy Point Road and County Road A until the intersection of Kohlhoff Road and County Road W. Then turn east 0.1 miles, crossing County Road W, and entering the new Manhattan Substation. There are several distribution lines that are built on the roadside that will be buried, 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 both single-circuit and double-circuit kV weathering steel poles. The single-circuit line begins at the North Randolph Substation and runs south, then east, then south for 0.6 miles, crossing Friesland Road and paralleling Hutchinson Road. Then turn east for 1.5 miles, crossing Highway 33 and Highway 73. Then turn south for 0.4 miles, crossing Highway 33. Then turn east for 2.4 miles, paralleling Highway 33. Then turn south for 1.0 mile, crossing County Road P. Then turn east for 1.5 miles, crossing County Road C, paralleling West Fox Road. Then jog around the north end of Beaver Dam Lake for 1.0 mile. Then turn east for 2.9 miles, crossing Spring Road, replacing connection into Fox Lake Substation, crossing Highway 33, paralleling Ireland Road, crossing Yew Road, until hitting County Road A. Then turn south, then east, then south for 1.3 miles. Then turn east for 0.5 miles, paralleling Breezy Point Road. Then turn south for 0.6 miles, crossing over Breezy Point Road and Kohlhoff Road. Then turn east 0.3 miles, crossing County Road W, and entering the new Manhattan Substation. The double-circuit line begins at the North Randolph Substation and runs south for 0.9 miles, crossing Friesland Road. Then turn east for 3.4 miles, crossing Highway 73, crossing Pleasant Road, and paralleling Highway 33. Then turn south for 0.5 miles. Then turn east for 0.8 miles, paralleling County Road P. Then turn south for 0.4 miles, crossing County Road P. Then turn east for 1.5 miles, crossing County Road C, paralleling West Fox Road. Then turn northeast, then east for 1.2 miles, crossing Spring Road. Then turn north for 0.2 miles, paralleling Spring Road. Then turn east for 1.9 miles, crossing Highway 33, and paralleling Point Road. Then turn southeast for 0.9 miles, crossing Point Road and Yew Road. Then turn east for 1.5 miles, crossing County Road A and Redwood Road, then paralleling Redwood Road. Then turn south for 1.0 mile. Then turn east for 0.3 miles, paralleling Breezy Point Road, and crossing Jersey Road. Then turn south for 0.7 miles, crossing Breezy Point Road, paralleling Jersey Road, and crossing County Road A. Then turn northwest for 0.4 miles, paralleling County Road A. Then turn east, then south, then east 0.3 miles, paralleling County Road W, and entering the new Manhattan Substation. There are several distribution lines that are built on the 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 lines will be built on both new and existing ROW. The 15-mile single-circuit rebuild and new double-circuit lines parallel each other and predominantly require a maximum ROW width of 150 feet. The single-circuit rebuild will predominately run along the existing ROW, with the double-circuit requiring new ROW, overlapping slightly with the existing ROW. Where the line is adjacent to public WisDOT ROW, a portion of the 150-foot easement will overlap with public WisDOT ROW.

Two new 138 kV double-circuit transmission lines will be built on new ROW on the customer property from the Manhattan Substation to two new customer substations. The two double-circuit lines are approximately 1.2 and 1.4 miles in length.

Alternate Route:

The proposed transmission lines will be built on both new and existing ROW. The 14-mile single-circuit rebuild and new 15.5-mile double-circuit lines parallel each other in three locations and require a maximum ROW width of 150 feet. The single-circuit rebuild will predominantly run along the existing ROW and require an 80-foot ROW. The proposed double-circuit will require new ROW and require an 80-foot ROW. Where the line is adjacent to public WisDOT ROW, a portion of the easement will overlap with public WisDOT ROW.

Two new 138 kV double-circuit transmission lines will be built on new ROW on the customer property from the Manhattan Substation to two new customer substations. The two double-circuit lines are approximately 1.2 and 1.4 miles in length.

1.7. Other Agency Correspondence, Permits, and Approvals

1.7.1. Agency Correspondence

Copies of ATC correspondence with all 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**
United States 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.
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, Exhibit 6**.
USFWS	Protected species coordination	Incidental Take Authorization-Section 10 of the	USACE will initiate consultation upon

Federal			
Agency	**Activity**	**Permit**	**Status**
		Endangered Species Act; Migratory Bird Treaty Act; Bald and Golden Eagle Act	receipt of ATC's permit application.

State			
Agency	**Activity**	**Permit**	**Status**
Department of Agriculture, Trade and Consumer Protection (DATCP)	Potential use of eminent domain on more than 5 acres of any farm	Agricultural Impact Notification (AIN)/Agricultural Impact statement (AIS)	An Agricultural Impact Notification will be submitted to DATCP concurrent with the Application, please see **Appendix H, Exhibit 8**.
WisDOT	Utility Crossing/ Longitudinal Occupancy (roads)	Utility Permit DT 1553	ATC will apply for these permits if necessary.
WisDOT	Driveway Construction	DT1504 – Connection to State Trunk Highway	ATC will apply for these permits if necessary.
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	ATC will apply for these permits if necessary.
WisDOT	Utility Crossing/ Longitudinal Occupancy (WSOR)[2]	Utility Permit DT 2036	ATC will apply for these permits if necessary.
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	Pending. The redacted Cultural Resources Literature Review and Architectural History Review is provided as

[2] Wisconsin Southern Railroad

State			
Agency	**Activity**	**Permit**	**Status**
		Historic Preservation Act)	**Appendix F, Exhibits 2, 3A and 3B**.
WDNR	Wetland and Waterway impacts	Utility Permit	See **Section 8.0**
WDNR	Soil disturbance	Stormwater/Erosion Control – NR 216	ATC will apply upon receipt of a PSCW Order.
WDNR	Protected Species coordination	Incidental Take Authorization/Permit	The BITP/A Verification forms are provided as **Appendix H**.

1.7.3. Local Permits

In addition to the approvals and permits issued by state agencies, the necessity of seeking local approvals for this utility construction Project is governed by Wis. Stat. §§ 196.491(3)(i) and 196.491(4)(c). ATC works with all local units of government to assure that the representatives of those units of government affected by ATC's proposed construction projects are informed concerning ATC's proposed construction activities.

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 applies for generally 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 does supply the involved local governments with information and requests 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[3] to the proposed Project absent the provisions of Wis. Stat. § 196.491(3)(i):

Dodge County: General Zoning and Shoreland/Floodplain Zoning Permit, Erosion Control/Shoreland Erosion Control Permit, Land Use Permit, Conditional Use Permit

Columbia County: General Zoning Permit, Erosion Control Permit

Town of Randolph: Conditional Use Permit for new substation, control house and transmission line construction

Village of Randolph: Permit and control plan requirements

Town of Fox Lake: Conditional Use Permit for transmission line construction

City of Fox Lake: Conditional Use Permit for transmission line construction, Construction Site Erosion Control Permit

Town of Trenton: Conditional Use Permit for substation, Conditional Use Permit for transmission line construction

City of Beaver Dam: Right of Way Permit, Street Opening Permit, Driveway Permit and materials storage permit, for any substation – site plan review, building inspection and erosion control permits

1.7.4. Railroad

Preferred Route segment A9 crosses the Wisconsin & Southern Railroad (WSOR) (WisDOT-owned ROW). Alternate Route segments B21A (Alternative X-47) and C27 (Alternative Double-Circuit) cross Wisconsin & Southern (WisDOT-owned ROW). Preferred Route segment A9 and Alternate Double-Circuit segment C27 cross the WSOR at or near the location of the existing X-47 transmission line. The Alternate X-47 segment B21A crosses the WSOR approximately 0.3 miles north of the aforementioned crossings.

In ATC's experience, the railroad companies prefer to wait and review final alignments once a transmission line route is ordered. After the Commission's selection of a route, ATC will follow standard permit application procedures for utility crossings and installations of railroad ROW. In this case, where the transmission line crosses a railroad, ATC will comply with National Electrical Safety Code Sections 231 and 232, as adopted in Wis. Admin. Code ch. PSC 114, or the railroad company's reasonable clearance requirements, whichever is more stringent.

1.7.5. Pipeline

The proposed Project routes will not cross or share pipeline ROWs.

[3] ATC accepted evaluations of local zoning representatives and did not seek to reconcile any differences between those evaluations and the local zoning ordinance.

1.7.6. WisDOT

Table 1.7.6-1 – Preferred Route Highway Corridor Sharing and Crossings

Segments	Highway	ROW Length Shared (miles)
A2B, A2C, A9	STH 33	Crossing
A2B	STH 73	Crossing
A5	STH 33	0.75 mi

Table 1.7.6-2 – Alternate Route Highway Corridor Sharing and Crossings

Segments	Highway	ROW Length Shared (miles)
C25B, C25C, B21A, C27	STH 33	Crossing
C25B, B16B	STH 73	Crossing
C25D	STH 33	0.8 mi
A5	STH 33	0.75 mi
C26A	STH 33	0.82 mi

ATC and its consultants met with WisDOT representatives to discuss the Project and to give WisDOT an opportunity to provide input. A general overview of the Project was provided to WisDOT staff at these meetings and ideas about the Project were shared. A copy of the WisDOT communication regarding this Project is included as **Appendix H, Exhibit 7**. When the Project's route is selected by the Commission, ATC will meet with WisDOT to discuss any remaining concerns and incorporate the resolutions to these concerns in the Project's detailed engineering.

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	11/2024
PSCW CPCN Approval and Order	12/2025
WDNR Utility Permit Issuance - Anticipated	1/2026
Start Construction	1/2026
Project In-Service	7/2027

To minimize adverse impacts on fish, placement and removal of temporary clear span bridges (TCSBs), or any work below the ordinary high-water mark (OHWM), may not occur from March 1 through June 15 unless waived or modified by the WDNR fisheries biologist. Fisheries waivers will be requested for all waterways crossed with a TCSB. Furthermore, Mill Creek is noted as a Wadable Nursery Water/Smallmouth Bass Stream designated under Wis. NR 26.01 as a fish refuge, which prohibits fishing, killing, disturbance etc. from March 1 to the first Saturday in May. Impacts to Mill Creek will be avoided. No additional seasonal or regulatory construction constraints are expected.

1.8.2. Outage Constraints

While it is difficult to predict all outage constraints so far in advance of construction, no significant outage constraints are expected. The new double-circuit transmission line will be constructed while the existing X-47 transmission remains in service. X-47 will be rebuilt after the new double-circuit is in service. Any outages related to cutting over transmission lines to new terminals will be coordinated with ATC System Operations and Midcontinent Independent System Operator, Inc. (MISO) Reliability Coordinator (RC) to ensure appropriate construction sequencing.

Depending on the time of year and other system constraints, temporary bypasses or mobile substations may be required to keep facilities energized during certain construction events.

1.8.3. Construction Spreads

For the Preferred Route, construction is expected to be completed under a single spread since the new 138 kV double-circuit and the rebuild of the existing 138 kV X-47 transmission line are located within the same corridor. In addition, two new 138 kV double-circuit transmission lines will be constructed primarily in parallel on the customer's property from the new Manhattan Substation to two new customer-owned substations. The total approximate transmission corridor length from North Randolph Substation to the new customer substations is roughly 16.5 miles.

For the Alternate Route, construction is expected to be completed in two spreads. The new 138 kV double-circuit and the two new 138 kV double-circuit transmission lines are anticipated to be constructed in the first spread and the rebuild of the existing 138 kV X-47 transmission is expected to be constructed as part of the second spread. The total transmission corridor length for the first spread is roughly 17 miles, and the second spread is roughly 14 miles.

1.8.4. Construction Sequence

Given that the projected start of construction is over a year away, it is difficult to accurately predict the construction sequence.

At this time, ATC foresees construction starting with the new Manhattan Substation and the new transmission facilities located on the customer property. These activities would likely be ongoing when the expansion of North Randolph Substation and the construction of the new double-circuit transmission line begin.

A minimal number of spans of X-47 are also expected to be relocated initially to allow for the construction of the double-circuit transmission line and the initial energization of Manhattan Substation. The majority of X-47 will be re-built after the double-circuit is constructed and placed in service.

Construction sequencing will also account for the avoidance of any 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 on discs, Geographic Information System (GIS) data files supporting the mapping.

1.10. ESRI ArcGIS Data Files

All Project maps were created using ESRI ArcGIS Pro Version 3.0. 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 separately to the Commission.

The information used to compile the landowner mailing lists was derived from Columbia County and Dodge County tax parcel data. ATC expects that this information is reasonably accurate but recognizes that changes in parcel ownership occur over time.

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

WPL notified ATC of a new load interconnection via the Load Interconnection Request Form (LIRF) #40938-2, most recently updated on October 9, 2024, provided as part of **Appendix D, Exhibit 1**. The new end-use customer facilities are to be located in the new Beaver Dam Commerce Park that is on the north side of the city of Beaver Dam. Due to the magnitude of the requested load, WPL stated in the LIRF that their distribution system is not capable of supporting the new load addition. ATC therefore studied two transmission alternatives that will add significant load serving capacity to the customer's facilities.

The Best Value Planning (BVP) Report in **Appendix D, Exhibit 1**, was used to determine the best value solution for the area. In the BVP study, ATC performed power flow analysis utilizing the Power System Simulator for Engineering (PSS®E, Version 35) program from Siemens Power Technologies, Inc. and Transmission Adequacy and Reliability Assessment software (TARA) from PowerGem. The study utilized the MISO MTEP23 model series 2028 and 2033 Summer Peak models and 2028 Shoulder models.

The study first evaluated connecting the proposed load to a new Manhattan Substation directly to the existing North Randolph – North Beaver Dam 138 kV line (X-47) without any new transmission line facilities that would be constructed as part of the Project (i.e., a "before Project" scenario). After evaluating the North American Electric Reliability Corporation (NERC) TPL-001-5 defined contingencies, ATC identified several thermal and voltage limitations on various transmission facilities, which indicated that additional transmission facilities are needed to reliably serve the proposed new load. ATC determined that the proposed Project (modeled as the "after Project" scenario in the BVP) is the best value solution to resolve many of these thermal and voltage limitations and provides reliable and robust sources to serve the proposed load addition.

ATC submitted this Project in MISO's Transmission Expansion Plan (MTEP24) as a target Appendix A project, ID 50138.

2.2. Transmission Network Alternatives

The size of this proposed load addition is substantial and would be by far the largest load on the ATC transmission system outside of the proposed data center development in southeast Wisconsin. The proposed load addition will overwhelm the existing transmission facilities in the Beaver Dam area and will require additional 138 kV transmission sources to reliably serve this load. Also, the end-use customer has requested to be served with a dedicated transmission interconnection substation constructed on their property within the Beaver Dam Commerce Park. The end-use customer will also build and own two load serving substations.

ATC studied two transmission alternatives to address the load interconnection needs. Both alternatives would include a new 138 kV breaker-and-a-half interconnection substation, to be named the Manhattan Substation. ATC will construct short radial 138 kV lines from the Manhattan Substation to connect two end-use customer owned load-serving substations.

The two transmission alternatives are described in **Sections 2.2.1** and **2.2.2**.

2.2.1. Proposed Solution

The proposed transmission solution—the Project—is to bring two new 138 kV sources from the existing North Randolph Substation and rebuild the existing North Randolph – North Beaver Dam line (X-47). The full scope of the Project is described below:

- Manhattan Substation:
  - Construct a new 138 kV breaker-and-a-half interconnection substation on the end-use customer property within the Beaver Dam Commerce Park.
  - Install 3 - 13.66 Mvar capacitor banks.
- North Randolph Substation:
  - Modify and expand the existing 138 kV straight bus to a breaker-and-a-half configuration.
  - Re-terminate the existing 4 – 138 kV lines to new bus positions on the new breaker-and-a-half bus.
- Construct a new North Randolph – Manhattan 138 kV double-circuit line.
- Rebuild the existing North Randolph – North Beaver Dam 138 kV line (X-47) to a higher rating between the North Randolph and Manhattan Substations.
- Construct a 138 kV double-circuit line from the Manhattan Substation to each of the two customer-owned load serving substations.

As part of its power flow analysis for the Project, ATC evaluated the Project against NERC Reliability TPL categories P0 through P7. The proposed Project addressed all the thermal and voltage limitations that will occur as a result of the load addition. The details of the analysis and a one-line diagram of the Project can be found in the BVP report attached in **Appendix D, Exhibit 1**. ATC determined that the Project provides the best value solution to address the load interconnection needs in the area.

2.2.2. Viable Alternatives Considered

This alternative studied (Alternative 2) would bring two 138 kV sources from the existing North Randolph Substation and a third source from the Academy Substation. The full scope of this alternative option is described below:

- Manhattan Substation:
  - Construct a new 138kV breaker-and-a-half interconnection substation on the end-use customer property within the Beaver Dam Commerce Park.
  - Install 3 - 13.66 Mvar capacitor banks.
- North Randolph Substation:
  - Modify and expand the existing 138 kV straight bus to a breaker-and-a-half configuration.
  - Re-terminate the existing 4 – 138 kV lines to new bus positions on the new breaker-and-a-half bus.
- Academy Substation:
  - Expand existing 138 kV straight bus for new line terminal position.

- Rebuild existing North Randolph – North Beaver Dam 138 kV line (X-47) to a new North Randolph – Manhattan 138 kV double-circuit line.
- Construct a new Academy – North Beaver Dam 138 kV line through the East Beaver Dam tap. This will provide a new 138 kV source to the Manhattan Substation (~20 miles).
- Construct a 138 kV double-circuit line from the Manhattan Substation to each of the two customer-owned load serving substations.

ATC evaluated this alternative against NERC Reliability TPL categories P0 through P7. The alternative also addressed all the thermal and voltage limitations as a result of the load addition. The details of the analysis and a one-line diagram of the alternative can be found in the BVP report attached in **Appendix D, Exhibit 1**. **Section 2.3** below describes why this alternative was not chosen.

2.2.3. Discussion of Proposed Solution and Viable Alternatives Considered

ATC performed power flow analysis on both alternatives and the results show that both alternatives performed similarly to meet the NERC TPL reliability requirements and adequately addressed the system limitations caused by the proposed load addition. ATC also performed a loss analysis and both alternatives demonstrate a reduction in losses for ATC and the total system. In addition, ATC performed an economic analysis and both alternatives again performed similarly and there is no economic driver for any additional scope to be added to either alternative.

The proposed Project utilizes mostly common ROW between the North Randolph and Manhattan Substations, with significant portions of the new double-circuit line being in an adjacent or shared ROW with the existing X-47 circuit. By building the new double-circuit first, the greater Beaver Dam area and the new load addition can be served by two new sources while the existing X-47 is being rebuilt. This alternative has added flexibility in allowing new load to be connected to the system sooner, which has a greater ability to achieve the targeted in-service date.

The studied alternative involves rebuilding the existing single-circuit X-47 as a double-circuit line. This long construction-related outage of X-47 would not be acceptable and would require the new single-circuit 138 kV line from Academy to be constructed first. A disadvantage of this alternative during the X-47 construction outage is serving the greater Beaver Dam area and the new load addition from a single 138 kV line from Academy. Also, Alternative 2 will require more ROW and more public and environmental impacts, which are all additional risks to achieve the targeted in-service date.

In summary, both alternatives provide a reliable and robust solution for this load addition and the greater Beaver Dam area. The two alternatives perform similarly to meet the NERC TPL-001 and FAC-002 reliability requirements. As discussed in the BVP report, **Appendix D, Exhibit 1**, the proposed Project demonstrates a reduction in ATC system losses and has lower costs, requires less new ROW, less public and environmental impacts, and has a greater ability to achieve the targeted in-service date. Therefore, the Project is the proposed solution to address all the system needs described above and in the BVP report.

2.3. Local Transmission, Distribution, and Distributed Resource Alternatives

2.3.1. Studied Alternatives

As discussed below, there were several transmission solution options that ATC considered, but ultimately rejected as not viable and declined to study in greater detail. Note that solution options are not considered "alternatives" since they do not address all the needs identified in **Section 2.1**. ATC considered these options at a very high level but did not analyze them in detail by (for example) performing power flow analysis, developing a proposed scope of work, and preparing cost estimates. In other words, these are conceptual transmission solution options that ATC considered, but for which ATC did not proceed with detailed evaluation or analysis. **Section 2.4** provides a discussion of non-transmission alternatives that ATC considered but ultimately rejected and declined to study in further detail.

Two New North Randolph – Manhattan 138 kV lines

ATC considered rebuilding the existing North Randolph – North Beaver Dam 138 kV line (X-47) to a new double-circuit 138 kV line between the North Randolph and Manhattan Substations. However, the outage of the new double-circuit line (NERC defined single event) would result in a voltage collapse of the entire area, including the proposed load addition as well as the existing greater Beaver Dam load pocket. Therefore, this option was dismissed.

Two New North Randolph – Manhattan 138 kV lines and retain the existing North Randolph – North Beaver Dam 138 kV line

ATC considered constructing a new North Randolph – Manhattan double-circuit 138 kV line and retain the existing North Randolph – North Beaver Dam 138 kV line (X-47). The outage of the new double-circuit line (NERC defined single event) would result in a severe overload of the existing X-47 which will create the same voltage collapse event of the entire area, including the proposed load addition as well as the existing greater Beaver Dam load pocket. Therefore, this option was dismissed.

Two New North Randolph – Manhattan 138 kV lines and one new Hubbard – Manhattan 138 kV line

ATC considered constructing a new North Randolph – Manhattan double-circuit 138 kV line and a new single-circuit Hubbard – Manhattan 138 kV line. The 138 kV source from Hubbard is the weakest of the three sources feeding the Beaver Dam load pocket. This new 138 kV line would also be the longest distance of the three new 138 kV line options at approximately 20 miles and would result in more environmental and public impacts. A 138 kV line extension from Hubbard was determined to be less beneficial and had no advantage based on potential circuit mileage or cost. Therefore, this option was dismissed.

2.3.2. Reasons for Rejecting Studied Alternatives

The reasons for rejecting the solution options are discussed in **Section 2.3.1**.

2.4. Non-transmission Options

ATC is a transmission-only utility and Wisconsin law prohibits ATC from directly serving a retail customer or cooperative member, owning electric generation facilities, or selling, marketing, or brokering electric capacity or energy in wholesale or retail markets.[4] Because ATC cannot serve any retail electric load, it likewise cannot and does not implement energy conservation, energy efficiency, or demand response programs, which are the responsibility of the local distribution companies (LDCs) that are ATC's transmission customers. And because ATC cannot own electric generation resources, it likewise cannot construct renewable or nonrenewable generation projects to meet the Project's stated needs.

That said, and as discussed below, non-transmission alternatives are not cost-effective or technically feasible alternatives for addressing the system needs associated with the Project. A transmission solution (i.e., the Project) is the only cost effective and technically feasible alternative to adequately address the system needs and operate the transmission system reliably.

2.4.1. Energy Conservation, Energy Efficiency, and Demand Response

As noted, ATC is a transmission-only utility that is precluded from implementing energy conservation and efficiency programs; these programs are the responsibility of Wisconsin LDCs, which are ATC's customers. Furthermore, these LDCs' energy efficiency and conservation efforts are already included in the annual load forecasts provided to ATC and incorporated into ATC's planning analysis, as shown in Section 3.1 and Section 4.2 of the BVP, **Appendix D, Exhibit 1**.

The Project is needed to support the load interconnection request. Under the MISO Open Access Transmission and Energy Markets Tariff, ATC is obligated to serve load within its service territory. Given the foregoing needs associated with the Project, energy efficiency and conservation programs are not cost effective or technically feasible options.

As to demand response programs, these are voluntary initiatives that incentivize customers to reduce energy use during peak periods. Like energy efficiency and conservation measures, Wisconsin LDCs are responsible for implementing demand response programs, and any impact these programs have on overall retail load are included in the annual load forecasts provided to ATC and incorporated into ATC's planning analysis. Because these programs are voluntary and are typically only activated during high demand periods, they do not provide a technically feasible or cost-effective means of meeting NERC reliability requirements to support this load interconnection request, which is the need driver for the Project. Therefore, demand response is not a technically feasible or cost-effective alternative.

2.4.2. Noncombustible Renewable Energy Resources

ATC is a transmission-only utility that is precluded from owning electric generation resources, and therefore, ATC cannot develop noncombustible or combustible renewable energy resources to address the needs described in **Section 2.1**.

[4] *See* Wis. Stat. § 196.485(3m)(a)2.

Furthermore, the amount of noncombustible renewable energy generation needed to address the Project need would be quite significant and could not be constructed in sufficient time to meet the targeted in-service date. There are presently no noncombustible renewable energy resources in the MISO generation interconnection queue of the right capacity and in the right location to address the need for the Project. Accordingly, noncombustible or combustible renewable energy resources are not practical or timely alternatives for this Project.

Finally, a battery energy storage system (BESS) is not a viable alternative to the Project. Large-scale BESSs operate by storing or discharging energy from or to the high-voltage transmission system. These systems typically have limited storage capacity and discharge duration and therefore cannot provide continuous support to the transmission system throughout the year. This continuous support is necessary, especially given that the Project is required to provide adequate and reliable service to the new data center being constructed, which (as noted) will be operated continuously throughout the year. Accordingly, BESSs are not a technically feasible or cost-effective solution for meeting the Project's stated needs.

2.4.3. Combustible Renewable Energy Resources

Please reference **Section 2.4.2** for a discussion as to why combustible renewable energy resources are not feasible alternative to the Project.

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

ATC is a transmission-only utility that is precluded from owning any generation resources, and therefore, ATC cannot construct new nuclear generation to address the Project need. Further, new nuclear generation is one of the most capital-intensive forms of generation and can take more than a decade to permit, site, and construct. New nuclear generation is not a cost-effective alternative to the Project and could not be constructed in time to meet the targeted in-service date. Accordingly, new nuclear generation is not a cost effective or technically feasible alternative to the Project.

2.4.5. Nonrenewable Combustible Energy Resources

Nonrenewable combustible energy resources are not cost effective or technically feasible alternatives to the Project, for the same reasons discussed in **Section 2.4.2**.

2.5. No-build Options

Under the MISO Open Access Transmission and Energy Markets Tariff, ATC is obligated to serve load within its service territory. The "No-Build" option would not allow ATC to serve WPL's load interconnection request, and it would violate NERC TPL Reliability Standard. Therefore, the "No-Build" option is not a viable option.

2.6. Energy Conservation and Efficiency, and Demand Response

Please reference **Section 2.4.1** for a discussion of why energy conservation, energy efficiency, and demand response are not cost-effective or technically feasible alternatives or viable options for addressing this Project's needs.

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

ATC is providing data files containing power flow modeling information separately to the Commission with a request for confidential handling. ATC used PSSE for building the reliability models and TARA from PowerGem for the power flow analysis included in the BVP. The reliability modeling files are provided in PowerWorld format. The reliability and load interconnection studies utilized the MISO MTEP23 series models. The PROMOD studies utilized MISO's MTEP21 F2 economic models.

2.9. Area Load Information

As mentioned in **Section 2.1**, WPL has submitted a load interconnection request to interconnect a large load associated with a data center campus in the Beaver Dam area. General area load information is discussed in Section 3.1, and the requested load addition is discussed in Section 4.2 of the BVP included in **Appendix D, Exhibit 1.**

2.10. Generation and Resource Retirements

As of the date of this Application, there is a MISO approved generation retirement request near the Project study area for the Columbia Power Plant in year 2026. Per MISO's modeling practice, the Columbia Power Plant is off-line in the five-year study models and on-line in the ten-year study model as its suspension period has expired.

2.11. Regional Transmission Organization Information

ATC provides transmission service under the terms of the MISO Open Access Transmission and Energy Markets Tariff. This project was submitted to MISO in the MTEP 2024 target Appendix A project. The Project has been assigned MTEP ID# 50138 and is classified as "Other – Load Growth" as project type.

3.0 MAGNETIC FIELDS

Under ATC's direction, a magnetic field study was performed (EMF Report) that is provided as **Appendix G, Exhibit 1**. The EMF Report documents magnetic field calculations for the proposed transmission line. The EMF Report provides the magnetic field calculations for the typical proposed line configurations on the Preferred and Alternate routes and was prepared following the guidance set forth in the AFRs for transmission lines. 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 appendices 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-year post-construction 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.

3.4. Substations

Existing Substations

Magnetic field measurements taken at the North Randolph and North Beaver Dam Substations are presented in **Appendix G, Exhibit 1.**

New Substations

Estimated power flow changes and magnetic fields due to Manhattan Substation tapping 138 kV line X-47 are presented in **Appendix G, Exhibit 1.**

Substations Associated with New Generation

This subsection is not applicable for this Application

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, however, minimize ratepayer impacts by seeking to limit cost wherever possible.

PROJECT COST CATEGORY		
	Preferred Route	**Alternate Route**
Transmission Line Work		
Material	$ 24,910,000.00	$ 26,441,000.00
Labor	$ 69,673,000.00	$ 74,669,000.00
Other	$ 26,706,000.00	$ 27,648,000.00
Subtotal	**$ 121,289,000.00**	**$ 128,758,000.00**
Substation Work		
Material	$ 21,146,000.00	$ 21,146,000.00
Labor	$ 45,226,000.00	$ 45,226,000.00
Other	$ 445,000.00	$ 445,000.00
Subtotal	**$ 66,817,000.00**	**$ 66,817,000.00**
Pre-certification Costs	**$ 3,000,000.00**	**$ 3,000,000.00**
TOTAL PROJECT COST	**$ 191,106,000.00**	**$ 198,575,000.00**

*The estimated Project costs above do not include Allowance for Funds Used During Construction (AFUDC). ATC intends to receive MTEP Appendix A approval from MISO for this Project, which allows for Construction Work in Progress (CWIP) in rate base treatment and no AFUDC costs.

Contingency costs are included in the cost estimate for the Project.

An application for PSCW approval of a project is filed very early in a project's overall development timeline. Because of this, a contingency amount (20%) was applied across the board to all line items in the cost estimate for this Project. Once ATC receives approval from the PSCW, the detailed design phase of the Project can begin and ATC (if applicable) can finalize structure placement, begin outage coordination, and order materials. Following the completion of outage coordination, ATC next schedules construction activities.

As the Project progresses through its timeline, the amount of contingency is reviewed and may be reduced as key activities are completed. For example, in the time in between preparing the estimates for a filing and the receipt of an order, commodity costs can fluctuate significantly. Once final engineering for the Project is completed and the steel is ordered, the amount of contingency will be reduced. On the other hand, contingency costs for labor may be increased until outage availability is confirmed, and ATC is able to determine the appropriate level of necessary labor.

ATC has found that it is difficult to determine if/when contingency dollars may need to be used, and often, the contingency associated with one line item may not be necessary. However, contingency dollars greater than what was associated with other line items may exceed the budgeted amount. Thus, ATC initially applies an across-the-board amount to allow for flexibility throughout the Project.

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

This subsection does not apply to this Application.

5.0 ROUTING AND SITING INFORMATION

5.1. Routing and Siting Factors

In advance of filing the Application, meetings were held with members of the boards for the towns of Fox Lake, Randolph, Trenton, and Westford and the village of Randolph and the city of Fox Lake to discuss the need for the transmission lines and the new Manhattan Substation, the Project's timeline, the routing and siting process generally, and copies of the outreach mailing were provided. Additionally, conversations took place with various residents living in proximity to the proposed lines and substation after receiving the Project introduction letter. **Section 7.1** includes more information about those communications.

Transmission Line

ATC identified and evaluated the routes proposed here using a multi-stage routing and siting review. The process began with identifying the study area using the start and end points to generate likely corridors. The study area consisted of a polygon approximately 14 miles by 7 miles encompassing the area between the North Randolph Substation and the new Manhattan Substation. Once ATC defined the study area, a resource database was compiled to identify the magnitude of sensitive resources that could be impacted by the Project. ATC obtained resource data using publicly available data, aerial imagery, and data from the ATC database for various impact categories including transportation, utilities, land use and zoning, natural resources, and jurisdiction.

ATC identified Project criteria that maximized the use of existing transmission line rights of way in the Project area wherever practicable. More specifically, the siting process generally consisted of:

1. Identifying a study area between the established Project endpoints. ATC identified the route criteria using Wis. Stat. § 1.12(6), ATC priorities, engineering constructability, transmission line reliability, and minimizing environmental impacts. Per Wis. Stat. § 1.12(6) statutory siting priorities, ATC identified potential route segments in the following order of priority:
    a. Existing utility corridors,
    b. Highway and railroad corridors,
    c. Recreational trails for underground facilities, and
    d. New corridors.
2. ATC mapped and screened possible transmission line routes against the route criteria and resources within the study area including:
        a. Location of linear infrastructure
        b. Collocation with existing utilities
        c. Existing land use and zoning,
        d. Natural resources such as farmland, floodplains, wetlands, waterbodies, slopes, critical habitat, soils, cultural and historic resources, vegetation,
        e. Jurisdictions, and
        f. Location of schools, cemeteries, airports, communication towers, wind turbines, or quarries.

3. ATC then performed an analysis to find the most effective path from point A to point B, using weighted values for categories, restricted areas that cannot be crossed, and ranked layers based on priority and sensitivity. Weighted values were determined for resources as a measure of the probable adverse response of resources to direct and indirect impacts associated with the construction, operation, maintenance, and abandonment of the Project. Below are the general resource sensitivity levels applied to the Project:
    - High Sensitivity (Exclusion) – Signifying unique, highly valued, complex, or legally protected areas. Constructing the proposed facilities in these areas would cause significant potential conflict with current or planned uses or pose substantial hazards to construction and operation of the line.
    - Medium Sensitivity (Avoidance) – Signifying important, valued resources or resources assigned special status. Constructing the proposed facilities in these areas would cause some conflict with current or planned use and may pose some hazard to construction and operation of the facility.
    - Low (Constraint) **–** Signifies areas that contain some sensitive routing considerations but overall provide for the placement of proposed facilities that would not conflict with the existing activities or planned land use. These areas typically provide adequate construction access and potential for future maintenance.
    - Preferred—Very Low (Opportunity) **–**These areas present opportunities to accommodate new facilities within already developed corridors and boundaries.

The purpose of the analysis is to have generalized routes to carry forward for route optimization.

4. The analysis outputs were optimized manually to further account for opportunities and constraints that could not be accounted for in the analysis, such as increasing collocation where possible, reducing angles, or correctly avoiding exclusion areas.
5. Following route optimization, ATC created segments using the points of interconnection that were then carried forward into the quantitative analysis to compare segments.
6. For each segment comparison, ATC identified a preferred option and eliminated non-preferred options. In general, an option was preferred if it had less overall impact. ATC accounted for quantitative data for all impact categories; however, the ability to collocate within existing transmission line ROW and roads, length, estimated angle structures, building buffer crossings and residences of concern were valued highest in the selection of a preferred segment. Collocation is highly valued as an opportunity and is favored in comparisons, aligning with state-specific priorities. Segments were ruled out until a proposed route was selected. Routes that did not meet the Project objective or were sited within an exclusion area were dismissed from further consideration or optimized further to avoid exclusion areas.

Substation

The expansion of the North Randolph Substation was selected due to the existing substation and transmission line infrastructure. Expanding the substation was the least impactful solution to the surrounding properties and environment.

The Manhattan Substation is being sited on what will be the new customer's property. The substation pad will be rough graded by the customer and is incorporated into their total site development plan.

5.2. Easements and Existing Utility Infrastructure

ATC intends to acquire new high-voltage easements for this Project for both new ROW and where the Project ROW overlaps existing transmission line ROW. In those locations where Project ROW overlaps an existing transmission line easement owned by ATC, ATC will evaluate whether the existing easement will be retained or released at the conclusion of all construction activities. ATC generally intends to release the existing easements but may retain an existing easement based on the specific provisions in the easement and the needs of the Project. For instance, there may be a need to retain an existing easement due to property usage restrictions recorded after the existing transmission line easement.

5.3. Route Segments

The Project has 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 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	Typical Structure Configuration	Structure Quantity	Structure Height Range (AGL)	Span Length Range	Transmission Conductor	Distribution Impacts	X-186/X-187 (DC) & X-195 (SC) Offset from X-47
Preferred – New Double-Circuit & Rebuild Single-Circuit Route							
A1A	DC Steel Braced Post	5	80-90’	150-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
A1B	DC Steel Braced Post	2	85-90’	150-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
A1C	DC/SC Steel Braced Post	4 DC 4 SC	80-130’	150-650’	TP 477 ACSR “Hawk”	0.3 miles of WPL Facilities to be Relocated	Greenfield (0.1 Miles) DC: 0’ (0.2 Miles) SC: 0’ (0.2 Miles)
A2B	DC/SC Steel Braced Post	14 DC 14 SC	75-90’	450-650’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	DC: 70’ S (1.0 Mile)/ 0’ N (0.5 Miles) SC: 0’ (1.0 Mile)/ 70’ N (0.5 Miles)
A2C	DC/SC Steel Braced Post	3 DC 3 SC	65-80’	600-650’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	Greenfield
A3	DC/SC Steel Braced Post	2 DC 2 SC	65-75’	500-550’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield

A4	DC/SC Steel Braced Post	9 DC 9 SC	70-90’	350-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
A5	DC/SC Steel Braced Post	7 DC 7 SC	75-90’	450-650’	TP 477 ACSR “Hawk”	*0.7 Miles of WPL Facilities to be Relocated	Greenfield (0.2 Miles) DC: 93’ S (0.5 Miles) SC: 23’ S (0.5 Miles)
A6	DC/SC Steel Braced Post	4 DC 4 SC	70-80’	550-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
A7	DC/SC Steel Braced Post	8 DC 8 SC	70-85’	600-650’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	Greenfield
A8	DC/SC Steel Braced Post	19 DC 19 SC	65-95’	450-650’	TP 477 ACSR “Hawk”	Two (2) LDC Crossings to be Relocated; 0.4 Miles of ACEC Facilities to be Relocated	DC: 70’ S (0.7 Mile)/ 80’ S (0.8 Miles)/ 30’ N (0.5 Miles) SC: 0’ (1.5 Mile)/ 100’ N (0.5 Miles)
A9	DC/SC Steel Braced Post	27 DC 29 SC	50-95’	200-700’	TP 477 ACSR “Hawk”	Four (4) LDC Crossing to be Relocated	DC: 40’ N (0.5 Miles)/ 150’ S (0.7 Miles)/ 70’ S (0.9 Miles)/ 35’ S (0.9 Miles) SC: 110’ N (0.5 Miles)/ 30’ S (0.7 Miles)/ 0’ (0.9 Miles)/ 40’ N (0.9 Miles)
A10	DC/SC Steel Braced Post	7 DC 7 SC	65-85’	500-700’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield

A11	DC/SC Steel Braced Post	1 DC 1 SC	75-80’	550-600’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
A12	DC/SC Steel Dead-End	1 DC 1 SC	75-80’	600-650’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	Greenfield
A13	DC/SC Steel Braced Post	20 DC 20 SC	65-90’	500-700’	TP 477 ACSR “Hawk”	No LDC Impacts	DC: 78’ S (1.3 Miles)/ 70’ W (0.7 Miles)/ 0’ (0.2 Miles)/ SC: 8’ S (1.3 Miles)/ 0’ (0.7 Miles)/ 70’ E (0.2 Miles)
A14	DC/SC Steel Braced Post	7 DC 7 SC	60-85’	450-600’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	Greenfield
A15	DC/SC Steel Braced Post	4 DC	70-80’	100-600’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	Greenfield
A16	SC Steel Horizontal Switch	1	40’	100-150’	TP 477 ACSR “Hawk”	No LDC Impacts	0’ (0.01 Miles)
Alternate – New Double-Circuit Route							
A1A	DC Steel Braced Post	5	80-90’	150-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield

B16A	DC Steel Braced Post	5	70-90’	500-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
B16B	DC Steel Braced Post	15	70-85’	550-650’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	Greenfield
B17	DC Steel Braced Post	9	70-80’	350-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
A5	DC Steel Braced Post	6	75-90’	450-650’	TP 477 ACSR “Hawk”	*0.7 Miles of WPL Facilities to be Relocated	Greenfield (0.2 Miles) 93’ S (0.5 Miles)
B18	DC Steel Braced Post	4	75-80’	600-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
B19	DC Steel Braced Post	7	70-80’	550-600’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
B20	DC Steel Braced Post	4	65-80’	500-600’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	70’ W (0.4 Miles)
A8	DC Steel Braced Post	19	65-95’	450-650’	TP 477 ACSR “Hawk”	Two (2) LDC Crossings to be Relocated; 0.4 Miles of ACEC Facilities to be Relocated	70’ S (0.7 Mile)/ 80’ S (0.8 Miles)/ 135’ N/W (0.5 Miles)

B21A	DC Steel Braced Post	23	70-95’	400-650’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated; 1.4 Miles of WPL Facilities to be Relocated	Greenfield
B21B	DC Steel Braced Post	8	70-105’	550-650’	TP 477 ACSR “Hawk”	Two (2) LDC Crossing to be Relocated	Greenfield
B21C	DC Steel Braced Post	2	85-115’	400-500’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	Greenfield (0.1 Miles) 50’ N (0.05 Miles)/ 70’ S (0.05 Miles)
B23	DC Steel Braced Post	19	75-120’	600-650’	TP 477 ACSR “Hawk”	No LDC Impacts	70’ S (1.3 Miles)/ 70’ E (0.9 Miles)
B24A	DC Steel Braced Post	9	70-90’	550-650’	TP 477 ACSR “Hawk”	Two (2) LDC Crossing to be Relocated	Greenfield
B24B	DC Steel Braced Post	4	75-115’	550-600’	TP 477 ACSR “Hawk”	0.1 Miles of WPL Facilities to be Relocated	Greenfield
B24C	DC Steel Braced Post	3	75-115’	250-550’	TP 477 ACSR “Hawk”	0.1 Miles of WPL Facilities to be Relocated	Greenfield
Alternate – Rebuild Single-Circuit Route							
A1C	DC/SC Steel Braced Post	4 DC 4 SC	80-130’	150-650’	TP 477 ACSR “Hawk”	0.3 Miles of WPL Facilities to be Relocated	Greenfield (0.1 Miles) DC: 0’ (0.2 Miles) SC: 0’ (0.2 Miles)

C25B	SC Steel Braced Post	14	65-80’	500-650’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	0’ (1.5 Miles)
C25C	SC Steel Braced Post	3	70-80’	600-650’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	Greenfield
C25D	SC Steel Braced Post	8	60-75’	500-600’	TP 477 ACSR “Hawk”	*0.3 Miles of WPL Facilities to be Relocated	Greenfield
A5	SC Steel Braced Post	6 SC	75-90’	450-650’	TP 477 ACSR “Hawk”	*0.7 Miles of WPL Facilities to be Relocated	Greenfield (0.2 Miles) 23’ S (0.5 Miles)
C26A	SC Steel Braced Post	7	65-75’	600-650’	TP 477 ACSR “Hawk”	*0.8 Miles of WPL Facilities to be Relocated	0’ (0.8 Miles)
C26B	SC Steel Braced Post	5	70-85’	600-650’	TP 477 ACSR “Hawk”	No LDC Impacts	5’ E (0.6 Miles)
B20	SC Steel Braced Post	4	65-80’	500-600’	TP 477 ACSR “Hawk”	One (1) LDC Crossing to be Relocated	0’ (0.4 Miles)
A8	SC Steel Braced Post	20 SC	65-95’	450-650’	TP 477 ACSR “Hawk”	Two (2) LDC Crossings to be Relocated; 0.4 Miles of ACEC Facilities to be Relocated	0’ (1.5 Mile)/ 65’ N (0.5 Miles)

C27	SC Steel Braced Post	28	50-80’	200-650’	TP 477 ACSR “Hawk”	Four (4) LDC Crossing to be Relocated	45’ S (0.6 Miles)/ 15’ S (2.4 Miles)
C28A	SC Steel Braced Post	3	65-80’	600-650’	TP 477 ACSR “Hawk”	No LDC Impacts	0’ (0.4 Miles)
C28B	SC Steel Braced Post	2	75-80’	500-600’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
C29	SC Steel Braced Post	1	70’	600-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
C30	SC Steel Braced Post	21	65-80’	250-700’	TP 477 ACSR “Hawk”	0.5 Miles of WPL Facilities to be Relocated	Greenfield
A16	SC Steel Horizontal Switch	1	40’	100-150’	TP 477 ACSR “Hawk”	No LDC Impacts	0’ (0.01 Miles)
Retired Route Segments							
R33	SC Wood Monopole to be retired	24	-	250-350’	336.4 ACSR “Linnet”	-	-
R34	SC Wood Monopole to be retired	7	-	300-550’	336.4 ACSR “Linnet”	-	-
R35	SC Wood Monopole to be retired	3	-	100-350’	336.4 ACSR “Linnet”	-	-

R36	SC Wood Monopole to be retired	13	-	250-350’	336.4 ACSR “Linnet”	-	-
Reroute Segments							
T1	SC Steel Dead-End	3	70-80’	200-550’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
T2	DC/SC Steel Dead-End	1 DC 2 SC	75-85’	100-600’	795 ACSR “Drake”	No LDC Impacts	Greenfield
T3	DC Steel Dead-End	1	100’	200’	397.5 ACSR “Ibis” and 477 ACSR “Hawk”	No LDC Impacts	-
T4	SC Wood Braced Post	3	60-90’	100-400’	TP 4/0 AWG ACSR “Penguin”	No LDC Impacts	Greenfield
T5	SC Steel Braced Post	4	65-80’	400-650’	TP 477 ACSR “Hawk”	No LDC Impacts	Greenfield
T6	DC Steel Braced Post	15	80-100’	150-650’	TP 336.4 ACSR “Linnet”	No LDC Impacts	Greenfield
T7	DC Steel Braced Post	12	70-120’	150-650’	TP 336.4 ACSR “Linnet”	No LDC Impacts	Greenfield

*WPL has a previously planned overhead to underground conversion along Highway 33 between Highway 73 and County Highway A in Dodge County that will be taking place in 2025.

Additional Route Characteristics:

1. On the Alternate Route, approximately 77% of the structures would be direct-embedded, and 23% of the structures would be on drilled concrete piers. Typical foundation diameter will range from six to nine feet.
2. On the Alternate Route, approximately 95% of the distribution is owned by WPL Energy and 5% owned by Adams-Columbia Electric Cooperative (ACEC). Approximately 65% is single phase and 35% 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 would be direct-embedded, and 20% of the structures would be on drilled concrete piers. Typical foundation diameter will range from six to nine feet.
4. On the Preferred Route, approximately 95% of the distribution is owned by WPL Energy and 5% owned by ACEC. Approximately 65% is single phase and 35% 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 7 – Route Impact Summary

In general, 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 statewide tax parcel data obtained in 2024, and state-managed lands information from the WDNR. The parcel data source and aerial imagery sources which were utilized are listed below:

- *Version 10 Statewide Parcel Map Database*, created by The Wisconsin State Cartographer's Office, 06/30/2024 (date free for public consumption)
- Main Imagery Layer – *WI_DNR_EN_Image_Basemap_Latest_Leaf_Off*, WI Regional Orthophoto Consortium (WROC) 2020, 2018-2020
- Supplementary Imagery – *ESRI World Imagery*, 10/27/2021 and 11/1/2022

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 61 segments. There are 26 segments associated with the Preferred Route and 35 segments associated with the Alternate Route. However, the Preferred and Alternate Routes share 12 segments: A1A, A1C, A5, A8, and A16, and T1 through T7.

GIS software was used to determine lengths, as well as new and shared ROW acreages. In some cases, the segment length was slightly modified in Table 1 to achieve calculated acreages consistent with the planned ROW acreages. Because of this, segment length attributes within GIS data may vary slightly from the segment length entered in Table 1.

The Preferred Route is approximately 18.7 miles in length (total length including relocating existing lines and tie lines), consisting of 307.1 acres of ROW, and is made up of segments: A1A, A1B, A1C, A2B, A2C, A3 through A16, and T1 through T7. The Preferred Route was designed to follow existing utility easements and transportation corridors to the extent practicable, and approximately 32.7% of the ROW is shared.

The Alternate Route would split the X-47 rebuild from the new double-circuit 138 kV line in several locations. The Alternate Route is approximately 29.6 miles in length (total length including relocating existing lines and tie lines; with areas where the rebuild and double-circuit lines run concurrently only counted once) and consists of 314.1 acres of ROW. The following segments make up the Alternate Route: A1A, A1C, A5, A8, A16, B16A, B16B, B17 through B20, B21A, B21B, B21C, B23, B24A, B24B, B24C, C25B, C25C, C25D, C26A, C26B, C27, C28A, C28B, C29, C30, and T1 through T7. Common segments where the Alternate Rebuild and Alternate double-circuit lines that are together include A5, A8, and B20. The Alternate rebuild Route would rebuild X-47 generally along its existing ROW and the Alternate double-circuit would also follow existing utility easements and transportation corridors, resulting in approximately 38.6% of shared ROW.

The type and extent of existing ROW was determined utilizing the following sources:

- Utility Easement: Existing ATC-owned utility easement widths were determined from a review of easement agreements, or estimated based on aerial photography (e.g., differences in vegetation).
- Road: Parcel data was utilized to determine the extent of State Highways, and aerial photography was used to estimate the easement width for local and County Highways.

Table 2 – Land Cover

Land cover data was obtained in 2024 and reviewed along the proposed Project areas. Additional land cover analysis was completed by review of aerial photography and field observations. Field work along the existing X-47 transmission line was completed March 12-14 and March 19, 2024, and included aquatic resource identification and direct land cover observation. Land cover was digitized using GIS software to quantify the area by category within all Project areas, including the Preferred and Alternate Routes, the proposed North Randolph substation expansion area, laydown yards, stringing setup areas, and off-ROW access. The area of each identified land use was quantified using GIS software, and the resulting acreages were summed by land cover category, by route segment or work area.

The results of this review are presented in **Appendix B, Table 2**. Land cover identified within the Project areas consisted of Crop Land, Specialty Agriculture, Grassland, Non-Forested Wetland, Forested Wetland, Forested Upland, and Developed/Urban categories. A summary of land cover analysis results by percentage is provided in the table below.

Table 5.4-1 – Summary Land Cover Analysis Results

Land Cover	% of Preferred Route	% of Alternate Route	% of Retired Only Segments	% Substations/ Work Areas
Crop Land	67.8%	67.4%	Preferred: 41.9% Alternate: 12.1%	Preferred: 9.7% Alternate: 9.2%
Specialty Agriculture	0.7%	0.2%	Preferred: 0.0% Alternate: 0.0%	Preferred: 0% Alternate: 0%
Grassland	4.3%	5.0%	Preferred: 13.7% Alternate: 26.1%	Preferred: 4.7% Alternate: 4.7%

Forested Upland	1.7%	1.6%	Preferred: 0.8% Alternate: 1.5%	Preferred: 2.9% Alternate: 3.0%
Forested Wetland	1.1%	1.4%	Preferred: 1.6% Alternate: 3.0%	Preferred: 0.1% Alternate: 0.1%
Non-Forested Wetland	15.8%	14.2%	Preferred: 26.0% Alternate: 45.9%	Preferred: 1.9% Alternate: 2.2%
Developed/Urban	8.7%	10.3%	Preferred: 16.0% Alternate: 11.4%	Preferred: 80.7% Alternate: 80.8%

Table 3 – Federal, State, Local and Tribal

State parcel data obtained in 2024 was used to identify federal, state, local, and tribal lands along the Project ROW. Road ROW was not included in this evaluation.

No tribal lands or American Indian reservations are present along any portion of the Project. Portions of some Project ROW cross parcels owned by the city of Fox Lake, as well as WisDOT lands for railroads. The overview of these parcels can be found in **Appendix B, Table 3**.

An additional resource was referenced for privately owned lands with existing conservation easements: the *USGS Protected Areas Database of the United States*. There are two privately owned parcels associated with Retired segment R33 which have conservation easements. One is in the Wetlands Reserve Program with a federal easement through NRCS, and the other is private Glacial Habitat Restoration land with a state conservation easement. All Project activities will take place within the existing transmission line ROW in these areas.

Retired segment R36 would involve the removal of the existing X-47 transmission line that is currently crossing through a USFWS-owned Waterfowl Production Area. All work in this area would take place within the existing ROW easement.

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 was determined using GIS measurements, and field verified to the extent practicable using GPS units and laser range finders. There are no schools, daycare centers, nursing homes, or hospitals within 300 feet of the Project centerline. 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 reviewed in the directory on Wisconsin Department of Children and Families (accessed on 10/11/2024);
- The location of public and private schools were reviewed from the Wisconsin School Directory provided by the Wisconsin Department of Public Instruction (accessed on 10/11/2024);
- Hospital locations were provided by the Wisconsin Department of Health Services (reviewed 10/11/2024); and,
- Nursing Home locations were provided by the Wisconsin Department of Health Services (reviewed 10/11/2024).

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. 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.

Note that the totals reported below represent the number of homes present within each of the distance range categories; therefore, it is possible for the same home to be counted in more than one distance category if its footprint exists within more than one of the distance ranges. Additionally, the same home could be counted under more than one segment if it is in close enough proximity to where segments connect to one another. Because of this, the overall total of homes shown in **Table 5** for each route is not a true total when considering that some homes are tallied more than one time.

The Preferred Route has six homes within 51-100 feet, seven homes within 101-150 feet, and 16 homes within 151-300 feet of the ROW centerline. There are no homes within 50 feet of the Preferred Route, and no apartments within 300 feet of the Preferred Route centerline.

The Alternate Route has one home within 25 feet, six homes within 26-50 feet, 11 homes within 51-100 feet, nine homes within 101-150 feet, and 31 homes within 151-300 feet of the ROW centerline. There are no apartments within 300 feet of the Alternate Route. Note that one home which was present on March 12, 2024, during the environmental field study was ultimately excluded from this analysis, as it was observed on October 16, 2024, to have been demolished. This property is associated with segment B24A, which is part of the Alternate double-circuit Route.

The Retired X-47 transmission line portions associated with the Preferred Route include two homes within 26-50 feet, three homes within 51-100 feet, two homes within 101-150 feet, and seven homes within 151-300 feet of the ROW centerline. There are no apartments within 300 feet of the Preferred Retired centerlines.

The Retired X-47 transmission line portions associated with the Alternate Route include two homes within 151-300 feet of the ROW centerline. There are no apartments within 300 feet of the Alternate Retired centerlines.

There are three homes near the eastern Project terminus that were excluded from the residential analysis, as they are planned for removal prior to the beginning of any transmission line work as part of a separate project not included in this Application.

Table 6 – Estimated Magnetic Field Data

Please see **Appendix G, Exhibit 1**.

Table 7 – Route Impact Summary

Table 7 presents a summary of impacts, including: total lengths and ROW acreages for the proposed Project routes; residential distance analysis summaries for the Preferred, Alternate, and Retired transmission line segments; and upland and wetland land cover acreages for all

proposed and retired routes and work areas. No new analyses were performed in this table; the data is a summary of the information in **Appendix B, Tables 1, 2, and 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 5.5.2** generally 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 and is 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.

Mobilization and Preparation of Laydown Yards

Labor and equipment are mobilized to prepare laydown yards for temporary trailer(s) and security measures to receive materials, storage containers, portable toilets, dumpsters, construction mats, tools, equipment, etc. Laydown areas are described further in **Section 5.6** and have been identified in **Appendix A, Figures 4A and 4B.**

Grading

In areas of steep topography, access routes and works platforms might require the construction contractor to grade certain areas to make the area stable and safe for the construction of the facilities. The work is generally completed using equipment such as bulldozers, track-hoe, skid loader, dump truck, or other typical construction equipment used in civil construction. Typical access routes require 16-foot-wide routes and work platforms are generally 75 feet by 150 feet to 100 feet by 100 feet depending on the type of work being performed. The total amount of disturbance is dependent on the soil type and topography. Grading is returned to prior conditions following construction, unless the landowner requests that changes remain.

Construction Matting

Access matting is expected to be installed along the majority of the construction route. In addition, permitted TCSBs will be installed over waterways. Construction matting may consist of timber, composite, or hybrid timber mats, and will be installed with rubber-tired grapple trucks, forwarders, forklifts, or skid loaders. Mat access routes will generally be 16 feet wide, and mat

work platforms may be as large as 100 feet by 100 feet, depending on the type of structure. Wire stringing and wire pulling areas are approximately 50 feet by 250 feet. At a minimum, at each wire pulling area, matting will be placed under wire equipment for construction grounding purposes. If a wire stringing location is in a wetland, additional matting will be needed to provide a stable area for the stringing equipment. Incidental matting will also be required at most road crossings. Matting will be removed by similar equipment used for installation. During mat placement, use, and removal, standard procedures will be implemented to prevent or minimize the spread of invasive species.

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 Best Management Practices (BMPs)

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. 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 six to nine feet in diameter and may be 18 to 27 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.

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 are completed. This includes removing construction mats, 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. However, as detailed design occurs it might be identified that specialty foundations such as micropiles or rock blasting may be required.

5.5.4. Special Construction Methods

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 will 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 construction impacts at the existing North Randolph Substation include the substation pads, access road, as well as stormwater ponding areas and transmission poles outside the substation fence. Detailed grading plans will be developed prior to construction. In general, construction starts with grading the site to create a level footprint. Construction of the substation pad and access road involves removing the topsoil, compaction, and balancing cut and fill (utilizing onsite cut). Importing and/or disposal of soil may be required. North Randolph would have approximately 56,450 cubic yards of net cut. Installing, grading, and shaping of the stormwater pond is typically done using soils from on-site. If necessary, any unsuitable or excess spoils will be removed from the site and disposed of according to stormwater plan requirements.

At both North Randolph and Manhattan Substations, crushed stone would be installed on top of the final grade of the pad and the access road would follow WisDOT recommendations.

Within the graded pad, drilled piers and slab-on-grade foundations would be utilized to install all equipment and supports necessary for a substation. Drilled piers would vary anywhere from 3-foot diameter by 6 foot deep to 6-foot diameter by 25-foot deep depending on equipment loading. Slab-on-grade foundations would be shallow excavations down to frost depth ~5 foot with a size anywhere between 5-foot by 5-foot for a small pad mount transformer to 26-foot by 50-foot for a control building. Geotechnical borings are planned to be obtained to design these foundations efficiently. There would be foundations at the North Randolph, Manhattan, and North Beaver Dam Substations.

Transmission impacts outside of the fence are described in **Section 5.5.2.**

5.6. Staging Areas and Temporary Work Space

Laydown yards will be required throughout construction for the setup of job trailers as well as storage and staging of construction equipment and material.

Preliminary locations for six laydown yards have been identified based on the construction requirements for the Project, proximity to work areas, and environmental and landowner impacts. The laydown yards in the table below were selected to minimize the amount of disturbance and preparation required to provide suitable surfaces for temporary storage and staging of construction equipment and material. For example, sites that are paved and/or have been previously graded and cleared of vegetation such as gravel pits, substations and fields are

ideal locations for laydown yards. These potential yards may change, or additional sites may be identified later based on negotiations with landowners and the updated construction needs of the Project.

Laydown Yard	Address	Description
N Randolph Laydown Yard	FN# W696 EAST FREISLAND RD, RANDOLPH, WI 53956	Active Substation
Manhattan Laydown Yard	N9100 COUNTY ROAD W, BEAVER DAM, WI, 53916	House (will be graded for future substation by customer)
Laydown Yard 1	N9707 COUNTY ROAD A, BEAVER DAM, WI, 53916	Active quarry/gravel pit
Laydown Yard 2	W8751 BREEZY POINT ROAD, BEAVER DAM, WI, 53916	Active quarry/gravel pit
Laydown Yard 3	W8876 SPRUCE ROAD, BEAVER DAM, WI, 53916	Active quarry/gravel pit
Laydown Yard 4	S W8825 SPRUCE ROAD, BEAVER DAM, WI, 53916	Active quarry/gravel pit

In addition to the laydown yards, during construction temporary workspace for wire pulling/handling areas will be required along the route. These temporary workspaces are matted and are generally close to 32 feet x 300 feet in size each. There are 41 off-ROW wire pulling/stringing setups along the Preferred Route and 42 off-ROW wire pulling/stringing setups along the Alternate Route. In addition, temporary work pads are needed around each structure installation location. In some cases, portions of these work pads need to be shifted outside the ROW due to site constraints (e.g., waterways, roadways). There are ten off-ROW work pads along the Preferred Route and 11 off-ROW work pads along the Alternate Route. There is also one area outside of the ROW for both the Preferred and Alternate Routes where grading is required.

The potential laydown yards and preliminary workspaces/grading areas are shown on site maps included in **Appendix A, Figures 4A** (Preferred Route) **and 4B** (Alternate Route). The boundaries of the laydown yards and temporary workspaces/grading areas presented in the Application mapping and GIS layers are approximate boundaries of where they may be located. Actual laydown yard layouts and sizes have not been finalized, but the typical area used for a laydown yard is about ten acres with a minimum of a 30-foot-wide driveway for ingress and egress. Mobilization and preparation of laydown yards is described in **Section 5.5.2.**, and impact tables can be seen in **Appendix B, Table 2**.

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

5.7.1. Off-ROW Route Identification

Preliminary off-ROW access routes have been identified in a number of locations. Preliminary routes have been identified based on a review of existing mapping and aerial photography data. The impacts of these routes are summed into one row (Off-ROW Access) in **Appendix B, Table 2**, and the routes are shown on **Appendix A, Figures 4A** (Preferred Route) **and 4B** (Alternate Route). There are six off-ROW routes identified for the Preferred Route and seven for the Alternate Route. One of the seven off-ROW access routes along the Alternate Route will require a TCSB. Waterway activities are discussed in **Section 8.1** below.

During final construction planning, these routes may be refined as new information becomes available and landowner negotiations begin. If additional required 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.

5.7.2. Off-ROW Route Dimensions

For the purpose of this evaluation, a 20-foot width was assumed for off-ROW access for upland routes, and 16 feet for wetlands. As construction plans are finalized during landowner negotiations, areas may be identified where greater than 20 feet may be required. For example, a greater than 20-foot width may be required where an existing route has a turn that is sharper than the turning radius of the construction and material delivery vehicles.

Some of the off-ROW access routes may need improvements to allow construction equipment to move safely to and from the Project ROW. These improvements may include vegetation removal and/or grading. Although grading (cut/fill) is not anticipated at this time for off-ROW access routes, the need for this may be identified later to provide safe construction vehicle access (i.e. on slopes that are very steep or on side slopes). In limited areas gravel may be placed to facilitate vehicle access along certain routes, but at this time the need for gravel has not been identified. Permanent wetland fill associated with off-ROW access paths is not proposed. Where grading or the placement of gravel is required, erosion control or storm water best management practices will be implemented.

5.7.3. Necessity for Off-ROW Routes

In some areas there are physical limitations such as steep slopes within the ROW preventing direct access from public roads or reaching structures from within the ROW; therefore, off-ROW access routes will be needed. In other areas off-ROW routes are identified in order to avoid or minimize crossing of sensitive features such as waterways or provide a safer ingress/egress for construction vehicles accessing from adjacent roads.

5.7.4. Off-ROW Route Land Cover

Where possible, the proposed off-ROW routes follow existing farm lanes (gravel and/or grassed two-track), driveways and existing cleared forest roads or trails. Cumulative land cover for each off-ROW route for both the Preferred and Alternate Routes is identified in **Appendix B, Table 2**.

5.7.5. Post-construction Modification

Off-ROW access paths will be restored to pre-construction conditions.

5.8. Substation Site Information

5.8.1. Description, Diagrams, Graphics

North Randolph Substation

The North Randolph Substation scope would consist of expanding the yard on an adjacent plot of land to the north. A new 138 kV breaker-and-a-half bus would be constructed to support relocating the existing 138 kV transmission lines and the new 138 kV lines from Manhattan Substation. The property is described in **Table 1.6-1**.

The scope of work at the North Randolph Substation would include:

- Purchasing and grading a new 138 kV yard. Size and dimension approximations are as follows:
  - Substation Pad: new fenced area of 482 feet x 365 feet, expansion of 120,072 SF
  - Wet Pond: 77,366 CF
  - Infiltration Basin: 4,247 CF
  - Total Grading Extents: 8.47 acres
- Installing 14 138 kV circuit breakers, foundations, and control cables;
- Installing nine 138 kV steel line dead-end structures with foundations to terminate the transmission lines;
- Installing 38 138 kV disconnect switches;
- Installing 29 138 kV voltage transformers;
- Installing four 138 kV CCVTs;
- Installing four 138 kV line traps;
- Upgrading two 12.47 kV station power transformers;
- Installing 21 138 kV surge arresters;
- Installing a new 24-foot x 48-foot control building complete with auxiliary systems to house all necessary protection and control, communication, security, and SCADA equipment for the expanded substation;
- Retiring the existing control building;
- Installing 25 protection and control panels in the new Control Building;
- Installing fiber optic communication and SCADA equipment for system protection, remote control, and monitoring of the substation;
- Replace the existing security fence with a new fence around the entirety of the expanded substation; and
- Installing buswork, lightning protection structures and wire, security, cable trench, grounding, and all appurtenances required to energize the substation.

The layout, vertical profile, and preliminary grading plan for the North Randolph Substation are shown in **Appendix I, Figure 1.**

Manhattan Substation

The Manhattan Substation scope would consist of constructing a new substation on a plot of land to be provided by the Customer near the intersection of Kohlhoff Rd and County Road W. The property is described in **Table 1.6-1**.

The Customer will secure the property for the substation. The Customer will design, permit, and grade the site, and will construct the stormwater facilities, the substation driveway from County Road W, and the substation pad. The Customer will provide ATC with the substation pad at rough grade. Ground disturbance by ATC will be limited to excavation, trenching, stockpiling, or other operations as necessary to install new equipment. After the Project is approved and construction commences, the Customer may transfer ownership of the parcel to ATC.

A new breaker-and-a-half bus would be constructed to support looping in the existing X-47 line, terminating the new 138 kV lines from North Randolph, and terminating the new 138 kV lines from the customer interconnection substations. Some limited temporary facilities may need to be constructed at the Manhattan Substation.

The scope of work at the Manhattan Substation would include:

- Construct a new 138 kV yard with a fenced area of approximately 417 feet x 380 feet;
- Installing 15 138 kV circuit breakers, foundations, and control cables;
- Installing 16 138 kV steel line dead-end structures with foundations to terminate the transmission lines;
- Installing 35 138 kV disconnect switches;
- Installing 30 138 kV voltage transformers;
- Installing three 138 kV capacitor banks;
- Installing two 138 kV CCVTs;
- Installing two 138 kV line traps;
- Installing one 138 kV SSVT;
- Installing 33 138 kV surge arresters;
- Installing a new 24-foot x 48-foot control building complete with auxiliary systems to house all necessary protection and control, communication, security, and SCADA equipment for the new substation;
- Installing 24 protection and control panels in the new Control Building;
- Installing fiber optic communication and SCADA equipment for system protection, remote control, and monitoring of the substation;
- Installing a security fence around the entirety of the substation; and
- Installing buswork, lightning protection structures and wire, security, cable trench, grounding, and all appurtenances required to energize the substation.

The layout and vertical profile for the Manhattan Substation are shown in **Appendix I, Figure 2.**

North Beaver Dam Substation

The North Beaver Dam scope would consist of X-47 protection updates. The property is described in **Table 1.6-1**.

The scope of work at the North Beaver Dam Substation would include:

- Installing one 138 kV CCVT;
- Installing one 138 kV Line Trap;
- Upgrading one protection and control panel in the Control Building; and
- Installing buswork, cable trench, grounding, and all appurtenances required to energize the substation.

The layout for the North Beaver Dam Substation is shown in **Appendix I, Figure 3.**

Remote Ends

Remote End scope would consist of protection updates at Academy (X-5), Green Lake (X-30), Metomen (X-3), and Staff (X-98) Substations. Additionally, the ground grid will be upgraded at Academy.

The properties are described in **Table 1.6-1**.

5.8.2. Associated Transmission and Distribution Line Work

Transmission circuits will be newly constructed on the substation site and will interconnect to existing facilities offsite.

Transmission circuits will be newly constructed on the Manhattan Substation site and will interconnect to new customer substations located on the customer's property. The 138 kV transmission circuits X-191, X-192, X-193 & X-194 between the new Manhattan and new customer substations will be double-circuit steel poles and will each require an 80-foot ROW.

A transmission circuit will be newly constructed on the Manhattan Substation site and will interconnect to the existing X-47 alignment on the customers property. The 138 kV transmission circuit between the new Manhattan Substation and existing X-47 alignment will be single-circuit steel poles and will require an 80-foot ROW.

The existing Y-64 69 kV transmission line entering the existing North Randolph Substation will remain as a double-circuit with the new X-47 (X-195) structures. The new structures will be designed as double-circuit steel poles and maintain the existing ROW.

The existing X-3, X-5, X-30, and X-98 138 kV transmission lines will be rerouted from the existing North Randolph 138 kV bus to the new 138 kV bus. The 69 kV Y-26 will be rerouted to make room for the North Randolph expansion but will still attach at the same 69 kV bus. The X-5 and X-98 new structures will be designed as single-circuit steel poles and will each require an 80-foot ROW. The Y-26 new structures will be wood poles and will each require an 80-foot ROW.

The work will also consist of burying existing WPL and ACEC distribution lines along the Preferred and Alternate alignments and at crossings.

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 AFRs, forested lands do not include narrow windbreaks located between agricultural areas but do 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); and
- Saw timber is greater than nine inches dbh (softwoods) and greater than 11 inches dbh (hardwoods).

6.2. Impacted Woodlands

The Project will impact forested lands along both the Preferred and Alternate Routes. Impacts will occur due to vegetation clearing for the new ROW, with a general clearing width of 150 feet for the Preferred Route and 80 feet for the Alternate Route. 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 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 (including the proposed ROW width). 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 Preferred Route contains approximately 9.56 acres of woodlands within the limits of the proposed ROW. Of this, approximately 5.18 acres is Upland Forest, 0.10 acre is Forested Wetland, 3.91 acres is Shrub-Carr, and 0.37 acre is Shrubland. Dominant tree and shrub species include box elder (*Acer negundo*, FAC), red oak (*Quercus rubra*, FACU), sugar maple (*Acer saccharum*, FACU), black cherry (*Prunus serotina*, FACU), shagbark hickory (*Carya ovata*, FACU), burr oak (*Quercus macrocarpa*, FACU), quaking aspen (P*opulus deltoides*, FACU), pussywillow (Salix discolor, FACW), red-osier dogwood (*Cornus sericea*, FACW), and common buckthorn (*Rhamnus cathartica*, FAC). In areas where field studies were completed, these species comprise a range of size classifications. Except for Segment R33, which is a segment of the existing X-47 transmission line that would be removed, the woodlands are on private property.

The Alternate Route contains approximately 10.34 acres of woodlands within the limits of the proposed ROW. Of this, approximately 4.98 acres is Upland Forest, 0.73 acre is Forested Wetland, 4.28 acres is Shrub-Carr, and 0.35 acre is Shrubland. Although a field survey was not conducted along the Alternate Route, it can be assumed that the species composition and size classifications are similar to that of the Preferred Route. Except for Segment R33, which is a segment of the existing X-47 transmission line that would be retired on land with federal easement, the woodlands are on private property.

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, acreage 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[1]	Acres to be cleared	Average size of Trees[2]	Ownership	Use
Preferred Route					
A2B	Southern Mesic Forest	1.18	Poletimber/ Sawtimber	Private	Recreation
	Shrub-Carr	1.96	Saplings		
A2C	Southern Mesic Forest	0.40	Poletimber/ Sawtimber	Private	Recreation
A4	Southern Mesic Forest	0.08	Poletimber/ Sawtimber	Private	Recreation
	Floodplain Forest	0.10	Poletimber/ Sawtimber		
A7	Southern Mesic Forest	0.39	Poletimber/ Sawtimber	Private	Recreation
A8	Southern Mesic Forest	1.79	Poletimber	Private	Recreation
	Shrub-Carr	1.13	Saplings		
A9	Southern Mesic Forest	0.74	Poletimber	Private	Recreation
	Shrub-Carr	0.10	Saplings		
A10	Southern Mesic Forest	0.001	Poletimber	Private	Recreation
T6	Southern Mesic Forest	0.47	Poletimber/ Sawtimber	Private	Recreation

T7	Southern Mesic Forest	0.13	Poletimber/ Sawtimber	Private	Recreation
R33	Shrub-Carr	0.60	Saplings	Private, Federal Easement, State Easement	Recreation
R34	Shrubland	0.37	Saplings	Private	Recreation
	Shrub-Carr	0.11	Saplings		
Alternate Route					
A8	Southern Mesic Forest	1.79	Poletimber	Private	Recreation
	Shrub-Carr	1.13	Saplings		
B16B	Southern Mesic Forest	0.32	Poletimber/ Sawtimber	Private	Recreation
B20	Southern Mesic Forest	0.10	Poletimber	Private	Recreation
B21A	Southern Mesic Forest	0.35	Poletimber/ Sawtimber	Private	Recreation
	Floodplain Forest	0.73	Poletimber/ Sawtimber		
	Shrub-Carr	0.55	Saplings		
B21B	Southern Mesic Forest	0.13	Poletimber/ Sawtimber	Private	Recreation
C25B	Southern Mesic Forest	0.72	Sawtimber	Private	Recreation
	Shrub-Carr	1.84	Saplings		
C25C	Southern Mesic Forest	0.40	Poletimber/ Sawtimber	Private	Recreation
C25D	Southern Mesic Forest	0.022	Poletimber/ Sawtimber	Private	Recreation
C27	Southern Mesic Forest	0.38	Poletimber	Private	Recreation
	Shrub-Carr	0.05	Saplings		
C28A	Southern Mesic Forest	0.05	Sawtimber	Private	Recreation
C30	Southern Mesic Forest	0.125	Poletimber/ Sawtimber	Private	Recreation
T6	Southern Mesic Forest	0.47	Poletimber/ Sawtimber	Private	Recreation
T7	Southern Mesic Forest	0.13	Poletimber/ Sawtimber	Private	Recreation

R33	Shrub-Carr	0.60	Saplings	Private, Federal Easement, State Easement	Recreation
R34	Shrubland	0.35	Saplings	Private	Recreation
	Shrub-Carr	0.11	Saplings		

[1] Inaccessible forested land was identified through aerial photo interpretation and classified based on location on the landscape and remote wetland identification procedures.
[2] Average size of trees based on WDNR Silviculture Handbook.

6.2.1. 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 or the Forest Crop Law programs. According to this information, no parcels located on route segments are enrolled in either of these programs.

6.2.2. 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 6.4** (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.

6.3. Grasslands

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

6.3.1. Grasslands Impacted by the Project

The grasslands 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**. The grasslands 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 Preferred Route intersects 19.44 acres of grassland, and the Alternate Route intersects 21.91 acres of grassland. The grasslands that are in roadside surrogate grasslands are dominated by grass species such as smooth brome (*Bromus inermis*, UPL), common milkweed (*Asclepias syriaca*, UPL), Canada goldenrod (*Solidago Canadensis*, FACU), Queen Anne's lace (*Daucus Carota*, UPL), and yellow foxtail (*Setaria pumila*, FAC). The old fields are dominated by alfalfa (*Medicago sativa*, UPL), tall fescue (*Festuca arundinacea*, FACU), orchard grass (*Dactylis glomerata*, FACU), yellow foxtail (*Setaria pumila*, FAC), and Kentucky bluegrass (*Poa Pratensis*, FACU). 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
Preferred Route				
A1C	Surrogate Grassland (Roadside)	Smooth Brome, Common Milkweed	0.15	Road ROW
A2B	Surrogate Grassland (Roadside)	Smooth Brome, Canada Goldenrod, Common Milkweed, Switchgrass, Kentucky Bluegrass	3.89	Road ROW / Private
A2C	Surrogate Grassland (Roadside)	Smooth Brome, Common Milkweed	1.18	Road ROW / Private
A3	Surrogate Grassland (Roadside)	Smooth Brome, Canada Goldenrod, Common Milkweed	0.02	Road ROW / Private
A4	Surrogate Grassland (Roadside)	Smooth Brome, Canada Goldenrod, Queen Anne's Lace, Giant Ragweed	.003	Road ROW
A5	Surrogate Grassland (Roadside)	Smooth Brome, Reed Canary Grass, Common Milkweed, Yellow Foxtail, Bird's-foot Trefoil, Queen Anne's Lace, Common Chicory	0.04	Road ROW
A8	Surrogate Grassland (Roadside)	Smooth Brome, Kentucky Bluegrass, White Clover, Alsike Clover, Queen Anne's Lace, Reed Canary Grass	0.74	Road ROW / Private
A9	Surrogate Grassland (Roadside)	Smooth Brome, Kentucky Bluegrass, Canada Goldenrod, Common Milkweed, Queen Anne's Lace, Reed Canary Grass, Sow Thistle	0.85	Road ROW / Private
A14	Surrogate Grassland (Roadside)	Smooth Brome, Yellow Foxtail, Sow Thistle, Queen Anne's Lace, Giant Ragweed	0.08	Road ROW
A15	Surrogate Grassland (Roadside)	Smooth Brome, Sow Thistle	0.82	Road ROW

T5	Surrogate Grassland (Roadside)	Smooth Brome, Queen Anne's Lace, Kentucky Bluegrass, Orchard Grass, Tall Fescue	2.95	Road ROW / Private
T6	Wet Mesic Prairie (Degraded)	Kentucky Bluegrass, Orchard Grass, Tall Fescue	1.21	Private
T7	Wet Mesic Prairie (Degraded)	Kentucky Bluegrass, Orchard Grass, Tall Fescue	1.26	Private
R33	Wet Mesic Prairie (Degraded)	Smooth Brome, Canada Goldenrod, New England Aster	2.98	Federal
R34	Wet Mesic Prairie (Degraded)	Reed Canary Grass, Canada Goldenrod, Smooth Brome	0.42	Private
R36	Wet Mesic Prairie (Degraded)	Canada Goldenrod, Kentucky Bluegrass, New England Aster, Jerusalem Artichoke, Sow Thistle, Smooth Brome	2.85	Federal
Alternate Route				
A1C	Surrogate Grassland (Roadside)	Smooth Brome, Common Milkweed	0.15	Road ROW
C25B	Surrogate Grassland (Roadside)	Smooth Brome, Canada Goldenrod, Common Milkweed, Switchgrass, Kentucky Bluegrass	2.52	Road ROW / Private
C25C	Surrogate Grassland (Roadside)	Smooth Brome, Common Milkweed	0.66	Road ROW / Private
C25D	Surrogate Grassland (Roadside)	Smooth Brome, Common Milkweed, Kentucky Bluegrass, Canada Goldenrod	0.95	Road ROW
A5	Surrogate Grassland (Roadside)	Smooth Brome, Reed Canary Grass, Common Milkweed, Yellow Foxtail, Bird's-foot Trefoil, Queen Anne's Lace, Common Chicory	0.04	Road ROW
A8	Surrogate Grassland (Roadside)	Smooth Brome, Kentucky Bluegrass, White Clover, Alsike Clover, Queen Anne's Lace, Reed Canary Grass	0.74	Road ROW / Private
C27	Surrogate Grassland (Roadside)	Smooth Brome, Kentucky Bluegrass, Canada Goldenrod, Common Milkweed, Queen Anne's Lace, Reed Canary Grass, Sow Thistle	0.57	Road ROW / Private
C30	Surrogate Grassland (Roadside)	Smooth Brome, Giant Ragweed	0.42	Road ROW / Private
B16A	Wet Mesic Prairie (Degraded)	Not accessible	0.18	Private
B16B	Surrogate Grassland (Roadside) / Wet Mesic Prairie (Degraded)	Smooth Brome, Canada Goldenrod, Queen Anne's Lace, Giant Ragweed	0.48	Road ROW / Private

B17	Surrogate Grassland (Roadside) / Wet Mesic Prairie (Degraded)	Smooth Brome, Queen Anne's Lace	0.01	Road ROW / Private
B21A	Surrogate Grassland (Roadside)	Smooth Brome, Queen Anne's Lace, Common Milkweed, Alsike Clover	0.31	Road ROW / Private
B24B	Surrogate Grassland (Roadside)	Smooth Brome, Queen Anne's Lace	0.40	Road ROW
B24C	Surrogate Grassland (Roadside)	Smooth Brome, Sow Thistle, Common Milkweed	2.90	Road ROW
T5	Surrogate Grassland (Roadside)	Smooth Brome, Queen Anne's Lace, Kentucky Bluegrass, Orchard Grass, Tall Fescue	2.95	Road ROW / Private
T6	Surrogate Grassland (Roadside)	Kentucky Bluegrass, Orchard Grass, Tall Fescue	1.21	Private
T7	Wet Mesic Prairie (Degraded)	Kentucky Bluegrass, Orchard Grass, Tall Fescue	1.26	Private
R33	Wet Mesic Prairie (Degraded)	Smooth Brome, Canada Goldenrod, New England Aster	2.98	Private
R34	Wet Mesic Prairie (Degraded)	Reed Canary Grass, Canada Goldenrod, Smooth Brome	0.39	Private
R36	Wet Mesic Prairie (Degraded)	Canada Goldenrod, Kentucky Bluegrass, New England Aster, Jerusalem Artichoke, Sow Thistle, Smooth Brome	2.80	Federal

6.3.2. 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.

6.4. Invasive Species

6.4.1. Invasive Species/Disease-Causing Organisms

Where accessible, the Project area was evaluated for the presence of regulated invasive species during field investigations in 2024. The general location and composition of invasive plant species 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. Six invasive plant species were

noted, all of which fall within the "Restricted" category of Wis. Admin. Code ch. NR 40 in Dodge and Columbia Counties.

Species Observed	NR 40 Status
Canada thistle *(cirsium arvense)*	Restricted
Common buckthorn (*Rhamnus cathartica*)	Restricted
Common reed grass (*Phragmites australis*)	Restricted
Hybrid cattail (*Typha x glauca*)	Restricted
Narrow-leaf cattail *(Typha angustifolia)*	Restricted
Wild parsnip *(Pastinaca sativa)*	Restricted

Dodge and Columbia counties are within the established state distribution for oak wilt disease (*Bretziella fagacearum),* quarantine counties for emerald ash borer (*Agrilus planipennis*) and spongy moth (fka gypsy moth) (*Lymantria dispar*). Additionally, heterobasidion root disease (HRD) (*Heterobasidion irregulare*) has been confirmed in Columbia County.

6.4.2. 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;
- Proper management of construction vehicles and materials (i.e. storage, cleaning);
- Minimizing ground disturbance;
- Placing a barrier between construction vehicles and plants (i.e. construction matting);
- Proper storage and disposal of plant materials; and
- Promoting 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.

6.5. Archaeological and Historic Resources

Pursuant to Wis. Stat. § 44.40, a review of the proposed transmission line routes, substations, remote-end substations (with planned ground disturbance) 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, GAI/Commonwealth Heritage Group, LLC, dba Chronical Heritage, 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 2, 3A,** and **3B**). Unredacted copies of the Archaeological Review and the Architecture and History Review have been submitted to the PSCW Historic Preservation Officer under separate cover.

6.5.1. Construction Location List

Figures depicting archaeological and historic sites (redacted) within the Project's archaeological and architectural area of potential effect (APE) are provided within the Archaeological Review and the Architecture and History Review, included in **Appendix F, Exhibits 2, 3A,** and **3B**.

6.5.2. Wisconsin Historic Preservation Database Results

The Wisconsin Historic Preservation Database was accessed to help determine the boundaries, historic significance, and integrity of cultural resources within the Project's Study Area. Chronicle Heritage's archaeological resources review of the Project identified 33 archaeological or cemetery/burial sites within one mile of proposed Project. One of these sites, an uncataloged burial site, is the reported location of a group of Woodland tradition mounds that overlaps a remote-end substation. Two sites are close to proposed Project developments but are in areas of previous cultural survey. The remaining sites within one mile of the Project are away from the areas of potential direct Project impacts.

Furthermore, Chronicle Heritage's architectural/historic resources review identified seven additional above-ground resources adjacent to the Project. Two of these resources were further evaluated in the field:

Site 1: this architectural/historic resource is located near the Beaver Dam Commerce Park and is potentially eligible for the National Register under *Criterion A: History.* Additional research is needed to assess the property's integrity and potential significance. Research did not suggest any potential for significance under *Criterion B: Significant Person or Criterion C: Architecture*.

Site 2: this architectural/historic resource is located within the Beaver Dam Commerce Park and is recommended not eligible for the National Register. The resource does not significantly convey historic agricultural practices of the area. Research did not suggest any

potential for significance under *Criterion A: History and Criterion B: Significant Person.* Under *Criterion C: Architecture,* the resource is an altered vernacular house that lacks sufficient architectural interest and integrity to be individually eligible, and the gambrel-roof barn is not distinctive.

6.5.3. Project Impacts

Authorization to work within the boundary of the uncataloged burial site must be obtained from the Wisconsin State Historical Preservation Officer (SHPO) prior to any ground disturbing work at the substation. The Project will have no effect on any of the remaining previously identified archaeological or cemetery/burial sites located outside of areas of potential direct Project impacts.

As currently proposed, it does not appear that the Project has the potential to cause any adverse effects to Site 1. The existing X-47 line runs north/south approximately 720 feet west of the property and the closest rerouted section of the line will be over 880 feet north of the property. Additionally, the proposed Manhattan Substation will be over 1,600 feet north of the property at the location of an existing farmstead. Since the Project site is not directly in front of or behind the property, the Project will not intrude into a historic view of the property or otherwise cause a noticeable change in the character of the property's setting. The site's potential historic significance will not be affected by the Project. Based on the results of the architectural/historic resources review Chronicle Heritage concludes that no architectural/historic resources will be affected by the proposed Project.

6.5.4. 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.

6.5.5. Burial Site Disturbance

One mapped burial site is present within the APE that will be disturbed associated with the remote end work. 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 a Request to Disturb a Burial Site permitting to comply with Wis. Stat. § 157.70.

6.5.6. 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.

6.5.7. Native American Human Burial Sites

There are two reported locations of prehistoric mound groups associated with the proposed remote-end work. Both sites are reported to have been previously disturbed, but intact mound remnants have been documented in areas of one site. Recent survey conducted by Chronicle Heritage within both sites did not confirm the presence of mounds in the areas of survey but did document previous disturbance.

Although neither of the sites are cataloged with the Wisconsin Historical Society, both sites are protected by Wis. Stat. § 157.70. Any ground disturbing activities planned within the boundaries of either site will need to be approved by the Wisconsin SHPO prior to disturbance.

6.6. Conservation Easements

The proposed Project is adjacent to or intersects the following 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 Project will be adjacent to or cross the following easements:

1. Warranty Easement Deed granted by Robert J. Cupery located at W451 Cupery Drive, Randolph, WI, 53956, to United States of America, Document No. 1041039, County of Dodge, State of Wisconsin. This easement is adjacent to section A2C.
2. Warranty Easement Deed granted by Sam Vander Galion, Jr and Sylvia Vander Galion, to the United States of America at Document No. 914012 County of Dodge, State of Wisconsin. This easement is adjacent to section R33.
3. Correction Deed Granted by Messer Farms, Inc. to the United States of America at Document No. 1037725, County of Dodge, State of Wisconsin. This easement is adjacent to sections A14 and B24A.

The title search information has not been completed for the Project. Upon receipt of a PSCW decision and 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 provide appropriate compensation to make them whole.

6.7. 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%.

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.

6.8. 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 area were determined using GIS measurements and are listed below in **Table 6.7-1**. The presence of contaminated sites within

two miles of the Project area were determined using GIS measurements and are listed below in **Table 6.7-1**.

There are 34 closed sites and two open sites within two miles of the Project area. There are also seven known landfill/historic waste sites within two miles of the Project area.

There is one closed site within 300 feet of the Preferred Route and two closed sites within 400 feet of the Alternate Route. The Fox Lake City Yard (FID 114051630) is an operating landfill/waste site within 500 feet of the Preferred and Alternate Routes, and the Fox Lake City - Braaksma Property (FID 114117080) is a closed landfill/waste area that intersects the Preferred and Alternate Routes.

Consultation with a WDNR Regional Specialist provided additional information about this unclassified waste site (FID 114117080). Known information includes that this is considered an unlined landfill which had no leachate collection system, nor any groundwater monitoring wells installed. Waste materials are of an unknown source; however, debris consistent with a local municipal waste disposal site was observed during a 2007 site screening visit. A cap exists, and any excavation will be avoided within the site to prevent damage to it. Existing X-47 Structure 138 kV which would be removed for either route option is near the boundary of this site, and it is recommended that this pole be cut off at ground level, to prevent any ground disturbance within the waste site. Scope for the Preferred and Alternate Routes have the new structures placed outside of the waste site. It is currently being assessed whether it will be necessary to apply for an exemption for development at a Historic Fill Site. If an exemption would be required, completion of WDNR Form 4400-226 would be needed.

Table 6.7-1. Contaminated Sites Summary Table

Route	Activity Detail Number	Activity Detail Name or Facility Name	Facility ID	Facility Status	Continuing Obligation
Wisconsin Remediation and Redevelopment Database Sites					
Both	211000839	ALSUM, KENNETH FARM	111054460	Closed	N
Both	314001469	BRASKAMP FARM		Closed	N
Both	311113417	BURBACH FARM PROPERTY		Closed	Y
Both	311202857	CUPERY & DEYOUNG STORAGE CORP		Closed	N
Both	314101090	DAIRYLAND OIL CO		Closed	Y
Both	314002025	DODGE CNTY GARAGE	114091890	Closed	Y
Both	314002830	DYKSTRAS SELF SERVICE		Closed	Y
Both	311116729	EAGLE MART	111078000	Closed	Y
Both	314000098	FLETCHER OIL CO		Closed	Y
Both	314174047	HUTCHINSON MEMORIAL LIBRARY		Closed	N
Both	311180829	JUNG WAREHOUSE		Closed	Y
Both	214104691	KLOOSTRA FUELING FACILITY	114105860	Closed	Y
Both	214234644	KOCH PIPELINE		Closed	N
Both	214001657	KOCH PIPELINE		Closed	N

Both	314555252	KWIK TRIP #367		Closed	Y
Both	314553935	KWIK TRIP #367		Closed	N
Both	314001483	LITTLE PROPERTY		Closed	N
Both	314001470	MACGREGOR SPORTS ESTATE PROPERTY		Closed	Y
Both	214408927	MAIERS RESORT		Closed	N
Both	314002207	MILLER FORD	114062960	Closed	Y
Both	311001047	RANDOLPH FEED		Closed	Y
Both	211001521	ROCKWELL OF RANDOLPH	111007820	Closed	Y
Both	314001777	RUSH PROPERTY		Closed	N
Both	314559409	SAMS AUTOMOTIVE		Closed	N
Both	314002427	SAMS AUTOMOTIVE & TIRE MART		Closed	N
Both	314118405	SAMS ROTARY DRILLING		Closed	N
Both	214001694	SCHMIDT FARM PROPERTY		Closed	N
Both	314554596	SHEAFOR PROPERTY		Closed	N
Both	314000664	SUNSET HILLS COUNTRY CLUB	114029190	Closed	N
Both	314001484	TRU-CUT MACHINE INC		Closed	Y
Both	311556415	UWGP ETHANOL PLANT TESSMAN		Closed	Y
Both	314002445	VANDERGALIEN PROPERTY		Closed	N
Both	314231519	WHITFORD FARM PROPERTY		Closed	N
Both	314554633	WI DOT STH 33 ROW @ CORDELIA ST		Closed	Y
Both	214000900	HACCO INC	114010820	Open	N
Both	214594181	WAYNE TRANSPORTS INC SPILL		Open	N

Landfills and Historic Waste Sites

Route	Activity Detail Number	Activity Detail Name or Facility Name	Facility ID	Facility Status	Type
Both	4405800070/ 4405800135	ALSUM, KENNETH FARM	111054460	Unknown	LF-UNCLASS/ WSTREGSITE
Both	7999200135/ 7999200070	BEAVER DAM CTY EDGEWATER PARK DISP GRDS	114012800	Closed	LF-UNCLASS/ WSTREGSITE
Both	33243900070	CUPERY/ SJOERDSMA SITE	111099560	(blank)	LF-UNCLASS
Both	1604300070/ 1604300135	FOX LAKE CTY	114051630	Operating	LF-UNCLASS/ WSTREGSITE
Both	23325900135/ 23325900070	FOX LAKE CTY - BRAAKSMA PROPERTY	114117080	Closed	LF-UNCLASS/ WSTREGSITE
Both	17141000712046/ 1714100135	FOX LAKE CTY BRUSH SITE	114051410	Closed	LF-UNCLASS/ WSTREGSITE
Both	1839100070/ 1839100135	TOM J PEACHEY LF	114052730	Closed	LF-UNCLASS/ WSTREGSITE

6.9. Floodplains

The Project includes limited work occurring within mapped floodplains along both the Preferred and Alternate Routes, associated with Beaver Dam Lake, Fox Lake, and Mill Creek. This work will include clearing the new ROW, removal of existing X-47 poles, new structure installation, and temporary 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, both the Preferred and Alternate Routes will have 15 structures removed from floodplain associated with rebuilding Line X-47. The Preferred Route will have seven new structures installed in the floodplain and the Alternate Route will have nine new structures installed in the floodplain. Regardless of which route is selected, there will be a net reduction in the number of structures located in floodplains. Floodplains along proposed routes are displayed on **Appendix A, Figures 3A and 3B.**

The engineering design of this Project, the use of specific construction techniques, and implementation of BMPs and ATC's standard environmental protection practices will avoid or minimize floodplain impacts to the extent practicable. Matting will be removed when construction activities are complete, 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 COMMUNITY IMPACTS

7.1. Communication with Potentially Affected Public

As stated in **Section 5.1**, meetings were held, mailing notifications were issued, and informal conversations took place with local officials and residents during the routing and siting process.

In October 2024, ATC sent Project notification mailings to landowners within 300 feet of the proposed centerline as well as to state, county, and municipal local officials and staff.

Direct communication with these landowners and elected officials took place through the pre-CPCN-filing Project notification mailing (a copy is provided as **Appendix E, Exhibit 1**). In addition, a Project web page (atc-projects.com/dodgecountydic) is available that provides additional resources, including a Project Video, an Interactive Project Map, FAQs, direct contact information for Project representatives, and PSCW docket information.

Finally, ATC had pre-CPCN-filing phone calls, one-on-one meetings, and presentations with local officials to keep them informed and prepared for any constituent inquiries.

7.2. Community Issues

Based upon ATC's pre-filing outreach, ATC is not aware of any specific community issues. However, ATC will continue to 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 are the predominant land use in the Project area. Utilizing aerial photography and field observations, agricultural land cover was classified for active uses, such as crop land and specialty crops. Specialty crops can include tree plantations, orchards, cranberry bogs, etc. Passive uses like pastures or fallow fields, i.e., areas where there was no evidence of recent tillage or agricultural production, are categorized as grasslands and are described in **Section 6.2**.

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**. Specialty agricultural land use is present along both proposed routes, which consists of a conifer plantation located along Preferred Route Segment A2B and Alternate Route Segment C25B.

The total agricultural land use along the Preferred Route is 209.45 acres, or approximately 68% of the proposed ROW. The total agricultural land use along the Alternate Route is 212.21 acres, or approximately 68% of the proposed ROW.

7.4.2. Agricultural Practices affected by Farming

The Preferred and Alternate Routes will primarily affect cropland, except for the parcel with a specialty crop, a tree farm. The type of cropland affected at the time of construction is unknown and may change because of agricultural best management practices of crop rotation, fallow year, or the planting of non-harvested cover crops.

A center pivot irrigation system is located adjacent to Segment R36, a section of the existing Line X-47 that is planned for removal, but ATC does not anticipate that the irrigation system will be impacted during or after construction.

Drainage tile may be present but has not been confirmed. Temporary impacts during construction may include crop loss, soil compaction, and potential damage to drain tiles. ATC will work with landowners to address drain tile concerns throughout the planning process and implementation phases.

Permanent impacts will result from the placement of the transmission structures within active agricultural land and from the expansion of North Randolph Substation. Along the Preferred Route there are 237 proposed structures in active agricultural fields, and along the Alternate Route there are 223 proposed structures in active agricultural fields. There are 55 of these proposed structures in active agricultural fields in the common segments. Expansion of the North Randolph Substation will eliminate 16.78 acres of agricultural land. Impacts from construction will be minimized through the mitigation measures identified in **Section 7.4.4.**

7.4.3. Farmland Preservation Program

Landowners with farmland that is located within an area zoned for farmland preservation can participate in the Farmland Preservation Program (FPP) or landowners located in other zoning districts may have existing FPP agreements with DATCP. DATCP has recently changed their policy and no longer releases a database that lists individual landowners who have voluntarily filed an FPP agreement. Because ATC is unable to provide a list of parcels participating in FPP, ATC is providing in **Table 7.4.3-1** a list of municipalities that have farmland preservation zoning where landowners are eligible to participate in the FPP.

Table 7.4.3-1 Municipalities with Farmland Preservation Zoning

County	Municipality	Preferred Route Segments	Alternate Route Segments
Dodge	Town of Fox Lake	A2C, A3, A4, A5, A6, A7, A8	B16, B17, B18, B19, B20, C25B, C25C, C25D, C26A, C26B
Dodge	Town of Trenton	A9, A10, A11, A12, A13, A14, A15	B21A, B21B, B22, B23, B24A, B24B, B24C, C27, C28A, C28B, C29, C30, C31

Electrical transmission lines are permitted on lands enrolled in the FPP and are considered to be compatible with agricultural use. ATC will work with all agricultural landowners, as discussed in **Section 7.4.4**, to reduce impacts where practicable.

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 an order from the PSCW, 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

There are no drainage districts 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 9** for correspondence with DATCP. Please refer to **Appendix H, Exhibit 8** for a copy of the AIN.

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

ATC has identified confined animal dairy operations within a half mile of the proposed routes' centerlines, and agricultural buildings within 300 feet of the proposed routes' centerlines as shown in **Appendix A, Figures 6a and 6b**, and summarized in **Table 7.4.7.1** and **Table 7.4.7.2.**

Table 7.4.7.1 Preferred Route Segments

Segment	Agricultural Buildings within 300 feet	Dairy Operations within ½ mile
T1	-	2
T2	1	-
A1C	7	-
A2B	3	-
A6	3	-

A8	8	-
A9	8	-
A13	3	2
T6	4	-
T7	2	-

Table 7.4.7.2 Alternate Route Segments

Segment	Agricultural Buildings within 300 feet	Dairy Operations within ½ mile
T1	-	2
T2	1	-
A1C	7	-
C25B	4	-
C25D	5	-
A5	1	-
C26A	9	-
A8	6	-
C27	9	-
B18	4	-
B21A	6	-
B21C	3	-
B23	1	-
B24A	3	2
T6	4	-
T7	2	-

Structures and other facilities made of conductive material located in close proximity to electric transmission lines may experience an induced current and spec voltage due to electric and magnetic field coupling between the facilities. Facilities potentially affected by the proposed Project include railroads 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; and,
- 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** of this Application 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 local distribution companies 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 29 homes located within 300 feet of the Preferred Route project centerline, and 58 homes within 300 feet of the Alternate Route project centerline. Three homes are within the transmission ROW on the Preferred Route along Segments A2B, A8, and A9, and four homes are within the ROW on the Alternate Route along Segments A8, C25B, C25D, and C27.

Anticipated impacts to residences and the planned mitigation are described below**.**

Noise

A majority of the proposed transmission line and substation infrastructure is 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 the transmission line route, including the substation sites, will be equivalent to highway traffic and truck equipment throughout the remaining Project route.

Noise will be intermittent and not out of the ordinary for general truck traffic. Most truck and equipment noise will be from 6:30 am to 6:30 pm, Monday through Friday. Most trucks will leave the designated laydown yards each day during this time.

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

Dust

ATC and its contractor will be performing drilling operations for the installation of the transmission structures and will not be creating large spoil piles in relation to this work. Dust impacts will be minimized in the residential areas. In addition, ATC and its contractors 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 January of 2026 and end in July of 2027.

Time-of-Day Construction

Construction work will generally occur Monday through Friday during daylight hours. Weekend work may be required. No night or weekend work is anticipated at this time but may be necessary.

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 photo simulations were requested by Commission staff. No scenic roads were identified in the Project area.

7.7. Parks and Recreation Areas

Retired Segment R36 is in the Dodge County Waterfowl Production Area (WPA) known as the Robbins Shorebird WPA. This WPA is within the USFWS Leopold Wetland Management District, which is open to the public for a variety of recreational activities. ATC is proposing to remove the existing eight wooden pole structures (Structures 251 – 258) and existing conductor along Line X-47 within the USFWS property. To perform the work, construction matting is proposed within existing ROW to ensure safe access and workspaces for the purpose of structure and conductor removals. Access will be minimized to the extent practicable to allow for safe maneuvering of equipment. Disturbed areas will be restored with seed and mulch, or seed and erosion control matting. ATC will reroute the Line X-47 on a different route outside of the USFWS property. Furthermore, the new double-circuit line options have also been sited outside of the USFWS property. Following completion of the Project, ATC will no longer have transmission infrastructure within this property.

7.8. Airports

7.8.1. Location of Private and Public Airstrips

There is one private-use seaplane base, and one private-use heliport identified within five miles of the proposed route centerlines. There are no public airports identified within five miles of the proposed route centerlines.

- Beaver Dam Lake Seaplane Base (private use, Randolph, WI) is located approximately 2.1 miles from the proposed route centerlines.
- Beaver Dam Community Hospital Heliport (private use, Beaver Dam, WI) is located approximately 4.1 miles from the proposed route centerlines.

7.8.2. Description of Airports

The Beaver Dam Lake (1WI5) Seaplane Base is a private-use seaplane base near Randolph, Wisconsin. The latitude/longitude of the airstrip is 43.514987 N/88.95261 W at an elevation of 871 feet. There are three runways: (5W/23W) with a water surface that is 10,000 feet in length

and runs in a southwest/northeast alignment; (9W/27W) with a water surface that is 5,000 feet in length and runs in a west/east alignment; and (18W/36W) with a water surface that is 5,000 feet in length and runs in a north/south alignment. This seaplane base is approximately 2.1 miles south of Segment A8.

The Beaver Dam Community Hospital (WS70) Heliport is a private medical use heliport near Beaver Dam, Wisconsin. The latitude/longitude of the heliport is 43.448936 N/88.826689 W at an elevation of 870 feet. There is one landing pad: (H1) with an asphalt surface that is 60 feet by 60 feet in dimension. This heliport is approximately 4.1 miles south of Segment T6.

7.8.3. Impact to Aircraft Safety

Based off proximity to airports and results from the FAA Notice Criteria Tool, no impacts to aircraft safety are anticipated.

7.8.4. Potential Construction Limitations and Permit Issues

ATC used the FAA Notice Criteria Tool to determine which Project structures would require filing with the FAA. The FAA Notice Criteria Tool has been checked for all proposed structure locations. No 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 ten feet above what is anticipated. Structures will be filed for the actual height on the ordered route once design is completed.

7.8.5. FAA Documentation

Documentation of the FAA Notice Criteria Tool checks along with a summary of checks performed and results are included in **Appendix H, Exhibit 6**.

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 ten-km radius was used 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 ten 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.

Communication Tower Noise Interference

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 online 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, and 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. Network engineers will avoid the lines when planning new facilities.

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.

Antenna Structure Registrate, Cellular Towers and Paging Transmission Towers

The FCC database research that was conducted did find paging base stations and cell facilities within ten km of the proposed transmission routes. With that said, ATC does not see potential interference of these facilities with the proposed transmission line route options.

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.

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.

Paging Transmission Towers (PAG) are only transmitters (not receivers), therefore the PAGs that are listed in **Appendix D, Exhibit 2** are not susceptible to radio frequency interference of any type.

7.9.2. GIS Location Information

In order to determine the types of communication towers adjacent to the proposed transmission line routes, research of available FCC databases was conducted and all communication towers within a ten km distance were determined. A location map showing all facilities within the ten 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 ten km of the proposed routes were as follows: Land Mobile (LM Private), Microwave (MICRO), PAGs, Cell (CELL), and ASR.

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 and waterbodies 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 OHWM widths. A summary of all waterways and waterbodies intersecting the Preferred and Alternate Routes is provided in **Appendix F, Table 2**. Additional details can be found in the Wetland Determination and Stream Identification Report **(Appendix F, Exhibit 4)**.

8.1.1. Proposed Waterbody or Waterway Crossings

The proposed routes intersect multiple waterways. Each time the ROW crossed a waterway, the waterway was given a unique feature ID. Four named perennial streams (two crossings of Cambra Creek and Mill Creek), six unnamed intermittent streams, seven unnamed perennial streams, two unnamed ephemeral streams, and five unmapped field drainage ditches are intersected by the Preferred Route. Four named perennial streams (Cambra Creek and Mill Creek), six unnamed intermittent streams, eight unnamed perennial streams, one unnamed ephemeral stream, six unmapped field drainage ditches, two unmapped perennial streams, and one excavated pond are intersected by the Alternate Route.

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 Waterways Crossed by Project

Number of Waterways Crossed	
Preferred Route	**Alternate Route**
24	28

8.1.2. Waterway Special Classifications

No Exceptional or Outstanding Resource Waters, Trout Streams, or Wild or Scenic Rivers are crossed by the Preferred or Alternate Routes. Mill Creek is crossed by both routes and is noted as a Wadable Nursery Water/Smallmouth Bass Stream designated under Wis. Admin. Code § NR 26.01 as a fish refuge, which prohibits fishing, killing, disturbance etc. from March 1st to the first Saturday in May. Mill Creek is classified as a Warm Mainstream under the state's Natural Community determinations and is listed as impaired.

Methods for minimizing impacts to Mill Creek 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. All stockpiled spoils, supplies, or materials will be isolated from the waterway to prevent impacts beyond the work area. Any disturbance within 75 feet of the OHWM of a waterway will be stabilized within 24 hours of construction completion.

8.1.3. Navigability Determination Request

ATC submitted a navigability determination request to WDNR on June 5, 2024 for an unnamed tributary to Cambra Creek in the town of Fox Lake, Dodge County, WI, WDNR mapped waterway (WBIC 5029985). On June 20, 2024, the WDNR determined this waterway to be non-jurisdictional under Wis. Stat. ch. 30 for the purpose of this Project. For more information see **Appendix H, Exhibit 1**.

8.1.4. Waterway Impacts

A summary of all waterbodies and waterways (hereafter collectively referred to as "waterways") intersecting the ROW is presented in **Appendix F, Table 2**, and shown on **Appendix A, Figures 4A and 4B**. The identification of waterways was based on a review of the WDNR 24K Hydrography layer and field observations along the ROW. Those features with a distinguishable bed and bank were considered navigable waterways, regardless of the width or if they were identified in the WDNR 24K Hydrography layer.

The Project crosses 18 waterways within the Preferred Route and 25 waterways within the Alternate Route, as identified and summarized in **Table 8.1.3-1**. Additional information about each waterway can be found in **Appendix F, Table 2**.

Table 8.1.4-1-Summary of Waterway Crossings

Preferred Route		Alternate Route	
Segment	**Number of Crossings**	**Segment**	**Number of Crossings**
A1C	1	A1C	1
A2B	5	C25B	5
A2C	1	C25C	1
A4	1	C25D	1
A5	2	A5	2
A8	2	C26B	2
A9	0	A8	2
R33	4*	C27	0
C26B	2	B16A	2
R34	0	B16B	2
-	-	B17	1
-	-	B21A	2
-	-	R33	4*
-	-	R34	0

** All crossings identified in this table will involve a temporary clear span bridge (TCSB), except for one existing culverted crossing within Segment R33.*

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.

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 and culverted drives. 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.

Table 8.1.3-1 in the section above summarizes all the planned waterway crossings and **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.

Proper erosion control measures will be implemented and maintained during and after the utilization of the temporary crossing 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 TCSBs 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 to span the stream banks. 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 Wis. Admin. Code § 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 § 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. 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, GAI, conducted field investigations from March 12-14 and March 19, 2024, to identify aquatic resources along the existing X-47 line within ATC ROW. An additional visit was conducted within the growing season on August 26-27, 2024.

While a formal delineation was not conducted, GAI followed the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual and the Regional Supplement to the USACE Delineation Manual: Northcentral and Northeast Region, Version 2.0 (Environmental Laboratory, 2012) general guidance for the wetland determination. The National Wetland Plant List (2020 NWPL v3.5) was used to determine wetland indicator status of observed plant species. Wetland communities were classified based on the Wetland Plants and Plant Communities of Minnesota and Wisconsin, Version 3.2 (Eggers and Reed, 2015).

Where access permission was not granted, wetlands were evaluated and identified using desktop resources, including one-to-two-foot contour lines, WWI data including the Wetland Indicators, WDNR Surface Water Data Viewer (SWDV), hydric soil ratings from NRCS, and aerial imagery. In addition, a crop slide analysis (farmed wetland determination) was conducted to assess the presence of wetlands located in farmed agricultural fields. The USACE St. Paul District Guidance for Offsite Hydrology/Wetland Determinations (2016) was followed to conduct this evaluation. Additional detail regarding field survey methodology is provided in the Wetland Determination and Stream Identification Report (**Appendix F, Exhibit 4**).

Field verification of desktop determined wetlands is planned for spring of 2025.

ATC submitted a wetland correspondence request to WDNR on October 17, 2024. 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 Preferred Route contains approximately 63.96 acres of wetland, and the Alternate Route contains approximately 60.32 acres of wetland. Additional details on the wetlands identified along the Preferred and Alternate Routes are provided in the Wetland Determination and Stream Identification 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 4A and 4B**. 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

Preferred Route		
Wetland Community	**Total Square Feet**	**Total Acreage**
Fresh Wet Meadow	515,248	11.83
Hardwood Swamp	4,487	0.10
Seasonally Flooded Basin	1,067,098	24.50
Shallow Marsh	1,025,074	23.53
Shrub-Carr	174,189	4.00
Alternate Route		

Wetland Community	Total Square Feet	Total Acreage
Floodplain Forest	31,599	0.73
Fresh Wet Meadow	598,094	13.72
Seasonally Flooded Basin	1,017,103	23.35
Shallow Marsh	789,424	18.12
Shrub-Carr	191,484	4.40

8.2.3. Wetland Functional Values

Most wetlands identified along both the Preferred and Alternate Routes are low (degraded) quality seasonally flooded basin communities within planted agricultural fields. The shallow marsh, fresh wet meadow and shrub-carr communities are low (degraded) to medium quality wetlands dominated by reed canary grass. Many of these wetlands have formed as a direct result of the historic disruption of natural drainage features by agricultural 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 *(Phalaris arundinacea)*, narrowleaf cattail *(Typha angustigolia)*, and phragmites *(Phragmites australis)*. The shrub dominated wetlands were dominated by red osier dogwood *(Cornus sericea)*, green ash *(Fraxinus pennsylvanica)*, riverbank grape *(Vitis riparia)*, and willow *(Salix spp.).*

A large wetland complex (Wetland 007, Wetland 008, Wetland 009 and corresponding remote wetlands) along both the Preferred and Alternate Routes abuts the Wetlands Reserve Program of Dodge County and the Glacial Habitat Restoration area. This wetland complex is made up of fresh wet meadow, shallow marsh, shrub-carr, and floodplain forest communities. While the complex is dominated by cattails and reed canary grass, it also has high plant diversity. In addition, the extended, unmanaged community beyond the ROW provides higher quality wildlife habitat.

General functional value of wetlands along the Project 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 most wetlands given the inaccessibility of the area. Flood storage is also limited due to the historic changes made in the area to shed water.

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 structures. 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 were evaluated to determine which wetlands could potentially 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.

No ASNRI wetlands were identified along the Project.

One floodplain forest which is part of a larger complex associated with an unnamed tributary to Beaver Dam Lake is near the Alternate Route.

8.2.5. Wetland Impacts

Table 8.2.2-1, above, summarizes the total area of each wetland community that would be 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 will be 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 is illustrated on the Environmental Features and Access Plan map set (**Appendix A, Figure 4A and 4B**).

Table 8.2.5-1 – Total Wetlands Crossed by Route

Preferred Route	Alternate Route
67	70

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 Preferred Route has 59 new structures proposed within wetlands, resulting in 9,093 square feet (0.21 acre) of permanent fill. There would also be 53 structure removals, resulting in 491 square feet (0.01 acre) of permanent fill in the Preferred Route. The

Alternate Route has 48 structures proposed within wetland, resulting in 7,805 square feet (0.18 acres) of permanent fill. There would also be 55 structure removals, resulting in 822 square feet (0.02 acre) of permanent fill in the Alternate Route.

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 1,172,206 square feet (26.91 acres) from 62 wetlands along the Preferred Route and 1,151,670 square feet (26.44 acres) from 66 wetlands along the Alternate Route.

Guard structures will be required to safely pull wire over major road crossings. Conservative estimates of temporary wetland impacts for guard structures include two guard structures along the Preferred Route for 28 square feet (0.001 acre) and four guard structures along the Alternate Route for 56 square feet (0.001 acre).

Impacts to shrub and forested wetlands will occur due to vegetation clearing for the new ROW. Conservative estimates of wetland conversion impacts associated with clearing include 175,252 square feet (4.02 acres) along the Preferred Route and 227,146 square feet (5.21 acres) along the Alternate Route. However, it is important to note that there is an existing, maintained ROW with shrub-carr wetland within both proposed routes that will either be retired (Segments R33 and R34) and allowed to revegetate, or will be reconstructed (Segments A2B, A8, A9, C25B and C27) and will revegetate in between maintenance cycles. **Table 8.2.5-2** below summarizes the total wetland impacts by community along the Preferred and Alternate Routes and defines existing wetland conversion ROW from new wetland conversion ROW. Conversion impacts were based on 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 – Wetland Impacts by Route

Preferred Route				
Wetland Community	**Permanent Fill** (ft^2)	**Temporary Fill** (ft^2)	**Existing ROW Conversion** (ft^2)	**New ROW Conversion** (ft^2)
Fresh Wet Meadow	1,582	257,961	-	-
Hardwood Swamp	-	547	-	4,487
Seasonally Flooded Basin	3,982	409,440	-	-
Shallow Marsh	3,239	420,405	-	-

Shrub-Carr	781	83,881	167,766	-
TOTAL:	9,584	1,172,234	167,766	4,487
Alternate Route				
Wetland Community	**Permanent Fill** (ft^2)	**Temporary Fill** (ft^2)	**Existing ROW Conversion** (ft^2)	**New ROW Conversion** (ft^2)
Floodplain Forest	169	8,979	-	31,599
Fresh Wet Meadow	1,673	305,460	-	-
Seasonally Flooded Basin	3,594	404,939	-	-
Shallow Marsh	2,402	333,328	-	-
Shrub-Carr	788	99,020	171,213	24,334
TOTAL:	8,626	1,151,726	171,213	55,933

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 5**.

8.2.7. Open-cut Trenching in Wetlands

No wetlands will be open-cut trenched for the Project.

8.2.8. Directional Boring in Wetlands

No wetlands will be directionally bored for the Project.

8.2.9. Plowing in Wetlands

No wetlands will be plowed 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 either 80 feet or 150 feet, depending on whether or not the rebuild and double-circuit lines run parallel. Forested and shrub wetland areas that exist within the 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.

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. 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/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.

- If 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, construction planning, and the use of particular construction techniques, and implementation of BMPs and ATC's standard environmental construction requirements. 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 5**).

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. Construction mats will be used when needed to minimize impacts and stabilize the area to support construction vehicles in wetlands that are not saturated at the time of construction and can support both tracked and/or rubber-tired equipment.

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 6.3**, 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. This could be as frequently as once every seven days to inspect erosion and sediment control BMPs along the Project and within 24 hours of a rainfall event producing precipitation of 0.5 inch or greater. Additional details about monitoring during construction and restoration are described in **Sections 8.2.11** and **8.2.14**, and the Matting Restoration Plan provided in **Appendix F, Exhibit 5**.

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 5**.

ATC will monitor restoration and revegetation progress within all wetland (and upland) areas in accordance with Wis. Admin. Code ch. NR 216 and 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 Feature Maps are provided in **Appendix A, Figures 4A and 4B**. This figure set depicts the Project scope as well as wetlands and waterways, construction access and matting plans, and proposed TCSB locations. Environmental maps depicting determined wetlands and waterways, WDNR mapped wetlands and waterways, and mapped hydric soils are provided as an attachment to the Wetland Determination and Stream Identification Report provided in **Appendix F, Exhibit 4**. These maps include the required wetland and waterway mapping information as listed below.

- Delineated wetlands.
- Wisconsin Wetland Inventory and hydric soils.
- WDNR 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 workspaces.

9.0 ENDANGERED, THREATENED, SPECIAL CONCERN SPECIES AND NATURAL COMMUNITIES

9.1. WDNR Endangered Resources Review

The WDNR Natural Heritage Inventory (NHI) database was accessed to perform an Endangered Resources (ER) screening on April 9, 2024, 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, substation property, the proposed laydown yards off ROW access routes, and the remote-ends. 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 any 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).

In addition, consultation regarding rare species and natural communities has also occurred in the form of submittal of a Project review through the USFWS Information for Planning and Consultation (IPaC) tool, a copy is provided in **Appendix H, Exhibit 5.**

9.2. NHI Occurrences

The query of the NHI database produced two element occurrences within the one- and two-mile buffers of the Project area for one state endangered amphibian species. No observations of federally protected species are recorded within applicable one- and two-mile buffers of the Project area.

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

The WDNR's Broad Incidental Take Permit/Authorization – No/Low Impact Activities will provide coverage for the state endangered amphibian species because the Project area is outside of the primary extant range of the species, and the occurrences are historical records. Consequently, no biological surveys or habitat assessments are planned for the Project area as there are no required or recommended actions to comply with the endangered species law. An ER Review Verification Form was submitted for the Project by a Certified ER Reviewer and is included in **Appendix H, Exhibit 3**.

9.3.1. Required Follow-up Actions

There are no required follow-up actions.

9.3.2. Recommended Actions

There are no recommended follow-up actions.

9.3.3. Justification for Follow-up Actions that Cannot be Met

Section 9.3.3 is not applicable to the Project.

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

See **Appendix H** for WDNR correspondence related to the ER Review and the IPaC Review.

The IPaC database review identified a bird that is listed as experimental - non-essential (whooping crane, *Grus americana)*, a reptile that is threatened (eastern massasauga, *Sistrurus catenatus*) and two insects that are a candidate for listing (monarch butterfly, *Danaus plexippus*) and proposed threatened (western regal fritillary, *Argynnis idalia occidentalis)*. No critical habitat was identified for any of the listed species.

The candidate species and the proposed threatened species are not protected by take prohibitions of Section 9 of the Endangered Species Act (ESA). The experimental, non-essential species is protected under Section 9 of the ESA because a portion of the Project overlaps with National Wildlife Refuge Land, the Dodge County Waterfowl Production Area. While suitable foraging habitat is present within the Project area there are no suitable roost sites. Finally, IPaC identifies the threatened reptile occurrence only within Columbia County where no suitable habitat is present. The remainder of the Project area falls within Dodge County where the threatened reptile is not known to occur. Coordination with federal entities will occur during the PSCW's Application review process, as needed.