

Appendix R

Alternative Segments

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As described in Section 6 of the application, in some locations the Applicant identified alternatives to address stakeholder feedback or routing constraints in the Project Study Area. Alternatives were included in the application when the impacts were generally considered comparable, but different, than the corresponding subsegment included in the end-to-end route. A description of each alternative the is presented below. To assist with the Commission’s review of alternatives, this appendix provides tables to outline the constraints along the alternative compared to the corresponding portion of the Route Option.

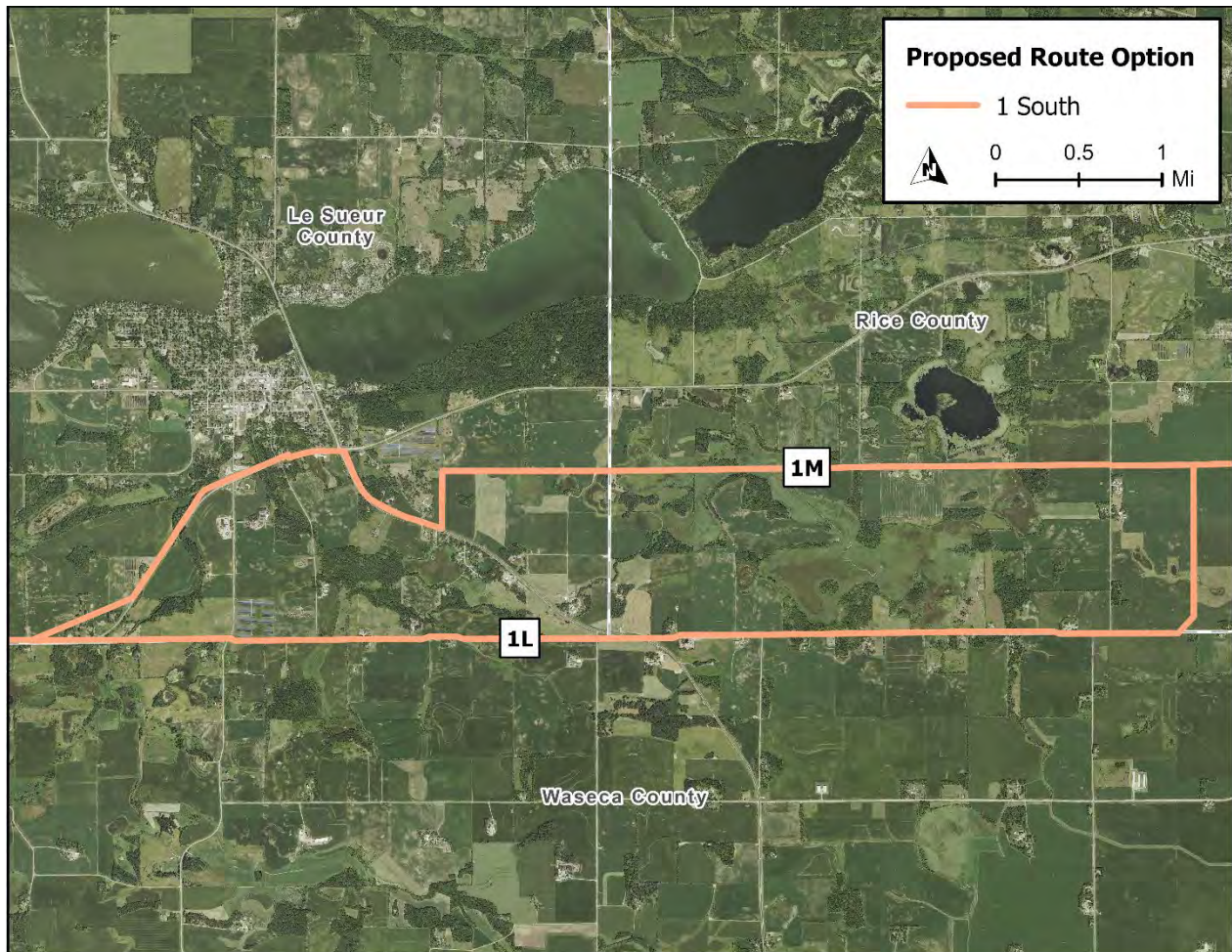
For the purpose of the route alternative comparison tables, the following datasets were used:

- Land Cover (e.g., agricultural and forested land crossing) – 2021 National Land Cover Database (NLCD). Please note that this national database does not always present information that matches current aerial photography and on the ground conditions. Route alternative descriptions provided in the sections below were written based on aerial photography and site visits and may not directly correlate with the numbers provided in data tables.
 - Agricultural land includes cultivated crop, pasture, and hay NLCD categories.
 - Forested land includes mixed, deciduous, and evergreen forest NLCD categories.
- Wetlands – National Wetland Inventory (NWI) Minnesota Department of Natural Resources.
- Streams – National Hydrography Dataset flowlines
- Residences – Residences were manually digitized using 2023 National Agricultural Imagery Program (NAIP) aerial photography. Digital points were placed on the center of residences to capture potential route alternatives that may be located on either side of a residence.

Alternative 1L

Option 1 South includes an approximately 8.0-mile Alternative, 1L, which diverges from the existing 69 kV corridor and continues east along existing roads and property lines. Due to the amount of residential development along the roadways, the alternative includes multiple crossings of the road to bring the route further from residences where possible. The alternative then joins an existing transmission line corridor, where it would be double-circuited with the existing line, and travels turns north through agricultural land.

Figure R-1 Alternative 1L



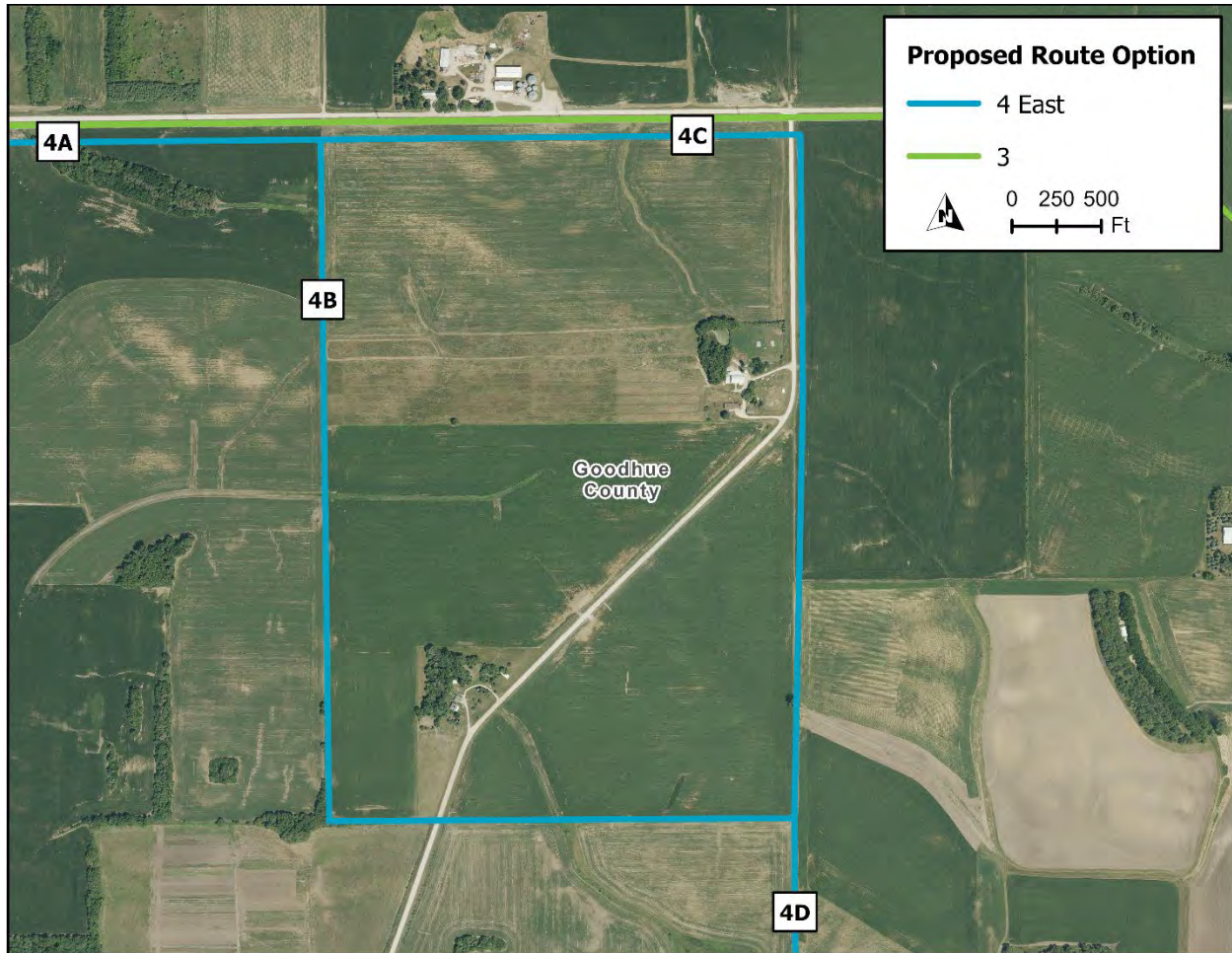
Resource Type	Route Subsegment ID	
	1L	1M
Total Length of Route (miles)	7.95	8.01
Double-Circuit with Existing Transmission Line (miles)	1.33	2.31
Parallels Existing Transmission Line (miles)	0.00	0.00
Follows Other Existing Linear Infrastructure (miles)	6.12	1.68
Residences within 0-75 feet (number)	1	1
Residences within 76-150 feet (number)	3	3
Residences within 151-300 feet (number)	9	13
Residences within 301-500 feet (number)	5	21
Upland Forest (acres)	4.45	9.87
Forested Wetlands (acres)	0.69	0.82
Non-Forested Wetlands (acres)	1.73	13.66
Agricultural Land (acres)	68.12	84.74
Waterbody Crossings (feet)	631	3,825

Alternative 1L is approximately the same length as subsegment 1M. Alternative 1L would be double-circuited with existing transmission lines for 1.3 miles, compared with 2.3 miles for subsegment 1M. Due to the residences along 440th Ave and 270th Ave and the number of road crossings that would be required to minimize impacts on these residences it was determined that subsegment 1M was preferable for incorporation of the end-to-end route. However due to the greater amount of tree clearing and length of wetland crossing associated with subsegment 1M, 1L is included as a proposed alternative.

Alternative 4C

Route Option 4 East includes an approximately 1.2-mile Alternative 4C, which is provided as an alternative to 4B. This alternative continues east along 500th Street, paralleling an existing transmission line corridor through agricultural land, then turns south, continuing through agricultural land. The entire length of the alternative would not be double-circuited with an existing transmission line and would therefore require a greenfield right-of-way.

Figure R-2 Alternative 4C



Resource Type	Route Subsegment ID	
	4C	4B
Total Length of Route (miles)	1.23	1.21
Double-Circuit with Existing Transmission Line (miles)	0.00	0.00
Parallels Existing Transmission Line (miles)	0.51	0.00
Follows Other Existing Linear Infrastructure (miles)	0.30	0.00
Residences within 0-75 feet (number)	0	0
Residences within 76-150 feet (number)	0	0
Residences within 151-300 feet (number)	1	0
Residences within 301-500 feet (number)	2	0
Upland Forest (acres)	0.00	0.00
Forested Wetlands (acres)	0.00	0.00
Non-Forested Wetlands (acres)	0.00	0.00
Agricultural Land (acres)	12.84	14.33
Waterbody Crossings (feet)	0	0

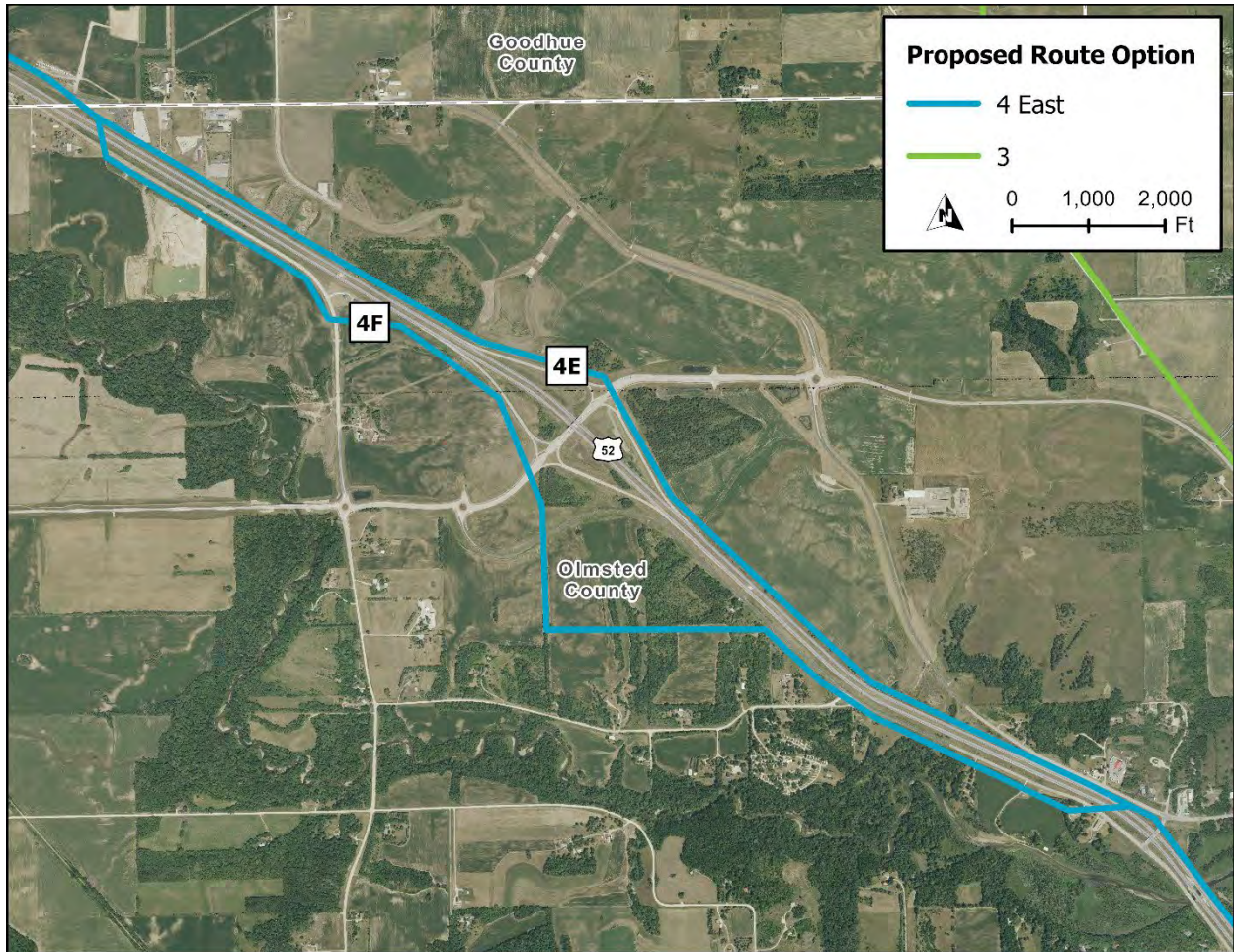
Alternative 4C is the same length (1.2 miles) as subsegment 4B. While Alternative 4C would have about 0.5 mile more paralleling existing transmission lines than subsegment 4B, it would bring the route closer to residences.

Alternative 4E

Route Option 4 East includes an approximately 3.1-mile Alternative 4E. This alternative was reviewed and generally follows the existing Highway 52 alignment. As part of Xcel’s stakeholder outreach, they met with the Prairie Island Indian Community which has expressed interest in developing newly acquired property on the east side of the highway (see Section 8.1 of the Route Permit Application). As part of Xcel’s work with the Prairie Island Indian Community, and to give the Commission several options to review in this area, Xcel also identified an option (4F) to parallel the highway on the southwestern side of Highway 52. Alternative 4E is located on the north/east side of Highway 52. The alternative crosses behind businesses and primarily crosses open land adjacent to the Highway 52 corridor. The alternative would not be double-circuited with an existing transmission line and would therefore require a greenfield right-of-way.

Resource Type	Route Subsegment ID	
	4E	4F
Total Length of Route (miles)	3.14	3.44
Double-Circuit with Existing Transmission Line (miles)	0.00	0.00
Parallels Existing Transmission Line (miles)	0.00	0.00
Follows Other Existing Linear Infrastructure (miles)	3.14	2.35
Residences within 0-75 feet (number)	0	0
Residences within 76-150 feet (number)	0	0
Residences within 151-300 feet (number)	2	3
Residences within 301-500 feet (number)	2	5
Upland Forest (acres)	0.59	1.45
Forested Wetlands (acres)	0.00	1.25
Non-Forested Wetlands (acres)	0.00	1.22
Agricultural Land (acres)	18.53	24.46
Waterbody Crossings (feet)	0	0
Prairie Island Indian Community crossing (miles)	0.85	0.01

Figure R-3 Alternative 4E

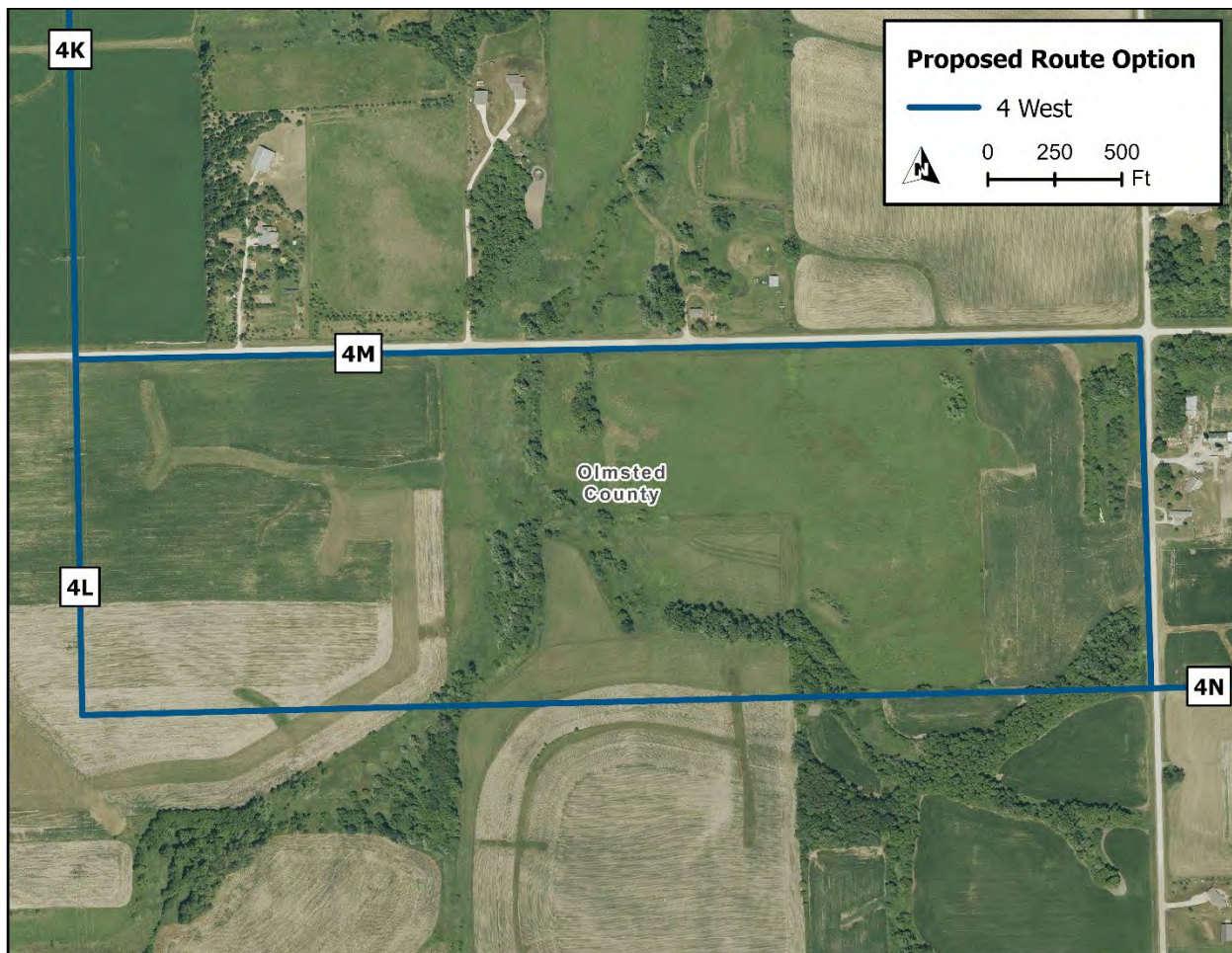


Alternative 4E is slightly shorter (3.1 miles versus 3.4 miles) than subsegment 4F. While neither route would be double-circuited with an existing transmission line, the alternative parallels roadways for a greater distance (3.1 miles versus 2.4 miles) and has fewer residences within 500 feet of the route than subsegment 4F. The alternative crosses six parcels owned by the Prairie Island Indian Community.

Alternative 4M

Route Option 4 West includes an approximately 1.0-mile Alternative 4M, which was identified in response to landowner comments regarding the alignment of 4L not following existing property lines or other rights-of-way. The alternative parallels roads and crosses primarily agricultural and open land along the roadways. The alternative would not be double-circuited with an existing transmission line and would therefore require a greenfield right-of-way.

Figure R-4 Alternative 4M



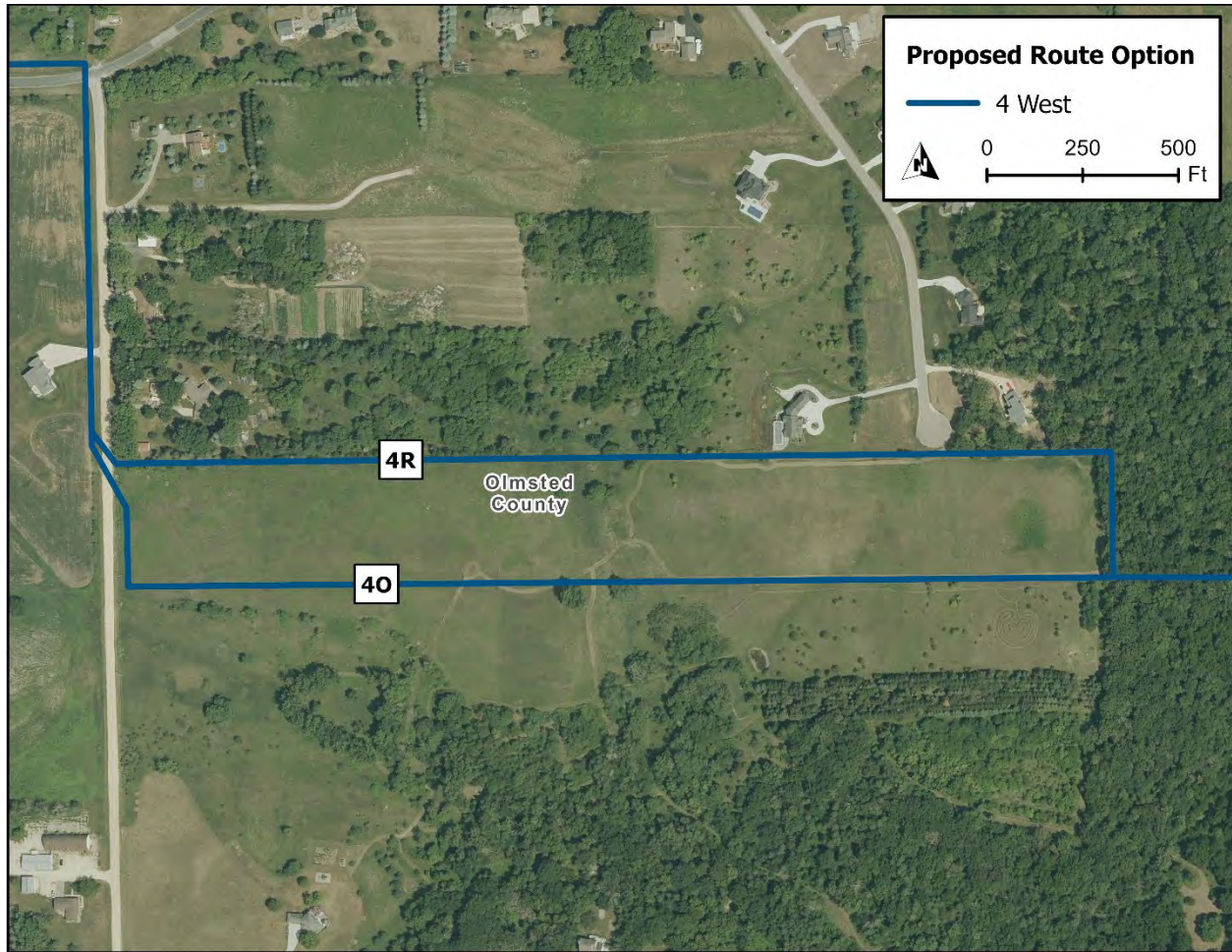
Resource Type	Route Subsegment ID	
	4M	4L
Total Length of Route (miles)	1.00	1.01
Double-Circuit with Existing Transmission Line (miles)	0.00	0.00
Parallels Existing Transmission Line (miles)	0.00	0.25
Follows Other Existing Linear Infrastructure (miles)	1.00	0.00
Residences within 0-75 feet (number)	0	0
Residences within 76-150 feet (number)	2	0
Residences within 151-300 feet (number)	1	0
Residences within 301-500 feet (number)	1	0
Upland Forest (acres)	0.00	0.00
Forested Wetlands (acres)	0.00	0.23
Non-Forested Wetlands (acres)	0.00	0.08
Agricultural Land (acres)	2.20	11.52
Waterbody Crossings (feet)	0	0

Alternative 4M is the same length (1.0 miles) as subsegment 4L. Subsegment L would have a greater length paralleling existing transmission lines and Alternative 4M has a greater length paralleling other existing linear infrastructure. The alternative would bring the route closer to residences along 85th Street NW and 110th Ave NW, whereas subsegment 4L would have greater impacts on wetlands (including forested wetlands) and agricultural land.

Alternative 4R

Route Option 4 West includes an approximately 0.6-mile Alternative 4R. Due to landowner comments received regarding a planned development in this area along 4O, Xcel Energy identified an alternative that brings the alignment further north along the property boundary. The alternative veers east and then south through primarily open and forested land. Neither alternative would be double-circuited with an existing transmission line and would therefore require a greenfield right-of-way.

Figure R-5 Alternative 4R



Resource Type	Route Subsegment ID	
	4R	4O
Total Length of Route (miles)	0.57	0.57
Double-Circuit with Existing Transmission Line (miles)	0.00	0.00
Parallels Existing Transmission Line (miles)	0.00	0.00
Follows Other Existing Linear Infrastructure (miles)	0.00	0.04
Residences within 0-75 feet (number)	0	0
Residences within 76-150 feet (number)	2	0
Residences within 151-300 feet (number)	1	2
Residences within 301-500 feet (number)	1	0
Upland Forest (acres)	1.04	0.00
Forested Wetlands (acres)	0.00	0.00
Non-Forested Wetlands (acres)	0.48	0.12
Agricultural Land (acres)	5.16	5.95
Waterbody Crossings (feet)	0	0

Alternative 4R is the same length as the corresponding portion of 4O. Neither route would be double-circuited with or run parallel to an existing transmission line; however, 4O does parallel a roadway for 0.04 mile. There are more existing recently built residences in proximity to Alternative 4R, while 4O would have greater impact on a planned development.