

4.0 Route and Alignment Alternatives Proposed during Scoping

4.1 Federal and State Alternative Review

U.S. Department of Energy (DOE) and Minnesota Department of Commerce – Energy Environmental Review and Analysis (DOC-EERA) conducted the joint scoping process as described in Section 1.4. This chapter describes the alternatives—which include the proposed Project routes and variations—proposed during the public scoping process selected for detailed study in this Environmental Impact Statement (EIS). A discussion of all the alternatives suggested and/or developed through the public scoping process and considered by DOE and DOC-EERA for purposes of environmental review is provided in Appendix C.⁶⁰

4.1.1 Federal Action Alternatives Reviewed Under this EIS

As described in its Notice of Intent (NOI), DOE uses the scoping process “both to help define the environmental issues to be analyzed and to identify the range of reasonable alternatives” (79 Federal Register 36497; see also 40 Code of Federal Regulations [CFR] 1501). The scope of this EIS includes the range of alternatives, including no action (Chapter 3), reasonable alternatives, including DOE’s preferred alternative, and impacts to be considered by DOE and cooperating agencies in the federal environmental review of the proposed Project.

DOE’s proposed federal action is the granting of the Presidential permit for the international border crossing. DOE’s Presidential permit decision is solely for the international border crossing, while the proposed construction, operation, maintenance, and connection of the portion of the transmission line within the United States is a “connected action” to DOE’s proposed action.

DOE’s preferred alternative is to grant a Presidential permit to Minnesota Power’s proposed international border crossing at latitude 49° 00' 00.00" N and longitude 95° 54' 50.49" W, roughly 2.9 miles east of Highway 89 in Roseau County, Minnesota.

During the scoping process, commenters proposed five alternative international border crossings. DOE evaluated the five alternative international border

crossings and determined that four of them, should be considered for detailed analysis in this EIS. These alternatives include the Border Crossing Pine Creek Variation, Border Crossing Hwy 310 Variation, Border Crossing 230 kV Variation, and the Border Crossing 500 kV Variation. **The border crossing alternatives are included in the scope of the EIS for purposes of the analysis supporting MN PUC’s Route Permit decision, and are not currently being considered by DOE as action alternatives in its response to the international border crossing proposed by the Applicant in its Amended Presidential permit application to DOE (October 2014).**

The fifth international border crossing alternative commenters proposed during scoping was the International Boundary Alternative Route Segment. DOE evaluated this international border crossing alternative and determined that it would not be carried forward for more detailed analysis in the EIS. DOE eliminated this alternative because it requires the proposed transmission line to cross the Pine Creek Peatland, which is a Minnesota Department of Natural Resources (MnDNR) Scientific and Natural Area (SNA) protected under state regulation with regard to transmission line crossings.⁶¹

In addition to the proposed federal action and border crossing alternatives, the proposed construction, operation, maintenance, and connection of the portion of the transmission line within the United States is analyzed in the EIS because it is a “connected action”; an action closely related to the DOE’s international border crossing decision. See 40 CFR 1508.25(a)(1). The Applicant’s proposed route, the Applicant’s alternative routes, the 22 alternative route segments, and nine alignment modifications that were proposed by agencies and the public during scoping were analyzed by DOE in coordination with the DOC-EERA, and were jointly determined to be within the scope of this EIS, and will therefore be studied in detail as described below. More importantly, the analysis of these alternatives related to the construction, operation, maintenance, and connection of the proposed transmission line in this joint federal-state EIS is necessary because the EIS also supports the proposed actions of DOE’s federal cooperating agencies (Section 1.4.2) and the

⁶⁰ The full text of the Scoping Summary Report is available at: <http://www.greatnortherneis.org> (<http://www.greatnortherneis.org/Files/Scoping%20Summary%20Report%20NOV2014%20v2.pdf>) and on e-Dockets (eDockets Numbers: 201411-104621-01 to 10, 104622-01 to 09, 104623-01 to 10, 104624-01 to 08, 104625-01 to 07, and 104626-01 to 03) at: <http://mn.gov/commerce/energyfacilities/Docket.html?Id=33847#edocketFiles>.

⁶¹ State regulations prohibit crossing the Pine Creek Peatland Scientific and Natural Area (SNA) unless no feasible and prudent alternative exists. Minnesota Rules, part 7850.4300, subpart 2. There are existing potential feasible and prudent alternatives for this crossing; therefore, DOE rejected this alternative.

Minnesota Public Utility Commission's (MN PUC) Route Permit decision.⁶²

The DOE's Scoping Summary Report (Appendix C) provides details on the alternative route segments and alignment modifications proposed during scoping.⁶³ Only one of the five alternative border crossing alternatives suggested during scoping, the International Boundary Alternative Route Segment, was determined by DOE to not be a reasonable alternative for purposes of this EIS. This border crossing alternative was eliminated because it would have crossed a State of Minnesota SNA – an area through which transmission infrastructure is prohibited by Minnesota Rules, part 7850.4300. During the scoping process, 11 additional alternative route segments were proposed in addition to the 22 alternative route segments previously discussed. But DOE, in cooperation with the DOC-EERA and the federal cooperating agencies, eliminated them from further consideration based on the rationale provided in the DOC-EERA comments to the MN PUC (including, but not limited to, considerations related to technical, legal, and economic feasibility of an alternative route segment or whether an alternative route would mitigate a potential impact from the proposed Project).⁶⁴

Non-transmission alternatives and one route alternative were proposed during the public comment period on the Draft EIS and were considered by DOE but eliminated from detailed analysis because they are outside the scope of the purpose of and need for DOE's federal action, which is to respond to the Applicant's request for a Presidential Permit. Non-transmission alternatives that are out of scope for this EIS are addressed through the MN PUC's certificate of need process.

62 Section 1506.2 of National Environmental Policy Act (NEPA) strongly encourages relevant federal, state, and local agencies to cooperate fully with each other. In such cases the Council on Environmental Quality's (CEQ's) Memorandum to Agencies, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (46 FR 18026; March 23, 1991), Question 23A states: "The EIS must contain a complete discussion of scope and purpose of the proposal, alternatives and impacts so that they [EIS] discussion is adequate to meet the needs of local, state, and federal decision makers." DOE's NEPA implementing regulations at 10 CFR part 1021.341(b) also direct DOE programs to, in consultation with other agencies, incorporate any relevant information and requirements in coordinated environmental reviews to the extent possible.

63 Available in electronic format at: <http://www.greatnortherneis.org/Files/Scoping%20Summary%20Report%20NOV2014%20v2.pdf>.

64 Available at: [http://mn.gov/commerce/energyfacilities/documents/33847/EERA%20Packet%20-%20cltr-C-R-Route%20Alternatives%20\(12-5-14\).pdf](http://mn.gov/commerce/energyfacilities/documents/33847/EERA%20Packet%20-%20cltr-C-R-Route%20Alternatives%20(12-5-14).pdf).

4.1.2 State Alternatives Reviewed Under this EIS

The MN PUC route permit regulations allow anyone to suggest alternative routes during the scoping process for evaluation in the EIS. The DOC-EERA then recommends which of the alternative routes, if any, to study in detail in the EIS. The alternatives selected for detailed study and the routes proposed by the Applicant must be evaluated in the EIS. There were 33 alternative route segments proposed by the public during scoping (including five new border crossings) and nine alignment modifications. Following DOC-EERA evaluation⁶⁵ and MN PUC's consideration, the DOC issued its Scoping Decision on January 8, 2015.⁶⁶ The Scoping Decision specifies that the EIS will evaluate the Applicant's proposed border crossing, route(s) and associated facilities, four new border crossings, 22 new alternative route segments, and nine new alignment modifications (defined below).

4.2 Definitions of Key Terms

The key terms used in this section as well as in the following chapters of the EIS are defined below.

Sections — The proposed Project is divided into three geographic sections: West Section, Central Section, and East Section. Within each section, multiple variation areas were developed to address local issues (Map 4-1, Table 4-1). The EIS evaluates the issues within each section, progressing from west to east across the project area.

Variation Areas — The variation areas are smaller geographic areas that allow evaluation and comparison of local issues, such as wildlife management areas or location of transmission lines, across alternatives (Table 4-1). Each variation area includes the Applicant's proposed routes and local route alternatives or "variations." The EIS evaluates the local issues within each variation area, progressing from west to east across each section.

Variations — The variations are specific combinations of segments within a variation area designed to avoid specific local issues. These variations were developed from alternative route segments identified during the scoping process, as described in Chapter 1 (Table 4-2). The EIS evaluates the potential environmental impacts and presents the results for the variation(s) and the proposed route(s) within each variation area.

65 Available at [http://mn.gov/commerce/energyfacilities/documents/33847/EERA%20Packet%20-%20cltr-C-R-Route%20Alternatives%20\(12-5-14\).pdf](http://mn.gov/commerce/energyfacilities/documents/33847/EERA%20Packet%20-%20cltr-C-R-Route%20Alternatives%20(12-5-14).pdf).

66 Available at [http://mn.gov/commerce/energyfacilities/documents/33847/Scoping%20Decision-SIGNED%20\(1-8-15\).pdf](http://mn.gov/commerce/energyfacilities/documents/33847/Scoping%20Decision-SIGNED%20(1-8-15).pdf).

Table 4-1 Sections and Corresponding Variation Areas

West Section	Central Section	East Section
Border Crossing Variation Area	Pine Island Variation Area	Effie Variation Area
Roseau Lake WMA Variation Area	Beltrami South Central Variation Area	East Bear Lake Variation Area
Cedar Bend WMA Variation Area	Beltrami South Variation Area	Balsam Variation Area
Beltrami North Variation Area	North Black River Variation Area	Dead Man's Pond Variation Area
Beltrami North Central Variation Area	C2 Segment Option Variation Area	Blackberry Variation Area
	J2 Segment Option Variation Area	
	Northome Variation Area	
	Cutfoot Variation Area	

Hops — The connector segments, or hops, connect the end of one variation to the beginning of another variation. These hops generally connect variations from west to east from one variation area to a different variation area. The exception is one hop that connects the end of a variation from east to west in order to allow additional flexibility for a complete route alternative. The EIS uses the hops to develop complete route alternatives.

Alignment Modifications — Alignment modifications are minor adjustments of the transmission line alignment (centerline and associated right-of-way (ROW)) within the proposed routes. During the scoping process, commenters developed and proposed these alignment modifications. **During the Draft EIS comment period, no commenters provided additional alignment modifications.** The purpose for each alignment modification is to provide a potential alternative for analysis that avoids a specific issue raised by commenters (e.g., sensitive lands, residences, airstrips, etc.). The EIS evaluates issues identified during the scoping process and presents the results for the alignment modification and the comparable segment of the Applicant’s proposed route alternative.

4.3 Presentation of Alternatives in the EIS

The West Section, Central Section, and East Section route variations and alignment modifications are discussed in Sections 4.3, 4.4, and 4.5, respectively (Map 4-1). These sections provide tables that include the naming convention used in this EIS as well as the corresponding name used in the DOE Scoping Summary Report and DOC Scoping Decision. Chapter 5 and Chapter 6 provide detailed results of the potential environmental impacts analysis.

4.3.1 West Section

There are five variation areas within the West Section: Border Crossing, Roseau Lake WMA, Cedar Bend WMA, Beltrami North, and Beltrami North Central

(Table 4-2, Map 4-2). In addition, there are five connector segments, or hops, that connect variations between the Cedar Bend WMA, Beltrami North, and Beltrami North Central variation areas. The variation areas are described in the following sections.

4.3.1.1 Border Crossing Variation Area

The Border Crossing Variation Area is located in the northwestern portion of the West Section (Map 4-2). The primary issues identified by commenters in this variation area included the location of the border crossing, crossing the large peatland complexes, and the need for the transmission line to avoid the SNAs. The Border Crossing Variation Area is bounded by the U.S.–Canada International Border to the north, overlapped by the Roseau Lake WMA Variation Area to the south, and overlapped by the Cedar Bend WMA Variation Area to the southeast. Table 4-2 and Map 4-3 provide details for the Border Crossing Variation Area.

International Border Crossings

There is one proposed international border crossing and four variations within the Border Crossing Variation Area as identified in Table 4-3. These alternatives include the Border Crossing Pine Creek Variation, Border Crossing Hwy 310 Variation, Border Crossing 230 kV Variation, and the Border Crossing 500 kV Variation (Map 4-3). DOE is considering issuance of a Presidential permit for only the international border crossing as proposed by the Applicant, at latitude 49° 00' 00.00" N and longitude 95° 54' 50.49" W, however all alternative international border crossings are analyzed discussed in this EIS.

Variations

There are five route alternatives within the Border Crossing Variation Area: the Proposed Border Crossing-Blue/Orange Route, Border Crossing Pine Creek Variation, Border Crossing Hwy 310 Variation, Border Crossing 230 kV Variation, and the Border Crossing 500 kV Variation (Table 4-2, Map 4-3). The four variations begin at different international border

Table 4-2 Proposed Routes and Variations in the West Section

Variation Area	Name in the EIS	Name(s) in the Scoping Decision Document	Length (mi)
Border Crossing	Proposed Border Crossing—Blue/Orange Route	Blue/Orange Shared	25.0
	Border Crossing Pine Creek Variation	Pine Creek Border Crossing Alternative Route Segment	25.7
	Border Crossing Hwy 310 Variation	Hwy 310 Border Crossing Alternative Route Segment	18.6
	Border Crossing 500 kV Variation	500 kV Border Crossing Alternative Route Segment	10.1
	Border Crossing 230 kV Variation	230 kV Border Crossing Alternative Route Segment	8.2
Roseau Lake WMA	Proposed Blue/Orange Route	Blue/Orange Shared Route	30.7
	Roseau Lake WMA Variation 1	Roseau Lake WMA Alternative Route Segment 1	44.1
	Roseau Lake WMA Variation 2	Roseau Lake WMA Alternative Route Segment 2	37.5
Cedar Bend WMA	Proposed Blue/Orange Route	Blue/Orange Route	24.7
	Cedar Bend WMA Variation	Cedar Bend WMA Alternative Route Segment	19.6
Beltrami North	Proposed Blue/Orange Route	Blue/Orange Route	16.5
	Beltrami North Variation 1	Beltrami WMA Alternative Route Segment 1 North	15.8
	Beltrami North Variation 2	Beltrami WMA Alternative Route Segment 2	19.7
Beltrami North Central	Proposed Blue/Orange Route	Blue/Orange Route	11.6
	Beltrami North Central Variation 1	Beltrami WMA Alternative Route Segment 4 & 5	13.7
	Beltrami North Central Variation 2	Beltrami WMA Alternative Route Segment 3	12.6
	Beltrami North Central Variation 3	Beltrami WMA Alternative Route Segment 1 South & 5	12.2
	Beltrami North Central Variation 4	Beltrami WMA Alternative Route Segment 1 South	13.5
	Beltrami North Central Variation 5	Beltrami WMA Alternative Route Segment 4 & 1 South	15.0

Table 4-3 Proposed International Border Crossings and Variations in the West Section

Variation Area	Name in the EIS	Location of Proposed International Border Crossing	
		Latitude (degrees, minutes, seconds)	Longitude (degrees, minutes, seconds)
Border Crossing	Proposed Border Crossing-Blue/Orange Route	49° 00' 00.00" N	95° 54' 50.49" W
	Border Crossing Pine Creek Variation	49° 00' 00.00" N	95° 55' 35.79" W
	Border Crossing Hwy 310 Variation	49° 00' 00.00" N	95° 46' 8.82" W
	Border Crossing 500 kV Variation	49° 00' 00.00" N	95° 32' 23.96" W
	Border Crossing 230 kV Variation	49° 00' 00.00" N	95° 30' 26.18" W

crossing locations than the Proposed Border Crossing-Blue/Orange Route. Each variation in this variation area shares a portion of its alignment with the Proposed Border Crossing-Blue/Orange Route in this variation area. The Proposed Border Crossing-Blue/Orange Route and the variations have a common endpoint near Minnesota Highway 11 in the southeastern portion of the Border Crossing Variation Area.

As shown in Table 4-2, the Proposed Border Crossing-Blue/Orange Route and the four variations in the Border Crossing Variation Area have different lengths because they start at different locations along the Canadian border but end at a common location in this variation area. The Border Crossing Pine Creek Variation begins furthest west on the border and is

longest, while the Border Crossing 230 kV Variation begins furthest east on the border, and is the shortest.

4.3.1.2 Roseau Lake WMA Variation Area

The Roseau Lake WMA Variation Area is located in the northwestern portion of the West Section (Map 4-2). The primary issue identified in this variation area is a need for the proposed transmission line to avoid the Roseau Lake Wildlife Management Area (WMA). The Roseau Lake WMA Variation Area is overlapped by the Border Crossing Variation Area to the north, the Cedar Bend WMA Variation Area to the east, and the Beltrami North Variation Area to the southeast (Map 4-2). Table 4-2 and Map 4-4 provide details for the Roseau Lake WMA Variation Area.

Variations

There are three route alternatives within the Roseau Lake WMA Variation Area: the Proposed Blue/Orange Route, Roseau Lake WMA Variation 1, and Roseau Lake WMA Variation 2 (Table 4-2, Map 4-4). The Proposed Blue/Orange Route and the two variations have a common start point where the Proposed Blue/Orange Route turns east at County Road 118 in the northwestern portion of the Roseau Lake WMA Variation Area. Variation 2 shares a portion of its alignment with the Proposed Blue/Orange Route in this variation area. The Proposed Blue/Orange Route and the two variations have a common endpoint located southeast of where the Proposed Blue/Orange Route crosses CSAH 2 in the southeastern portion of the Roseau Lake WMA Variation Area. Roseau Lake WMA variations 1 and 2 are longer than the Proposed Blue/Orange Route by 14 and 7 miles, respectively (Table 4-2).

4.3.1.3 Cedar Bend WMA Variation Area

The Cedar Bend WMA Variation Area is located in the central portion of the West Section (Map 4-2). The primary issue identified in this variation area is a need for the proposed transmission line to **consider avoiding** U.S. Fish and Wildlife Service (USFWS) **Interest Land** and the Cedar Bend WMA. The Cedar Bend WMA Variation Area is overlapped by the Border Crossing Variation Area to the northwest, the Roseau Lake WMA Variation Area to the west, the Beltrami North Variation Area to the south, and the Beltrami North Central Variation Area to the southeast (Map 4-2). Table 4-2 and Map 4-5 provide details for the Cedar Bend WMA Variation Area.

Variations

There are two route alternatives within the Cedar Bend WMA Variation Area: the Proposed Blue/Orange Route and Cedar Bend WMA Variation (Table 4-2, Map 4-5). The Proposed Blue/Orange Route and Cedar Bend WMA Variation have a common start point just north of the intersection of the Proposed Blue/Orange Route with Minnesota 11, in the northwestern portion of the Cedar Bend WMA Variation Area. The Cedar Bend WMA Variation does not share any portion of its alignment with the Proposed Blue/Orange Route in this variation area. The Proposed Blue/Orange Route and Cedar Bend WMA Variation have a common endpoint located in the area where the existing 500 kilovolt (kV) and 230 kV transmission lines are closest to each other in the southeastern portion of the Cedar Bend WMA Variation Area. The Cedar Bend WMA Variation is about 5 miles longer than the Proposed Blue/Orange Route (Table 4-2).

Hops

There are three connecting segments, or hops, located in the southeastern portion of this variation area: Hop 1, Hop 2, and Hop 3 (Map 4-5). These hops provide a connection for the Proposed Blue/Orange Route and Variation in the Cedar Bend WMA Variation Area to the variations in the Beltrami North and Beltrami North Central variation areas.

The Proposed Blue/Orange Route could use the Hop 3 to connect to Beltrami North variation 3 or 4 in the Beltrami North Central Variation Area (Map 4-5). Hop 3 begins where the Proposed Blue/Orange Route turns south to follow the existing 500 kV transmission line, crosses the existing 500 kV transmission line, and connects to the north end of either Beltrami North variation 3 or 4 in the Beltrami North Central Variation Area, which parallel the west side of the existing 230 kV transmission line.

The Cedar Bend WMA Variation could use Hop 1 to connect to the Proposed Blue/Orange Route in the Cedar Bend WMA Variation Area (Map 4-5). Hop 1 begins where the Cedar Bend WMA Variation is just north of where the Proposed Blue/Orange Route turns south to follow the existing 500 kV transmission line. Hop 1 crosses the existing 500 kV transmission line, and connects to the Proposed Blue/Orange Route, which parallels the west side of the existing 500 kV transmission line.

The Cedar Bend WMA Variation could alternatively use the Hop 2 to connect to Beltrami North Central variation 3 or 4 in the Beltrami North Central Variation Area (Map 4-5). Hop 2 begins where the Cedar Bend WMA Variation is just north of where the Proposed Blue/Orange Route turns south to follow the existing 500 kV transmission line, continues south along the west side of the existing 230 kV transmission line, and connects to the north end of either Beltrami North Central Variation 3 or 4 in the Beltrami North Central Variation Area, which continue to parallel the west side of the existing 230 kV transmission line.

4.3.1.4 Beltrami North Variation Area

The Beltrami North Variation Area is located in the central portion of the West Section (Map 4-2). The primary issue identified in this variation area is a need by USFWS to consider avoidance of USFWS

Interest Lands.⁶⁷ The Beltrami North Variation Area is overlapped by the Roseau Lake WMA Variation Area to the west, the Cedar Bend WMA Variation Area to the north, and the Beltrami North Central Variation Area to the east (Map 4-2). Table 4-2 and Map 4-6 provide details for the Beltrami North Variation Area.

Variations

There are three route alternatives within the Beltrami North Variation Area: the Proposed Blue/Orange Route, Beltrami North Variation 1, and Beltrami North Variation 2 (Table 4-2, Map 4-6). The Proposed Blue/Orange Route and these two variations have a common start point just south of where the Proposed Blue/Orange Route intersects CSAH 2 in the northwestern portion of the Beltrami North Variation Area. The Beltrami North Variation 1 and Beltrami North Variation 2 variation both share a portion of its alignment with the Proposed Blue/Orange Route in this variation area. The Proposed Blue/Orange Route and the two variations have a common endpoint in the area where the existing 500 kV and 230 kV transmission lines are closest to each other in the eastern portion of the Beltrami North Variation Area. Beltrami North Variation 1 is less than a mile shorter than the Proposed Blue/Orange Route, while Beltrami North Variation 2 is over 3 miles longer than the Proposed Blue/Orange Route (Table 4-1).

Hops

There are two connecting segments, or hops, located in the eastern portion of this variation area: Hop 3 and Hop 4 (Map 4-6). These hops provide a connection for the Proposed Blue/Orange Route and Beltrami North Variation 1 in the Beltrami North Variation Area to the Beltrami North Central Variations 3 and 4 in the Beltrami North Central Variation Area.

The Proposed Blue/Orange Route could use the Hop 3 to connect to Beltrami North Central Variations 3 or 4 in the Beltrami North Central Variation Area (Map 4-5). Hop 3 begins where the Proposed Blue/Orange Route turns south to follow the existing 500 kV transmission line, crosses the existing 500 kV transmission line, and connects to the north end of either Beltrami North Central Variations 3 or 4 in the

Beltrami North Central Variation Area, which parallel the west side of the existing 230 kV transmission line.

The Beltrami North Variation 1 could use the Hop 4 to connect to Beltrami North Central Variations 3 or 4 in the Beltrami North Central Variation Area (Map 4-5). Hop 4 begins at the east end of the Beltrami North Variation and connects to the north end of either Beltrami North Central variations 3 or 4 in the Beltrami North Central Variation Area, which parallel the west side of the existing 230 kV transmission line. Hop 4 would not require crossing over the existing transmission lines.

4.3.1.5 Beltrami North Central Variation Area

The Beltrami North Central Variation Area is located in the southeastern portion of the West Section (Map 4-2). The primary issue identified in this variation area is a need by USFWS to consider avoidance of USFWS **Interest Lands**. The Beltrami North Central Variation Area is overlapped by the Cedar Bend WMA and Beltrami North variation areas to the northwest (Map 4-2). Table 4-2 and Map 4-7 provide details for the Beltrami North Central Variation Area.

Variations

There are six route alternatives within this variation area: the Proposed Blue/Orange Route, Beltrami North Central Variation 1, Beltrami North Central Variation 2, Beltrami North Central Variation 3, Beltrami North Central Variation 4, and Beltrami North Central Variation 5 (Table 4-2, Map 4-7). The Proposed Blue/Orange Route and these variations have a common start point where the existing 500 kV transmission line turns southeast east of Township Road 465 in the northwestern portion of the Beltrami North Central Variation Area. All variations, except Beltrami North Central Variation 3, share a portion of its alignment with the Proposed Blue/Orange Route in this variation area. The Proposed Blue/Orange Route and three of the variations have a common endpoint in the area where the Proposed Blue/Orange Route splits in the southeastern portion of the Beltrami North Central Variation Area; Beltrami North Central variations 4 and 5 have a common endpoint where they intersect the Proposed Blue Route near 53rd Avenue Southwest in the southeastern portion of the Beltrami North Central Variation Area. All variations are longer than the Proposed Blue/Orange Route (Table 4-2).

⁶⁷ USFWS letter to DOC-EERA that finalizes their route alternative recommendations for the proposed Project. FWS Tails # 03E19000-2013-CPA-0045. November 26, 2014. The letter states that this review is requested by the USFWS because all "ROW requests on Service lands can only be considered after all other alternatives are full examined, as well as the potential impacts to refuge lands. In order for this analysis to be complete, all alternatives must be analyzed and available to the Service for review."

Hop

There is one connecting segment, or hop, located in the southwestern portion of the Beltrami North Central Variation Area: Hop 5 (Map 4-7). Hop 5 provides a connection from the south end of Beltrami North Central variations 4 and 5 west to the Proposed Orange Route. This hop requires crossing over the existing 500 kV transmission line to rejoin the Proposed Orange Route.

4.3.2 Central Section

There are eight variation areas within the Central Section: Pine Island, Beltrami South Central, Beltrami South, North Black River, C2, J2, Northome, and Cutfoot (Table 4-4, Map 4-8). In addition, there are four alignment modifications (minor adjustments of the transmission line alignment centerline and associated ROW) within the proposed routes: Silver Creek WMA, Airstrip, Mizpah, and Gravel Pit (Table 4-4, Map 4-8). The variation areas are described in the following sections.

4.3.2.1 Pine Island Variation Area

The Pine Island Variation Area encompasses the entire Central Section (Map 4-8). The primary issues identified by commenters in this variation area include the presence of large peatland complexes, sharing of transmission line corridors, and a need for the proposed transmission line to avoid SNAs. The Pine Island Variation Area includes the Beltrami South Central, Beltrami South, North Black River, C2, J2, Northome, and Cutfoot variation areas (Map 4-8). Table 4-4 and Map 4-9 provide details for the Pine Island Variation Area.

Variations

There are two route alternatives within the Pine Island Variation Area: the Proposed Blue Route and the Proposed Orange Route (Table 4-4, Map 4-9). The proposed routes have a common start point where the Proposed Blue and Proposed Orange routes split east of Aichele Forest Road in the northwestern portion of the Pine Island Variation Area. The proposed routes do not share any portion of their alignments in this variation area.

Table 4-4 Proposed Routes, Variations, and Alignment Modifications in the Central Section

Variation Area	Variation Names in the EIS	Name(s) in the Scoping Decision Document	Length (mi)
Pine Island	Proposed Blue Route	Blue Route	109.8
	Proposed Orange Route	Orange Route	105.4
	Silver Creek WMA Alignment Modification	Silver Creek WMA Alignment Modification	1.0
	Proposed Blue Route	Blue Route	1.0
Beltrami South Central	Proposed Orange Route	Orange Route	1.2
	Beltrami South Central Variation	Beltrami WMA Alternative Route Segment 7	1.7
Beltrami South	Proposed Orange Route	Orange Route	5.6
	Beltrami South Variation	Beltrami WMA Alternative Route Segment 8	7.5
North Black River	Proposed Blue Route	Blue Route	8.4
	North Black River Variation	North Black River Alternative Route Segment	9.2
C2 Segment Option	Proposed Blue Route	Blue Route	32.8
	C2 Segment Option Variation	C2 Proposed Alternative	46.0
	Airstrip Alignment Modification	Airstrip Alignment Modification	1.5
	C2 Segment Option Variation	C2 Proposed Alternative	1.5
J2 Segment Option	Proposed Orange Route	Orange Route	42.2
	J2 Segment Option Variation	J2 Proposed Alternative	45.2
	Mizpah Alignment Modification	Mizpah Alignment Modification	2.8
	Proposed Orange Route	Orange Route	2.8
	Gravel Pit Alignment Modification	Gravel Pit Alignment Modification	1.2
	Proposed Orange Route	Orange Route	1.2
Northome	J2 Segment Option Variation	J2 Proposed Alternative	3.7
	Northome Variation	Northome Alternative Route Segment	4.0
Cutfoot	Proposed Orange Route	Orange Route	4.2
	Cutfoot Variation	Cutfoot Alternative Route Segment	4.8

The proposed routes have a common endpoint in the southeast corner of the Pine Island Variation Area, just west of Bass Lake Campground, in the southeastern portion of the Pine Island Variation Area. The Proposed Blue Route is longer than the Proposed Orange Route.

Alignment Modification

The Silver Creek WMA Alignment Modification is located along the Proposed Blue Route in the north-central portion of the Pine Island Variation Area (Map 4-9). This alignment modification is the same length as the comparable segment of the Proposed Blue Route (Table 4-4). The alignment modification shifts the ROW south from private, state forest, and federal lands onto state lands in order to avoid the USFWS **Interest Land** and the Silver Creek WMA. Section 6.5.2.1 provides additional information on the Silver Creek Alignment Modification.

4.3.2.2 Beltrami South Central Variation Area

The Beltrami South Central Variation Area is located in the northwestern portion of the Central Section (Map 4-8). The primary issue identified in this variation area is a need by USFWS to consider avoidance of USFWS **Interest Land**. The Beltrami South Central Variation Area is within the Pine Island Variation Area and bordered by the Beltrami South Variation Area to the southeast (Map 4-8). Table 4-4 and Map 4-10 provide details for the Beltrami South Central Variation Area.

Variations

There are two route alternatives within the Beltrami South Central Variation Area: the Proposed Orange Route and the Beltrami South Central Variation (Table 4-4, Map 4-10). The Proposed Orange Route and Beltrami South Central Variation have a common start point where the 500 kV corridor crosses Aichele Forest Road in the northwestern portion of the Beltrami South Central Variation Area. The Proposed Orange Route and Beltrami South Central Variation do not share their alignments in this variation area. The Proposed Orange Route and Beltrami South Central Variation have a common endpoint located approximately 1.25 miles to the southeast of their common start point, in the southeastern portion of the Beltrami South Central Variation Area. The Beltrami South Central Variation is less than one-half mile longer than the Proposed Orange Route (Table 4-4).

4.3.2.3 Beltrami South Variation Area

The Beltrami South Variation Area is located in the northwestern portion of the Central Section (Map 4-8). The primary issue identified in this

variation area is a need by USFWS to consider avoidance of USFWS **Interest Land**. The Beltrami South Variation Area is within the Pine Island Variation Area and bordered by the Beltrami South Central Variation Area to the northwest (Map 4-8). Table 4-4 and Map 4-10 provide details for the Beltrami South Variation Area.

Variations

There are two route alternatives within the Beltrami South Variation Area: the Proposed Orange Route and the Beltrami South Variation (Table 4-4, Map 4-10). The Proposed Orange Route and Beltrami South Variation have a common start point located approximately 2.5 miles southeast of where the 500 kV corridor crosses Aichele Forest Road in the northwestern portion of the Beltrami South Variation Area. The Proposed Orange Route and Beltrami South Variation do not share their alignments in this variation area. The Proposed Orange Route and Beltrami South Variation have a common endpoint located approximately 1.25 miles to the southeast of Stony Corners Trail in the southeastern portion of the Beltrami South Variation Area. The Beltrami South Variation is about 2 miles longer than the Proposed Orange Route (Table 4-4).

4.3.2.4 North Black River Variation Area

The North Black River Variation Area is located in the north-central portion of the Central Section (Map 4-8). The primary issues identified by the commenters in this variation area were the avoidance of **the non-ferrous mineral areas** and whether to share the existing 230 kV transmission line corridor or to develop an alternative that requires a new corridor. The North Black River Variation Area is within the Pine Island Variation Area and bordered by the C2 Variation Area to the south (Map 4-8). Table 4-4 and Map 4-11 provide details for the North Black River Variation Area.

Variations

There are two route alternatives within the North Black River Variation Area: the Proposed Blue Route and the North Black River Variation (Table 4-4, Map 4-11). The Proposed Blue Route and North Black River Variation have a common start point located just west of Town Road 118 in the northern portion of the North Black River Variation Area. The Proposed Blue Route and North Black River Variation do not share their alignments in this variation area. The Proposed Blue Route and North Black River Variation have a common endpoint located north of the intersection of Sandsmark Trail and CSAH 32 in the southern portion of the North Black River Variation Area. The North Black River Variation is about one mile longer than the Proposed Blue Route (Table 4-4).

4.3.2.5 C2 Segment Option Variation Area

The C2 Segment Option Variation Area is located in the northeastern portion of the Central Section (Map 4-8). The primary issue identified by commenters in this variation area are whether to share the existing 230 kV transmission line corridor or to develop variations that require new corridors. The C2 Segment Option Variation Area is within the Pine Island Variation Area and bordered by the North Black River Variation Area to the northwest (Map 4-8). Table 4-4 and Map 4-12 provide details for the C2 Segment Option Variation Area.

Variations

There are two route alternatives within the C2 Segment Option Variation Area: the Proposed Blue Route and the C2 Segment Option Variation (Table 4-4, Map 4-12). The Proposed Blue Route and C2 Segment Option Variation have a common start point located north of the intersection of Sandsmark Trail and CSAH 32 in the northwestern portion of the C2 Segment Option Variation Area. The Proposed Blue Route and C2 Segment Option Variation do not share their alignments in this variation area. The Proposed Blue Route and C2 Segment Option Variation have a common endpoint located approximately two miles south of the intersection of Town Road 67 and CSAH 31 in the southeastern portion of the C2 Segment Option Variation Area. The C2 Segment Option Variation is about 13 miles longer than the Proposed Blue Route (Table 4-4).

Alignment Modification

The Airstrip Alignment Modification is located along the C2 Segment Option Variation in the eastern portion of the C2 Segment Option Variation Area (Map 4-12). The alignment modification is the same length as the comparable segment of the C2 Segment Option Variation (Table 4-4). The modification shifts the alignment west to allow additional space to use the runway at a private airstrip. The land ownership remains a mix of private, corporate, and state lands. Section 6.5.2.2 provides additional information on the Airstrip Alignment Modification.

4.3.2.6 J2 Segment Option Variation Area

The J2 Segment Option Variation Area is located in the southern portion of the Central Section (Map 4-8). The primary issue identified by commenters in this variation area is the presence of large peatland complexes. The J2 Segment Option Variation Area is within the Pine Island Variation Area (Map 4-8). Table 4-4 and Map 4-13 provide details for the J2 Segment Option Variation Area.

Variations

There are two route alternatives within this variation area: the Proposed Orange Route and the J2 Segment Option Variation (Table 4-4, Map 4-13). The Proposed Orange Route and J2 Segment Option Variation have a common start point located north of Flowing Well Trail and east of Forest Road 54 in the northwestern portion of the J2 Segment Option Variation Area. The Proposed Orange Route and J2 Segment Option Variation do not share their alignments in this variation area. The Proposed Orange Route and J2 Segment Option Variation have a common endpoint located southeast of Effie near County Road 288 in the southeastern portion of the J2 Segment Option Variation Area. The J2 Segment Option Variation is about 3 miles longer than the Proposed Orange Route (Table 4-4).

Alignment Modifications

The Mizpah Alignment Modification is located along the Proposed Orange Route in the northwestern portion of the J2 Segment Option Variation Area (Map 4-13). This alignment modification is the same length as the comparable segment of Proposed Orange Route (Table 4-4). The alignment modification shifts the ROW north from the private and state lands onto only state land. Section 6.5.2.3 provides additional information on the Mizpah Alignment Modification.

The Gravel Pit Alignment Modification is located along the Proposed Orange Route in the southeastern portion of the J2 Segment Option Variation Area (Map 4-13). The alignment modification is the same length as the comparable segment of the Proposed Orange Route (Table 4-4). The modification shifts the alignment east from the Proposed Orange Route to avoid private land with a gravel pit. The land ownership changes from private, corporate, and state lands to a mix of corporate and state lands. Section 6.5.2.4 provides additional information on the Gravel Pit Alignment Modification.

4.3.2.7 Northome Variation Area

The Northome Variation Area is located in the south-central portion of the Central Section (Map 4-8). The primary issue identified in this variation area is a need by USFWS to consider avoidance of USFWS **Interest Land**. The Northome Variation Area is within the Pine Island and J2 variation areas (Map 4-8). Table 4-4 and Map 4-13 provide details for the Northome Variation Area.

Variations

There are two route alternatives within the Northome Variation Area: the J2 Segment Option Variation and the Northome Variation (Table 4-4, Map 4-13). The J2 Segment Option Variation and Northome Variation have a common start point located just north of the intersection of Stone Road and CSAH 24 in the western portion of the Northome Variation Area. The J2 Segment Option Variation and Northome Variation do not share their alignments in this variation area. The J2 Segment Option Variation and Northome Variation have a common endpoint located north of Little Constance Lake in the eastern portion of the Northome Variation Area. The Northome Variation is about one-half mile longer than the comparable segment of the J2 Segment Option Variation (Table 4-4).

4.3.2.8 Cutfoot Variation Area

The Cutfoot Variation Area is located in the southeastern portion of the Central Section (Map 4-8). The primary issue identified by commenters in this variation area is a desire by commenters to avoid private land with old cedar stands. The Cutfoot Variation Area is within the Pine Island and J2 variation areas (Map 4-8). Table 4-4 and Map 4-13 provide details for the Cutfoot Variation Area.

Variations

There are two route alternatives within this variation area: the Proposed Orange Route and the Cutfoot Variation (Table 4-4, Map 4-13). The Proposed Orange Route and Cutfoot Variation have a common start point located west of Minnesota Highway 6 in the northwestern portion of the Cutfoot Variation Area. The Proposed Orange Route and Cutfoot Variation do not share their alignments in this variation area. The Proposed Orange Route and Cutfoot Variation have a common endpoint located south of Cutfoot Sioux Trail in the southeastern portion of the Cutfoot Variation Area. The Cutfoot Variation is about one-half mile longer than the Proposed Orange Route (Table 4-4).

4.3.3 East Section

There are five variation areas within the East Section: Effie, East Bear Lake, Balsam, Dead Man's Pond, and Blackberry (Map 4-14, Table 4-5). In addition, there are five alignment modifications: Bass Lake, Wilson Lake, Grass Lake, Dead Man's Pond, and Trout Lake (Map 4-14, Table 4-5). The variation areas are described in the following sections.

4.3.3.1 Effie Variation Area

The Effie Variation Area is located in the northern portion of the East Section (Map 4-14). The primary issues identified by commenters in this variation area are whether to share the existing 230 kV or 500 kV transmission line corridors or to develop variations that require new corridors. The Effie Variation Area includes the East Bear Lake Variation Area. The Balsam Variation Area overlaps the Effie Variation Area to the south (Map 4-15). Table 4-5 and Map 4-15 provide details for the Effie Variation Area.

Variations

There are three route alternatives within the Effie Variation Area: the Proposed Blue Route, Proposed Orange Route, and the Effie Variation (Table 4-5, Map 4-15). The proposed Blue Route and Effie Variation have a common start point where the existing 500 kV and 230 kV transmission line corridors converge near Lofgrin Truck Trail in the northwestern portion of the Effie Variation Area. The Proposed Orange Route begins in the west-central portion of the Effie Variation Area. The Proposed Blue and Orange routes share one portion of their alignment in the central portion of this variation area. The Proposed Orange Route and Effie Variation share one portion of their alignment in this variation area. The Proposed Blue and Orange routes and the Effie Variation have a common endpoint located southeast of Wolf Lake in the southern portion of the Effie Variation Area. The Effie Variation is 8 miles longer than the Proposed Blue Route and about 5 miles longer than the Proposed Orange Route; the Proposed Orange Route is about 3 miles longer than the Proposed Blue Route (Table 4-5).

Alignment Modifications

The Bass Lake Alignment Modification is located along the Proposed Blue/Orange Route in the central portion of the Effie Variation Area (Map 4-15). The alignment modification is slightly longer than the comparable segment of the Proposed Blue/Orange Route in the Effie Variation Area (Table 4-5). The alignment modification shifts the ROW southwest to avoid the Bass Lake County Park and Campground (Itasca County) and the George Washington State Forest campground on Larson Lake. The alignment modification modifies the proportion of land ownership to a mix of slightly less corporate land and slightly more state land. Section 6.5.3.1 provides additional information on the Bass Lake Alignment Modification.

Table 4-5 Proposed Routes, Variations, and Alignment Modifications in the East Section

Variation Area	Variation Names in the EIS	Name(s) in the Scoping Decision Document	Length (mi)
Effie	Proposed Blue Route	Blue and Blue/Orange Routes	41.1
	Proposed Orange Route	Blue, Blue/Orange, and Orange Routes	44.6
	Effie Variation	Effie Alternative Route Segment	49.8
	Bass Lake Alignment Modification	Bass Lake Alignment Modification	2.5
	Proposed Blue/Orange Route	Blue/Orange Route	2.4
	Wilson Lake Alignment Modification	Wilson Lake Alignment Modification	2.4
	Proposed Blue Route	Blue Route	2.4
East Bear Lake	Proposed Orange Route	Orange Route	8.9
	East Bear Lake Variation	East Bear Lake Alternative Route Segment	10.5
Balsam	Proposed Blue Route	Blue and Blue/Orange Routes	12.9
	Proposed Orange Route	Orange and Blue/Orange	13.7
	Balsam Variation	Balsam Alternative Route Segment 1	17.8
	Grass Lake Alignment Modification	Grass Lake Alignment Modification	1.3
	Proposed Blue Route	Blue Route	1.3
Dead Man's Pond	Proposed Blue Route	Blue Route	2.2
	Dead Man's Pond Variation	Dead Man's Pond Alternative Route Segment	2.3
	Dead Man's Pond Alignment Modification	Dead Man's Pond Alignment Modification	1.6
	Proposed Blue Route	Blue Route	1.6
Blackberry	Proposed Blue Route	Blue Route	5.4
	Proposed Orange Route	Orange Route	6.1
	Trout Lake Alignment Modification	Trout Lake Alignment Modification	1.0

The Wilson Lake Alignment Modification is located along the Proposed Blue Route in the central portion of the Effie Variation Area (Map 4-15). The alignment modification is the same length as the comparable segment of the Proposed Blue Route (Table 4-5). The modification shifts the alignment east to avoid corporate land; land ownership changes from corporate and state lands to mostly state lands. Section 6.5.3.2 provides additional information on the Wilson Lake Alignment Modification.

4.3.3.2 East Bear Lake Variation Area

The East Bear Lake Variation Area is located in the east-central portion of the East Section (Map 4-14). The primary issue identified by commenters in this variation area is the presence of the Bear-Wolf Peatland. The East Bear Lake Variation Area is within the Effie Variation Area (Map 4-15). Table 4-5 and Map 4-16 provide details for the East Bear Lake Variation Area.

Variations

There are two route alternatives within the East Bear Lake Variation Area: the Proposed Orange Route and the East Bear Lake Variation (Table 4-5, Map 4-16). The Proposed Orange Route and East Bear Lake Variation have a common start point located just

north of Bear Lake Forest Road E in the northwestern portion of the East Bear Lake Variation Area. The Proposed Orange Route and East Bear Lake Variation do not share their alignments in this variation area. The Proposed Orange Route and East Bear Lake Variation have a common endpoint located southeast of Wolf Lake in the southern portion of the East Bear Lake Variation Area. The East Bear Lake Variation is over one mile longer than the Proposed Orange Route (Table 4-5).

4.3.3.3 Balsam Variation Area

The Balsam Variation Area is located in the central portion of the East Section (Map 4-14). The primary issue identified by commenters in this variation area is concern over potential impacts from the proposed transmission line on the town of Balsam. The Balsam Variation Area is overlapped by the Effie Variation Area to the north (Map 4-15). Table 4-5 and Map 4-17 provide details for the Balsam Variation Area.

Variations

There are three route alternatives within the Balsam Variation Area: the Proposed Blue Route, Proposed Orange Route, and the Balsam Variation (Table 4-5, Map 4-17). The proposed routes and Balsam Variation have a common start point along

the existing 230 kV transmission line corridor approximately one mile north of County Road 539 in the northeastern portion of the Balsam Variation Area. The Proposed Blue and Orange routes share one portion of their alignment in this variation area. The Proposed Orange Route and the Balsam Variation share one portion of their alignment in this variation area. The proposed routes and Balsam Variation have a common endpoint located near Diamond Lake Road in the southern portion of the Balsam Variation Area. The Balsam Variation is 5 miles longer than the Proposed Blue Route and about 4 miles longer than the Proposed Orange Route; the Proposed Orange Route is about one mile longer than the Proposed Blue Route (Table 4-5).

Alignment Modification

The Grass Lake Alignment Modification is located along the Proposed Blue Route in the northeastern portion of the Balsam Variation Area (Map 4-17). The alignment modification is the same length as the comparable segment of the Proposed Blue Route (Table 4-5). The alignment modification shifts the ROW east to avoid crossing Grass Lake, a MnDNR Public Waters Inventory (PWI) lake and a wild rice waterbody. The land ownership changes from private, corporate, and state forest lands to just corporate and state forest lands. Section 6.5.3.3 provides additional information on the Grass Lake Alignment Modification.

4.3.3.4 Dead Man's Pond Variation Area

The Dead Man's Pond Variation Area is located in the south-central portion of the East Section (Map 4-14). The primary issue identified by commenters in this variation area is the use of corporate and state fee lands instead of private land. The Dead Man's Pond Variation Area is located within the Balsam Variation Area (Map 4-15). Table 4-5 and Map 4-17 provide details for the Dead Man's Pond Variation Area.

Variations

There are two route alternatives within the Dead Man's Pond Variation Area: the Proposed Blue Route and the Dead Man's Pond Variation (Table 4-5, Map 4-17). The Proposed Blue Route and Dead Man's Pond Variation have a common start point just north of where the Proposed Blue Route crosses CSAH 8 in the northeastern portion of the Dead Man's Pond Variation Area. The Proposed Blue Route and Dead Man's Pond Variation do not share their alignments in this variation area. The Proposed Blue Route and Dead Man's Pond Variation have a common endpoint located approximately 0.5 miles south of CSAH 57 in the southwestern portion of the Dead Man's

Pond Variation is slightly longer than the Proposed Blue Route (Table 4-5).

Alignment Modification

The Dead Man's Pond Alignment Modification is located along the Proposed Blue Route in the south-central portion of the Dead Man's Pond Variation Area (Map 4-17). The alignment modification is the same length as the comparable segment of the Proposed Blue Route (Table 4-5). The modification shifts the alignment west and away from one residence; however, the shift is to private land that requires crossing a MnDNR PWI waterbody. Section 6.5.3.4 provides additional information on the Dead Man's Pond Alignment Modification.

4.3.3.5 Blackberry Variation Area

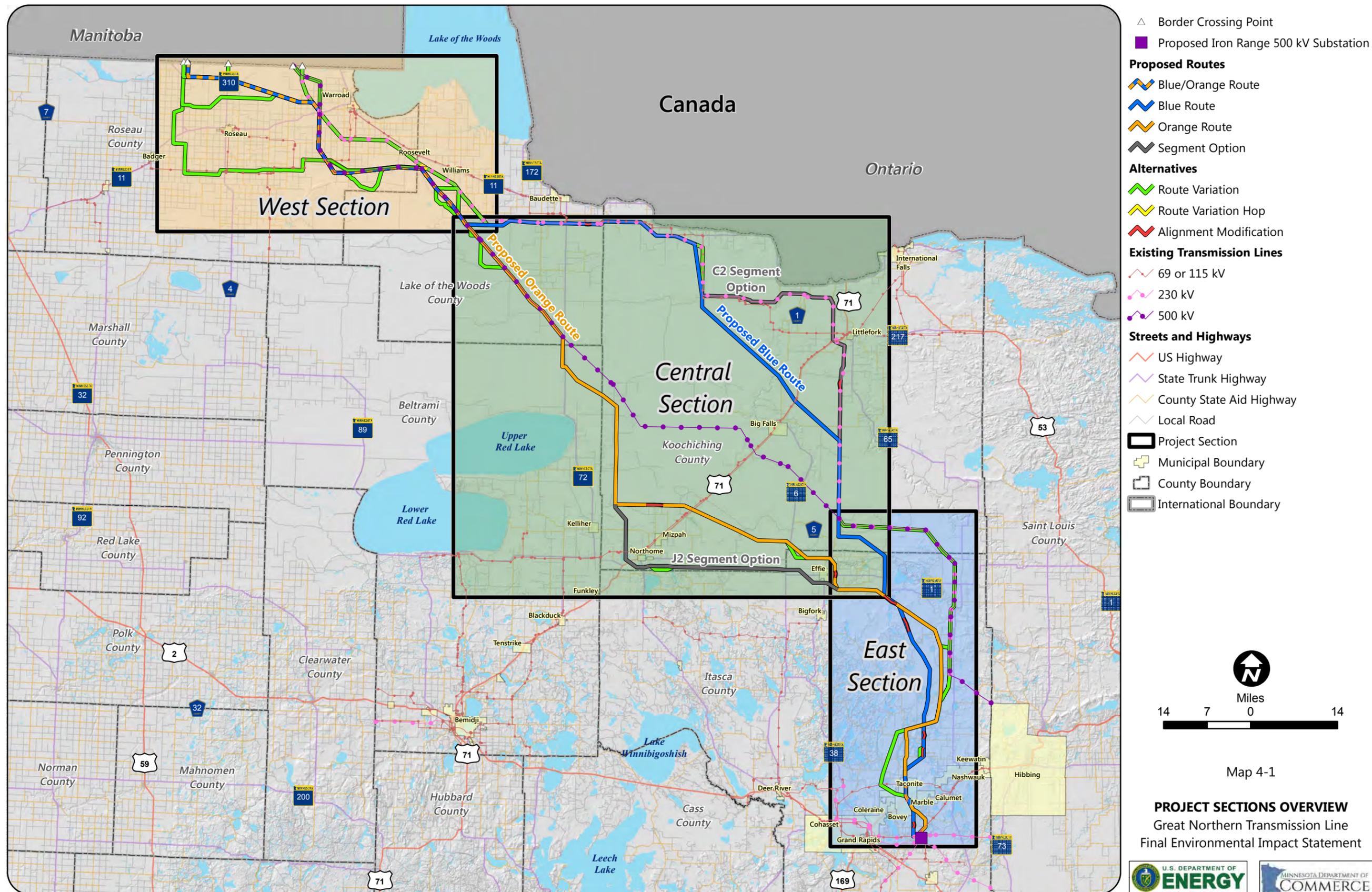
The Blackberry Variation Area is located in the southern portion of the East Section (Map 4-14). The primary issues identified by commenters in this variation area are the presence of the Mesabi Iron Range (with associated mining) and existing Blackberry Substation. The Blackberry Variation Area is located south of the Balsam Variation Area (Map 4-15). Table 4-5 and Map 4-17 provide details for the Blackberry Variation Area.

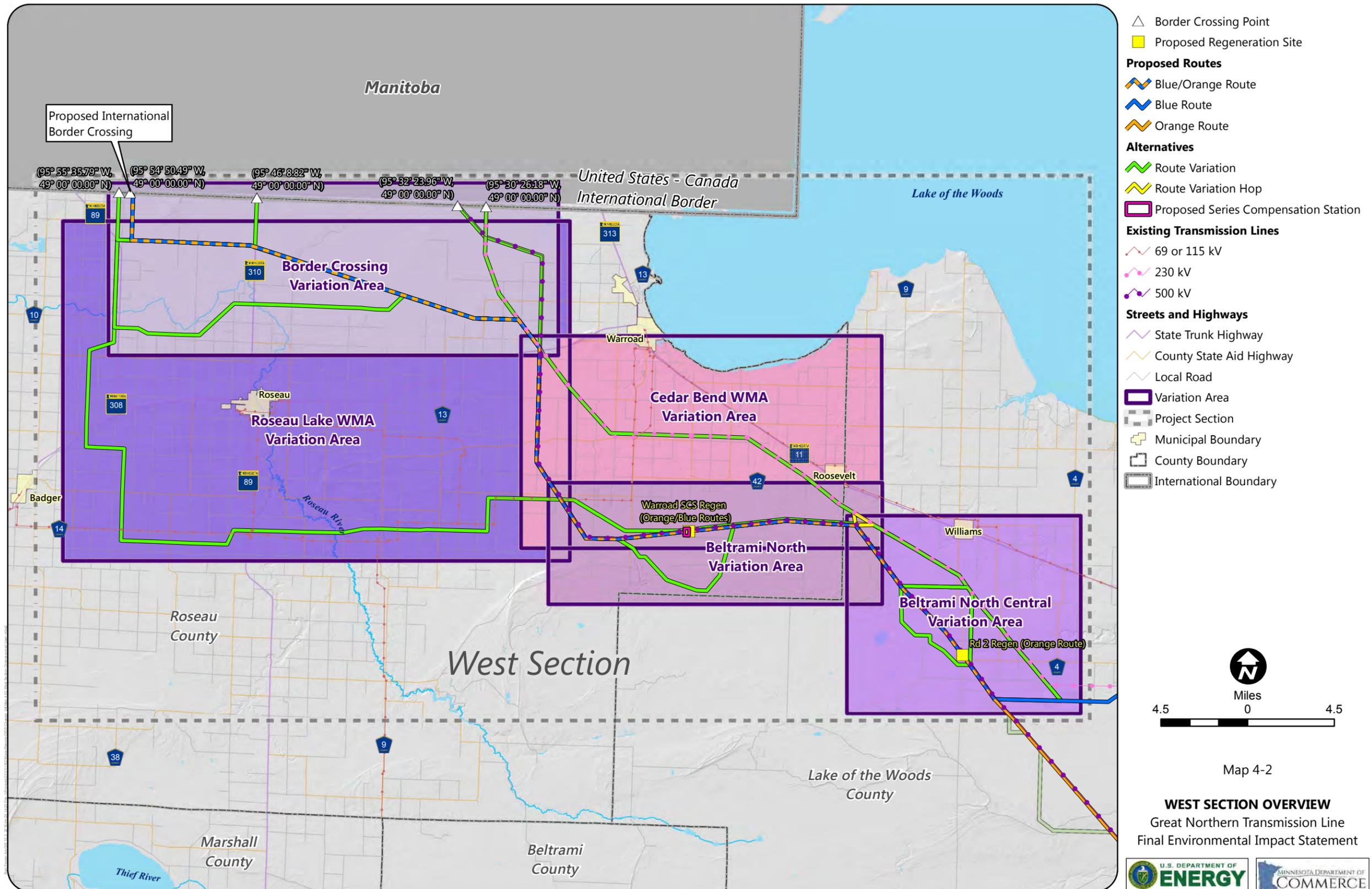
Variations

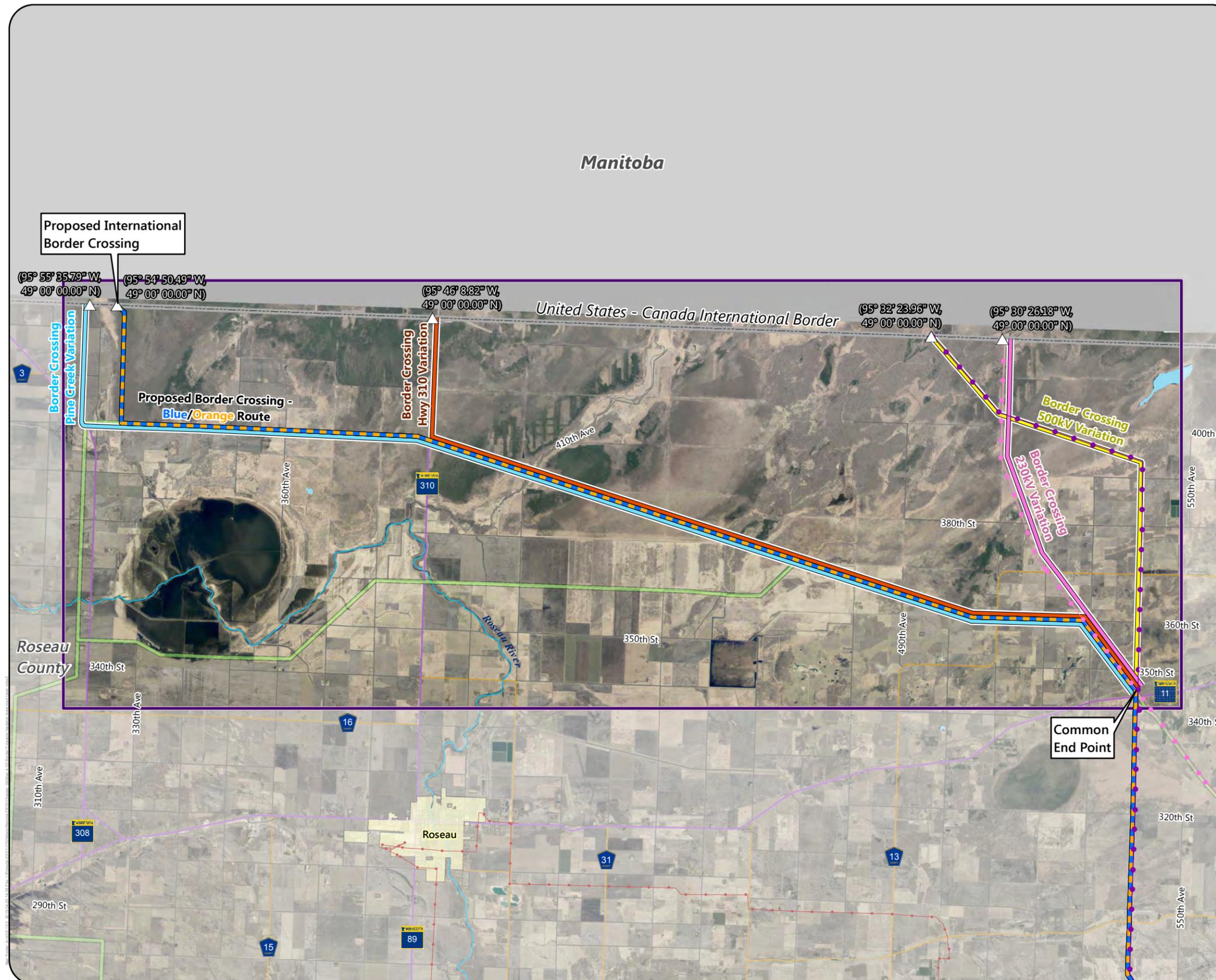
There are two route alternatives within the Blackberry Variation Area: the Proposed Blue Route and the Proposed Orange Route (Table 4-5, Map 4-17). These proposed routes have a common start point located west of Twin Lakes where the Proposed Blue/Orange Route diverges in the northwestern portion of the Blackberry Variation Area. The Proposed Blue and Orange routes do not share their alignments in this variation area. The proposed routes have a common endpoint located at the proposed **Iron Range 500 kV** Substation in the southern portion of the Blackberry Variation Area. The Proposed Orange Route is less than one mile longer than the Proposed Blue Route (Table 4-5).

Alignment Modification

The Trout Lake Alignment Modification is located along the Proposed Blue Route in the western portion of the Blackberry Variation Area along the Proposed Blue Route (Map 4-17). This alignment modification is the same length as the comparable segment of the Proposed Blue Route (Table 4-5). The alignment modification shifts the alignment east from a mix of private and corporate lands to all corporate lands. Section 6.5.3.5 provides additional information on the Trout Lake Alignment Modification.







- △ Border Crossing Point
- Proposed Routes**
- Blue/Orange Route
- Alternatives**
- Border Crossing 230kV Variation
- Border Crossing 500kV Variation
- Border Crossing Hwy 310 Variation
- Border Crossing Pine Creek Variation
- Existing Transmission Lines**
- 69 or 115 kV
- 230 kV
- 500 kV
- Streets and Highways**
- State Trunk Highway
- County State Aid Highway
- Local Road
- Variation Area
- Municipal Boundary
- International Boundary

Note:
Anticipated alignments are shown offset for display purposes only. Please refer to more detailed maps for precise alignment placement.

The Applicant will be issued a Route Permit with a specific route width. The proposed route widths are shown in Appendix S.



Map 4-3

BORDER CROSSING VARIATION AREA

Great Northern Transmission Line
Final Environmental Impact Statement