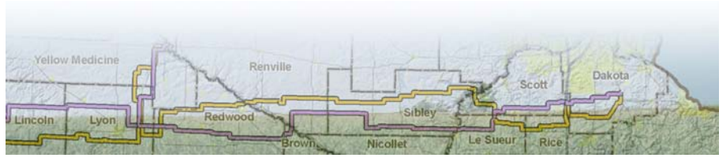
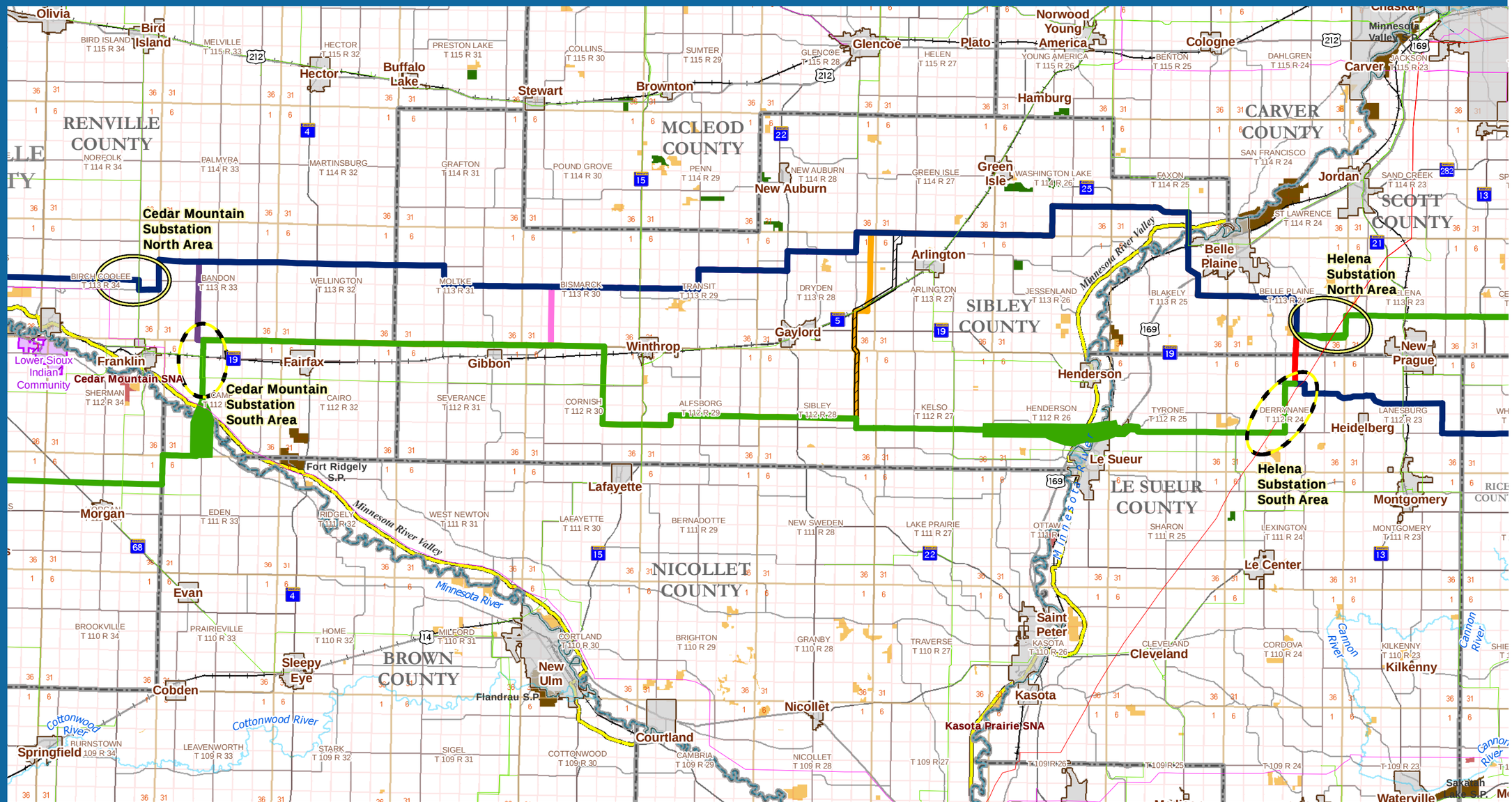

Yellow Medicine
Renville
Scott
Dakota
Lincoln
Lyon
Redwood
Sibley
Brown
Nicollet
Le Sueur
Rice

OVERVIEW MAP



October 2009

N

0 2.5 5 Miles

Project Substations
Preferred Substation Area
Alternate Substation Area
City
Scenic Byway

Tribal Lands
MN WMA
MN State Park
MN SNA
USFWS WPA

Transmission Lines
69 kV - Existing
115 kV - Existing
230 kV - Existing
345 kV - Existing

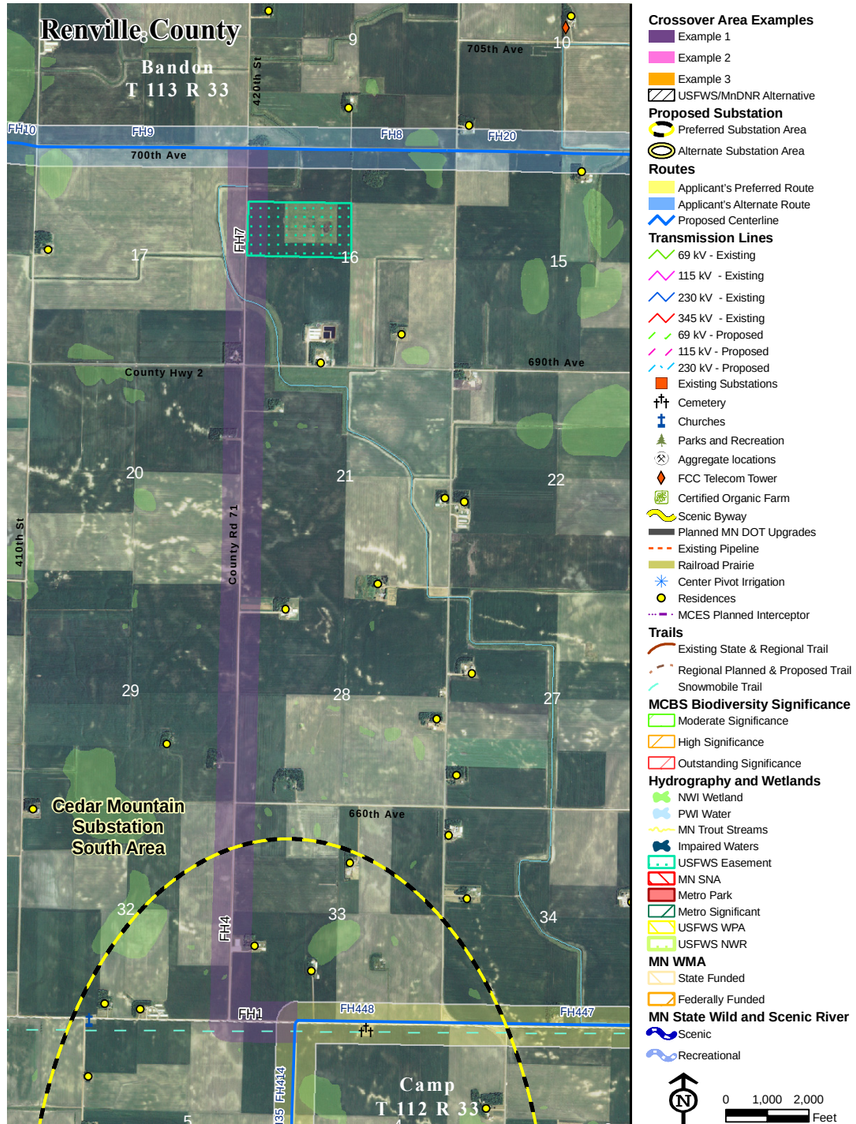
Routes
Applicant's Preferred Route
Applicant's Alternate Route
Applicant's Both Preferred & Alternate Route

USFWS/MnDNR Alternative

Crossover Area
Example 1
Example 2
Example 3

Crossover Examples
Overview Map

Brookings - Hampton
345 kV Transmission Line
Docket ET2/TL-08-1474

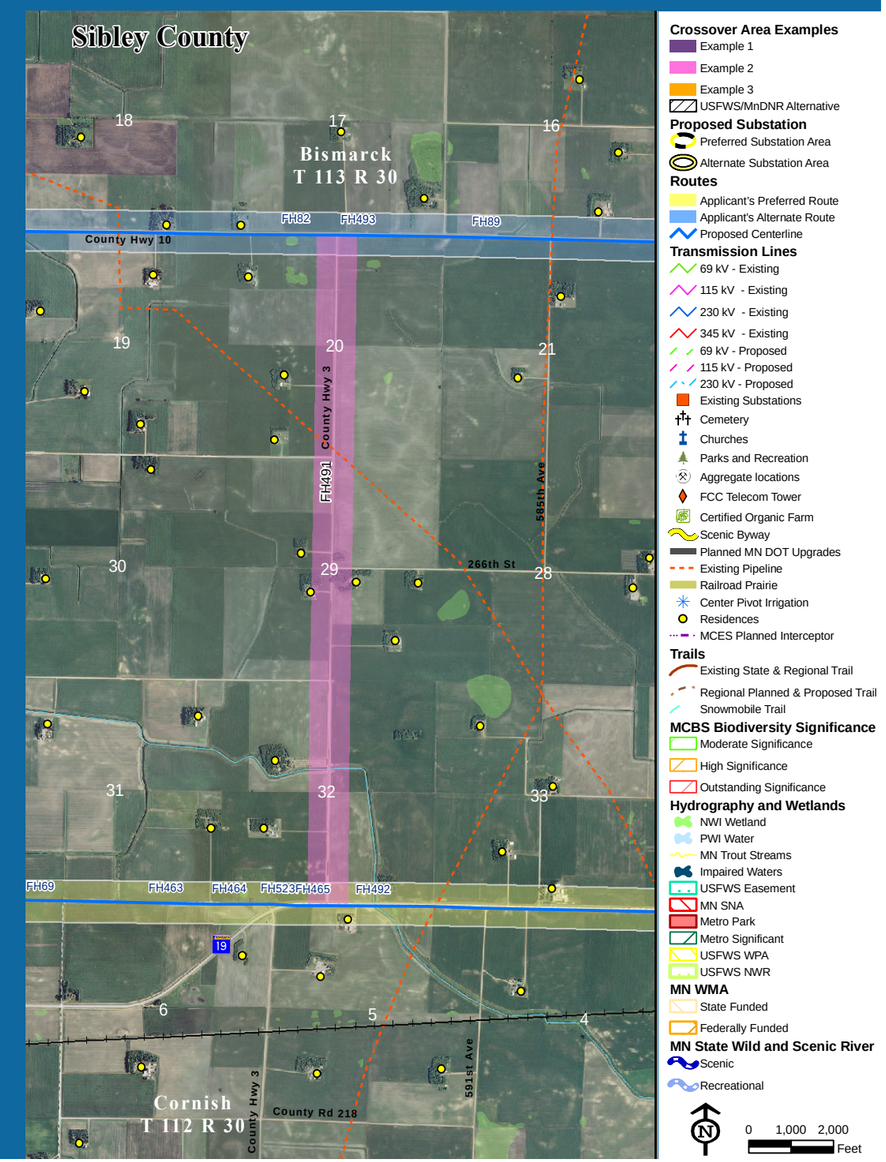


EXAMPLE 1

Example 1 generally follows County Road 71 in Bandon Township and is approximately 4.3 miles long. The example crossover is represented by Route Segments FH1, FH4, and FH7 in the route permit application (See Appendix C – Segment Map CH01). Example 1 begins on the border of Camp and Bandon Townships. It heads west from the Applicants' Preferred Route along 660th Avenue for approximately 0.3 miles. At this point the route turns north on County Road 71 for four miles, joining with the Applicants' Alternate Route along 700th Avenue.

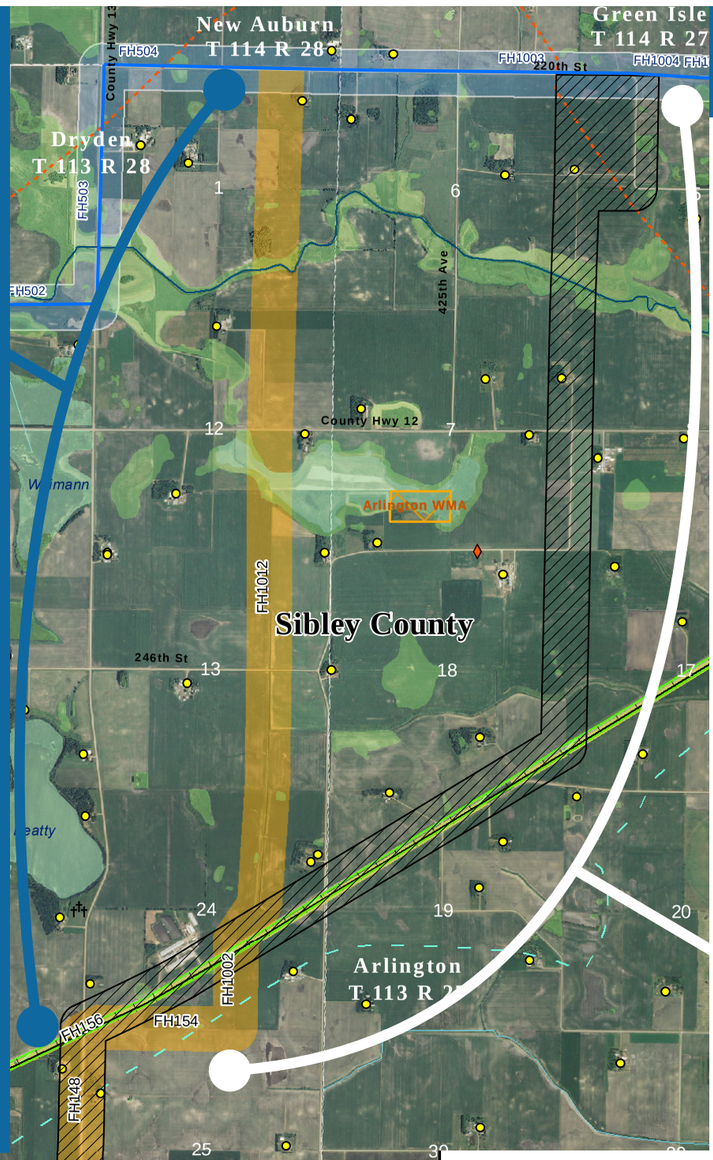
EXAMPLE 2

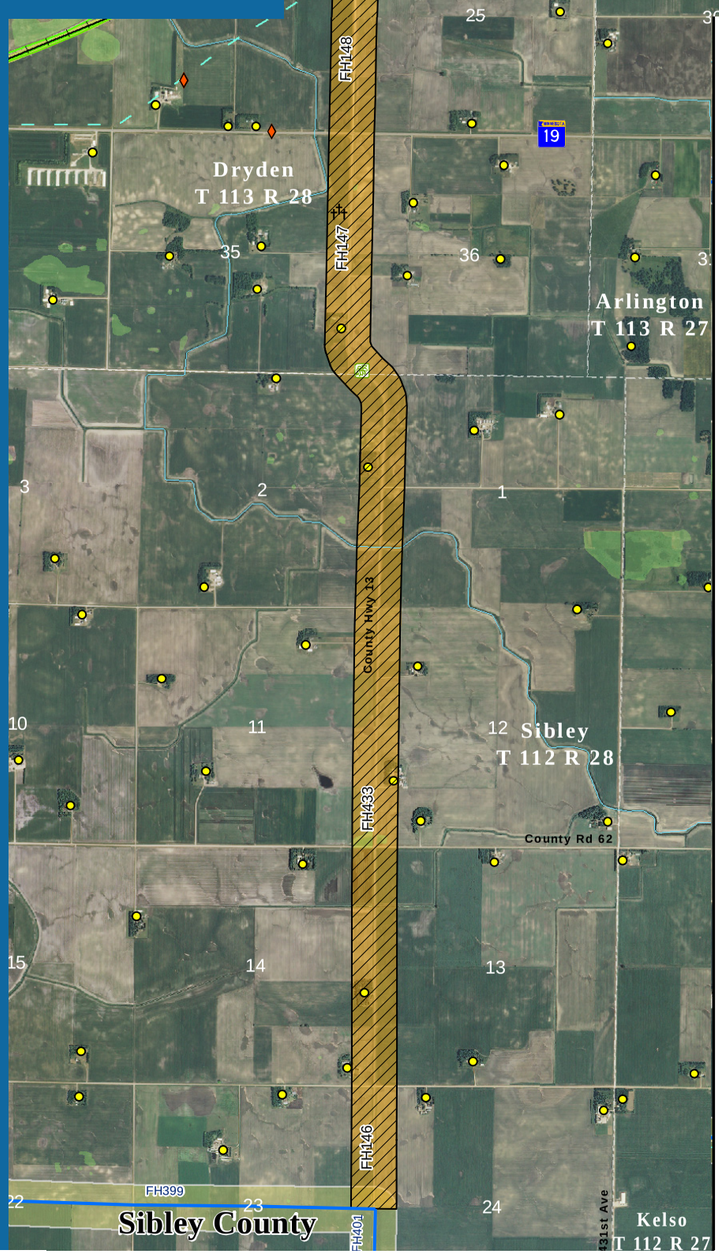
Example 2 follows County Highway 3 in Bismarck Township and is approximately three miles in length. The example crossover is represented by Route Segment FH 491 in the route permit application (See Appendix C – Segment Map CH02). Example 2 begins at the intersection of County Highway 3 and State Highway 19. It heads north from this location three miles where it joins the Applicants' Alternate Route at County Highway 10.



EXAMPLE 3

Example 3 begins at the Applicants' Preferred Route in Sibley Township, 0.5 mile north of the intersection of County Highway 13 and 320th Street. The example crossover is represented by Route Segments FH 146, FH 147, FH 148, FH 154, FH 156, FH 433, FH 1002 and FH 1012 in the route permit application (See Appendix C – Segment Map CH08 and Map CH21). The example crossover runs north from the Preferred Route along County Highway 13 for approximately 5.5 miles to State Highway 5. From this location it runs directly east for approximately 0.7 miles along a field line, then heads north along field lines and cross country for approximately 4 miles to 220th Street. At this point it connects with the Applicants' Alternate Route, which is also at the border of Dryden Township and New Auburn Township.





Crossover Area Examples
- Example 1
- Example 2
- Example 3
- USFWS/MnDNR Alternative

Proposed Substation
- Preferred Substation Area
- Alternate Substation Area

Routes
- Applicant's Preferred Route
- Applicant's Alternate Route
- Proposed Centerline

Transmission Lines
- 69 kV - Existing
- 115 kV - Existing
- 230 kV - Existing
- 345 kV - Existing
- 69 kV - Proposed
- 115 kV - Proposed
- 230 kV - Proposed
- Existing Substations
- Cemetery
- Churches
- Parks and Recreation
- Aggregate locations
- FCC Telecom Tower
- Certified Organic Farm
- Scenic Byway
- Planned MN DOT Upgrades
- Existing Pipeline
- Railroad Prairie
- Center Pivot Irrigation
- Residences
- MCES Planned Interceptor

Trails
- Existing State & Regional Trail
- Regional Planned & Proposed Trail
- Snowmobile Trail

MCBS Biodiversity Significance
- Moderate Significance
- High Significance
- Outstanding Significance

Hydrography and Wetlands
- NWI Wetland
- PWI Water
- MN Trout Streams
- Impaired Waters
- USFWS Easement
- MN SNA
- Metro Park
- Metro Significant
- USFWS WPA
- USFWS NWR

MN WMA
- State Funded
- Federally Funded

MN State Wild and Scenic River
- Scenic
- Recreational

N

0 1,000 2,000 Feet

USFWS/MNDNR ROUTE

The USFWS/MNDNR example crossover is approximately 11 miles long and begins at the same location as Example 3, described above. About half of this example crossover is represented by Route Segments FH 146, FH 147, FH 148, FH 156 and FH 433 in the route permit application (See Appendix C – Segment Map CH08 and Map CH22). This portion of the alternative follows a line that begins at the Preferred Route in Sibley Township and runs north along County Highway 13 to State Highway 5. At this point, the Applicants deviated from the route segments evaluated in the Route Permit Application in response to comments from the USFWS and MNDNR and also to avoid the wetland complex northwest of the city of Arlington. This "deviation" portion of the example crossover follows State Highway 5 for about 2.25 miles before turning north, running along a field line and a short portion of 421st Avenue, before finally connecting with the Alternate Route at the intersection of 417th Avenue and 220th Street.

Analysis of Examples

	Section	Route Length (Miles)	Route (Acres)	Corridor Sharing								Homes		Environmental									
				Corridor Sharing - Road (Miles)	Corridor Sharing - Transmission (Miles)	Corridor Sharing - Railroad (Miles)	Corridor Sharing - Pipeline (Miles)	Corridor Sharing - Field lines (Miles)	No Corridor Sharing (Miles)	Total Corridor Sharing (Miles)	Total Corridor Sharing (Percent)	Number of Occupied Homes in Route [4, 5]	Number of Occupied Homes per Mile	Number of MCBS Biodiversity sites crossed in Route[8]	Number of WMAs in Route[3]	Number of WMAs within 1 mile	Number of SNA within 1 mile[3]	Number of WPA within 1 mile	USFWS Lands and Easements in Route	T & E Species within Route	T & E Species within 1 Mile of Route	Number of Archaeological sites within 1 mile	Number of Historical sites within 1 mile
Example 1	Cedar Mountain Substation to Helena Substation - Crossover Segments FH1, FH4 & FH 7	4.3	524	4.3	0.0	0.0	0.0	0.0	0.0	4.3	99.8%	0	0.0	0	0	0	0	0	1	0	0	0	4
Example 2	Cedar Mountain Substation to Helena Substation - Crossover Segment FH491	3.0	364	3.0	0.0	0.0	0.0	0.0	0.0	3.0	100.0%	1	0.3	0	0	0	0	0	0	0	0	0	1
Example 3	Cedar Mountain Substation to Helena Substation - Crossover Segments FH1002, FH1012, FH 146, FH 147, FH148, FH154, FH156 & FH433	10.2	1,235	5.5	0.1	0.0	0.0	2.9	1.7	8.5	83.2%	7	0.7	4	0	1	0	0	0	0	7	0	4
USFWS / DNR Route	New USFWS Alignment between Preferred and Alternate Route	11.0	1,381	8.9	0.0	0.0	0.0	0.8	1.2	9.7	88.2%	8	0.7	1	0	1	0	0	0	2	5	0	2

	Section	Route Length (Miles)	Route (Acres)	Prime Farmland[3]								GAP Land Cover														Wetlands						PWI & Shallow Lakes		
				Prime Farmland within the Route (Acres)	Percent of the Route that Crosses Prime Farmland	Prime Farmland if Drained within the Route (acres)	Percent of Route that Crosses Prime Farmland if Drained	Farmland of State Importance within the Route (Acres)	Percent of Route that Crosses Farmland of State Importance	Route Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance (Acres)	Route Percent Prime Farmland, Prime Farmland if Drained, Farmland of Statewide Importance	Route Crop (Acres)	Route Grassland (Acres)	Route Lowland Deciduous Forest (Acres)	Route Non-Vegetated (Acres)	Route Shrubland (Acres)	Route Upland Conifer Forest (Acres)	Route Upland Deciduous Forest (Acres)	Route Percent of Crop5	Route Percent of Grassland	Route Percent of Lowland Deciduous Forest	Route Percent of Non-Vegetated	Route Percent of Shrubland	Route Percent of Upland Conifer Forest	Route Percent of Upland Deciduous Forest	Total wetlands within the Route (Acres)	Number of Wetlands Crossed	Percent of the Route that Crosses Wetlands	Forested wetlands in Route (Acres)	Number of Forested Wetlands Crossed	Percent of the Route that Crosses Forested wetlands	Number of PWI Lakes within Route	Number of PWI Wetlands within Route	Number of Shallow Lakes within Route
Example 1	Cedar Mountain Substation to Helena Substation - Crossover Segments FH1, FH4 & FH 7	4.3	524	181	35%	318	61%	25	5%	524	100%	513.2	5.1	0.0	0.0	1.6	0.0	4.4	97.9%	1.0%	0.0%	0.0%	0.3%	0.0%	0.8%	0.2	1	0.0%	0.0	0	0.0%	0	0	0
Example 2	Cedar Mountain Substation to Helena Substation - Crossover Segment FH491	3.0	364	136	37%	209	57%	19	5%	364	100%	359.6	0.3	0.0	0.0	0.0	0.0	4.5	98.7%	0.1%	0.0%	0.0%	0.0%	0.0%	1.2%	0.0	0	0.0%	0.0	0	0.0%	0	0	0
Example 3	Cedar Mountain Substation to Helena Substation - Crossover Segments FH1002, FH1012, FH 146, FH 147, FH148, FH154, FH156 & FH433	10.2	1,235	316	26%	834	68%	70	6%	1,220	99%	1208.4	11.3	0.0	0.0	0.0	0.0	5.6	97.8%	0.9%	0.0%	0.0%	0.0%	0.0%	0.5%	34.5	20	0.0%	0.0	0	0.0%	0	1	1
USFWS / DNR Route	New USFWS Alignment between Preferred and Alternate Route	11.0	1,381	349	25.3%	952	68.9%	59	4.3%	1,360	98.5%	1311.1	40.7	0.0	0.0	0.0	0.0	7.4	94.9%	2.9%	0.0%	0.0%	0.0%	0.0%	0.5%	34.0	20	0.0%	0.0	0	0.0%	0	0	0

Corridor SHaring/Homes | Assumptions

1. "Total Corridor Sharing" is the approximate amount of ROW that follows existing corridors such as transmission lines, roads, field lines and railroads.
2. "No Corridor Sharing" is the approximate amount of ROW that does not follow existing corridors such as transmission lines, roads, field lines and railroads.
3. Right-of-way (ROW) acres were calculated based on a width of 150 feet multiplied by the length of the route centerline.
4. In most areas the width of the Route is 1000 feet. Some areas are as wide as 1.25 miles to accommodate engineering and routing concerns.
5. Occupied homes were identified during field investigations and using 2006 and 2008 NAIP aerial photographs

Environmental | Assumptions

1. Right-of-way (ROW) acres were calculated based on a width of 150 feet multiplied by the length of the route centerline.
2. Number of poles was determined using the average span between poles, which was divided into the length of Wetland, or WMA span. Average span for a 345 kV poles is 1000ft. This number is conservately rounded by the hundred foot digit.
3. Scientific and Natural Areas, Wildlife Management Areas, State Parks, Snowmobile Trails and Biodiversity Areas were acquired from the Minnesota DNR Data Deli
4. Rare and Threatened and Endangered species and Natural Communities were identified using data licensed from the MN DNR for this project.
5. Cultural resource data was obtained from the MN State Historic Preservation Office.
6. Waterfowl Production Areas were acquired from area USFWS management districts.
7. USFWS Lands and easements were obtained from the USFWS district offices.
8. Includes Medium, High, and Outstanding sites only. MCBS Biodiversity site information has only preliminary data for Lincoln County and Lyon County.
9. Route segments include areas up to 1.25 mile wide to accommodate placement.

Prime Farmland/Gap Landcover | Assumptions

1. Right-of-way (ROW) acres were calculated based on a width of 150 feet multiplied by the length of the route centerline.
2. In most areas the width of the Route is 1000 feet. Some areas are as wide as 1.25 miles to accommodate engineering and routing concerns.
3. Prime Farmland numbers were compiled using the USDA County Soil Survey Geographic (SSURGO) Data for all counties.
4. Land cover numbers were compiled using the U.S. Geological Survey's Gap Analysis Program (GAP) Data. Only primary land cover types are listed and ROW percentages will not equal 100 percent when combined.
5. Crop land area was based upon GAP landcover. The percentage was based upon the area within a temporary construction area.

Wetlands/PWI and Shallow Lakes | Assumptions

1. Right-of-way (ROW) acres were calculated based on a width of 150 feet multiplied by the length of the route centerline.
2. Wetland numbers were compiled using the NWI maps and provide an estimate of the number of wetlands likely present along the route. These numbers do not necessarily represent the number of wetland impacts subject to state and federal wetland regulations.
3. Streams crossing were compiled using MN DNR 24k streams. PWI streams were identified in the MN DNR dataset. PWI waters were identified using the MN DNR PWI maps.
4. Number of poles was determined using the average span between poles, which was divided into the length of Wetland, or WMA span. Average span for a 345 kV poles is 1000ft. This number is conservately rounded by the hundred foot digit.
5. Route segments include areas up to 1.25 mile wide to accommodate placement.