

Appendix K
Summary Table, Sauk Centre to St. Cloud area

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Table K-1. Summary Table, Sauk Centre to St. Cloud Proposed Routes - Applicant Preferred through Route D

Factor	Applicant Preferred Route	Route A	Route B	Route C	Route D
Effects on Human Settlement					
Socioeconomic Resources	The construction, operation and maintenance of the transmission lines are not anticipated to negatively impact socioeconomic resources in the Project area. Immediate short-term positive economic gains would likely result from activities associated with the construction of the proposed Project. Long-term beneficial impacts include incremental increases in revenues from utility property tax and landowners would receive compensation for the rights to build, operate and maintain the transmission facilities within the easements area.				
Land Use, Zoning and Planning	Approximately 91.7% of the route is zoned agricultural use, 6.5% is zoned commercial/industrial, 0.8% is zoned residential, and 0.7% is zoned recreation/park land use.	Approximately 93% of the route is zoned agricultural use, 6% is zoned commercial/industrial, 0.8% is zoned residential, and 0.1% is zoned recreation/park land use.	Approximately 97% of the route is zoned agricultural use, 1% is zoned commercial/industrial, 2% is zoned residential, and 1% is zoned recreation/park land use.	Approximately 91% of the route is zoned agricultural use, 5% is zoned commercial/industrial, 1% is zoned residential, and 2% is zoned recreation/park land use.	Approximately 80% of the route is zoned agricultural use, 9% is zoned commercial/industrial, 6% is zoned residential, and 1% is zoned recreation/park land use.
Displacement	No residences are located within 75 feet of the centerline alignment, and therefore, there are no residences within the ROW.			One residence is located within 75 feet of the centerline alignment.	Nine residences are located within 75 feet of the centerline alignment.
	The alignment would be designed to avoid residential displacements.				
Property Values	Based on research conducted, it is not anticipated that the proposed transmission line routes evaluated would significantly affect the value of properties adjacent to the proposed transmission lines.				
Pipelines	The route would cross one of the Northern Natural Gas pipelines.	The route would not cross any of the pipelines in the study area.	The route would cross one of the Northern Natural Gas pipelines.	The route would not cross any of the pipelines in the study area.	The route would not cross any of the pipelines in the study area.
Noise	Noise associated with the operation of the proposed 345 kV transmission line is not predicted to exceed the limits identified by the MPCA.				
Effects on Public Health and Safety					

Factor	Applicant Preferred Route	Route A	Route B	Route C	Route D
EMF	<p>The proposed HVTL would conform to all applicable local, state, and North American Electric Reliability Corporation (NERC) standards and National Electric Safety Code (NESC) standards regarding clearance to the ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths.</p> <p>There are no anticipated impacts attributed to EMF from the Project; however, three primary methods to reduce EMF exposure for the Project include: avoiding residences to the greatest possible extent, compacting phases, and rearranging phase conductors to cancel EMF.</p>				
Magnetic Fields	<p>Predicted magnetic field levels are considerably less than the recommended exposure guidelines. Based on the proposed design and operation of the project, no impacts are anticipated.</p>				
Stray Voltage	<p>Poor grounding conditions, inadequate connections, lightning strikes, or undersized neutral conductors can be the cause for stray voltage. Therefore, impacts attributed to stray voltage are not anticipated.</p>				
Effects on Recreation					
Recreation Land	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 7 acres of recreation/open space/park land would be impacted. The route crosses two trails seven times.</p>	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 0.3 acres of recreation/open space/park land would be impacted. The route crosses four trails.</p>	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 0.3 acres of recreation/open space/park land would be impacted. The route crosses four trails.</p>	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 5 acres of recreation/open space/park land would be impacted. The route crosses seven trails.</p>	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 6 acres of recreation/open space/park land would be impacted. The route crosses five trails.</p>
	<p>No scenic byways are crossed by either route.</p>				
Aesthetics	<p>There are approximately 83 homes within 500 feet of the alignment.</p>	<p>There are approximately 116 homes within 500 feet of the alignment.</p>	<p>There are approximately 191 homes within 500 feet of the alignment.</p>	<p>There are approximately 77 homes within 500 feet of the alignment.</p>	<p>There are approximately 179 homes within 500 feet of the alignment.</p>
	<p>Would likely affect visual quality within open landscapes, WMA, wayside rest areas, and campgrounds in proximity of the transmission line.</p>				
Effects on Transportation					

Factor	Applicant Preferred Route	Route A	Route B	Route C	Route D
Roadways	The Preferred Alternative and Route A do not follow a particular roadway. Construction activities along this route have the potential to impact one future roadway projects.		Routes B and C do not follow a particular roadway. Construction activities along this route have the potential to impact two future roadway projects.		Route D primarily follows I-94. Construction activities along this route have the potential to impact two future roadway projects.
Airports	There are no public-use airports within 5 miles of any route in the Sauk Centre-St Cloud section. Therefore, construction notice to FAA would not be required. No impacts to VORs are expected.				
Effects on Wireless Technologies					
Wireless Technologies	No widespread interference to radio, television, or cellular phones is anticipated.				
Effects on Archaeological and Historic Resources					
Archaeological & Historic Resources	No archaeological resources and 15 historic facilities resources are located within the route area.	One historic facility is located within the route area. .	No discussion of cultural resources has occurred for this permit application.		
Effects on Land-based Economics					
Agriculture	Approximately 93% of the route is zoned for agricultural use, of which approximately 270-272 acres are considered prime farmland. Permanent impacts due to pole placement are 4.82-4.92 acres.	Approximately 96% of the route is zoned for agricultural use, of which approximately 354 acres are considered prime farmland. Permanent impacts due to pole placement are 5.35 acres.	Approximately 97% of the route is zoned for agricultural use, of which approximately 389 acres are considered prime farmland. Permanent impacts due to pole placement are 5.20 acres.	Approximately 91% of the route is zoned for agricultural use, of which approximately 226 acres are considered prime farmland. Permanent impacts due to pole placement are 3.97 acres.	Approximately 77% of the route is zoned for agricultural use, of which approximately 179 acres are considered prime farmland. Permanent impacts due to pole placement are 3.77 acres.
Forestry	Impacts approximately between 131 and 132 acres of wooded land.	Impacts approximately 125 acres of wooded land.	Impacts approximately 113 acres of wooded land.	Impacts approximately 110 acres of wooded land.	Impacts approximately 83 acres of wooded land.
Tourism	No impacts to tourism are anticipated.				

Factor	Applicant Preferred Route	Route A	Route B	Route C	Route D
Mining	One aggregate source has been identified within the ROW.	No aggregate sources have been identified within the ROW.	No aggregate sources have been identified within the ROW.	One aggregate source has been identified within the ROW.	One aggregate source has been identified within the ROW.
Effects on Water Resources					
Surface Waters	Crosses 35 small or unnamed streams and 13 PWI streams.	Crosses 35 small or unnamed streams and 16 PWI streams.	Crosses 38 small or unnamed streams and 13 PWI streams.	Crosses 33 small or unnamed streams and 11 PWI streams.	Crosses 32 small or unnamed streams and 8 PWI streams.
Groundwater Resources	All well locations within the routes would be avoided; therefore no impacts to groundwater resources are anticipated.				
Wetlands	ROW includes 135 acres of wetlands and crosses 141 wetlands. Thirty poles would be placed within these wetlands.	ROW includes 111 acres of wetlands and crosses 121 wetlands. Twenty-three poles would be placed within these wetlands.	ROW includes 78 acres of wetlands and crosses 87 wetlands. Sixteen poles would be placed within these wetlands.	ROW includes 104 acres of wetlands and crosses 118 wetlands. Twenty-four poles would be placed within these wetlands.	ROW includes 94 acres of wetlands and crosses 87 wetlands. Twenty-one poles would be placed within these wetlands.
Floodplains	ROW includes approximately 25 acres designated as 100-year floodplain.	ROW includes approximately 26 acres designated as 100-year floodplain.	ROW includes approximately 16 acres designated as 100-year floodplain.	ROW includes approximately 15 acres designated as 100-year floodplain.	ROW includes approximately 15 acres designated as 100-year floodplain.
Effects on the Natural Environment					

Factor	Applicant Preferred Route	Route A	Route B	Route C	Route D
Flora	<p>The majority of the Applicant Preferred Route occurs along existing rights-of-way and vegetation communities that occur in these areas are regularly disturbed. Impacts due to construction are not anticipated to substantially disrupt vegetative community quality or function. Would permanently impact approximately 4,880 square feet of vegetation.</p>	<p>Route A does not follow major existing infrastructure and is generally along property lines or local roadways. Would permanently impact approximately 4,184 square feet of vegetation.</p>	<p>Would permanently impact approximately 4,025 square feet of vegetation.</p>	<p>Would permanently impact approximately 4,090 square feet of vegetation.</p>	<p>Would permanently impact approximately 3,343 square feet of vegetation.</p>
Fauna	<p>There is a potential for temporary displacement of wildlife during construction and for loss of small amounts of habitat. Because transmission line routing avoids direct impacts to lakes and rivers, impacts on fisheries will be small. Any impacts, temporary or permanent, are unlikely to affect population levels of are wildlife.</p>				

Factor	Applicant Preferred Route	Route A	Route B	Route C	Route D
Rare and Unique Natural Resources	One USFWS easement, 8 Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance, and 6 Native Plant Communities are crossed by the Applicant Preferred Route. No WMAs, WPAs, SNAs, MCBS Railroad Prairies, or BWSR RIM Easements are crossed by the Applicant Preferred Route.	Six Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance and seven Native Plant Communities are crossed by Route A. No WMAs, WPAs, SNAs, USFWS Easements, MCBS Railroad Prairies, or BWSR RIM Easements are crossed.	One USFWS easement, one SNA, ten Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance, and nine Native Plant Communities are crossed by Route B. No WMAs, WPAs, MCBS Railroad Prairies, or BWSR RIM Easements are crossed.	One USFWS easement, nine Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance, and three Native Plant Communities are crossed by Route C. No WMAs, WPAs, MCBS Railroad Prairies, or BWSR RIM Easements are crossed.	One USFWS easement, ten Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance, and three Native Plant Communities are crossed by Route D. No WMAs, WPAs, SNAs, MCBS Railroad Prairies, or BWSR RIM Easements are crossed.
	No state-listed threatened, endangered or candidate species identified within any of the ROWs.				
Air Quality	During construction there would be limited emissions due to exhaust from vehicles and other construction equipment and fugitive dust from ROW clearing. The magnitude of the construction emissions is influenced heavily by the specific construction activity occurring. Adverse impacts to the surrounding environment would be minimal because of the short and intermittent nature of the exhaust emission and dust-producing construction phases.				

Table K-2. Summary Table, Sauk Centre to St. Cloud Proposed Routes, Route E through Route H

Factor	Route E	Route F	Route G	Route H
Effects on Human Settlement				
Socioeconomic Resources	The construction, operation and maintenance of the transmission lines are not anticipated to negatively impact socioeconomic resources in the Project area. Immediate short-term positive economic gains would likely result from activities associated with the construction of the proposed Project. Long-term beneficial impacts include incremental increases in revenues from utility property tax and landowners would receive compensation for the rights to build, operate and maintain the transmission facilities within the easements area.			
Land Use, Zoning and Planning	Approximately 92% of the route is zoned agricultural use, 3% is zoned commercial/industrial, 2% is zoned residential, and 1% is zoned recreation/park land use.	Approximately 77% of the route is zoned agricultural use, 12% is zoned commercial/industrial, 5% is zoned residential, and 3% is zoned recreation/park land use.	Approximately 94% of the route is zoned agricultural use, 2% is zoned commercial/industrial, 1% is zoned residential, and 0% is zoned recreation/park land use.	Approximately 93% of the route is zoned agricultural use, 2% is zoned commercial/industrial, 1% is zoned residential, and 0% is zoned recreation/park land use.
Displacement	No residences are located within 75 feet of the centerline alignment.	One residence is located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.	
	The alignment would be designed to avoid residential displacements.			
Property Values	Based on research conducted, it is not anticipated that the proposed transmission line routes evaluated would significantly affect the value of properties adjacent to the proposed transmission lines.			
Pipelines	The route would cross the Amoco and one of the Northern Natural Gas pipelines.	The route would cross the Amoco and one of the Northern Natural Gas pipelines.	The route would cross the Amoco pipeline.	The route would cross the Amoco pipeline.
Noise	Noise associated with the operation of the proposed 345 kV transmission line is not predicted to exceed the limits identified by the MPCA.			
Effects on Public Health and Safety				

Factor	Route E	Route F	Route G	Route H
EMF	<p>The proposed HVTL would conform to all applicable local, state, and North American Electric Reliability Corporation (NERC) standards and National Electric Safety Code (NESC) standards regarding clearance to the ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths.</p> <p>There are no anticipated impacts attributed to EMF from the Project; however, three primary methods to reduce EMF exposure for the Project include avoiding residences to the greatest possible extent, compacting phases, and rearranging phase conductors to cancel EMF.</p>			
Magnetic Fields	<p>Actual current flow on the transmission line would be less than peak levels during most hours of the year. Predicted magnetic field levels are considerably less than the recommended exposure guidelines. Based on the proposed design and operation of the project, no impacts are anticipated.</p>			
Stray Voltage	<p>Poor grounding conditions, inadequate connections, lightning strikes, or undersized neutral conductors can be the cause for stray voltage. Therefore, impacts attributed to stray voltage are not anticipated.</p>			
Effects on Recreation				
Recreation Land	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 1 acre of recreation/open space/park land would be impacted. The route crosses three trails.</p>	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 11 acres of recreation/open space/park land would be impacted. The route crosses six trails.</p>	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 0.05 acre of recreation/open space/park land would be impacted. The route crosses six trails.</p>	<p>There are no federal or state parks near this route. No acres of recreation/open space/park land would be impacted. The route crosses eight trails.</p>
	<p>No scenic byways are crossed by either route.</p>			
Aesthetics	<p>There are approximately 76 homes within 500 feet of the alignment.</p>	<p>There are approximately 206 homes within 500 feet of the alignment.</p>	<p>There are approximately 88 homes within 500 feet of the alignment.</p>	<p>There are approximately 96 homes within 500 feet of the alignment.</p>
	<p>Would likely affect visual quality within open landscapes, WMA, wayside rest areas, and campgrounds in proximity of the transmission line.</p>			
Effects on Transportation				
Roadways	<p>Routes E, F, G, and H do not follow a particular roadway. Construction activities along this route have the potential to impact one future roadway project.</p>			
Airports	<p>There are no public-use airports within 5 miles of any route in the Sauk Centre-St Cloud section. Therefore, construction notice to FAA would not be required. No impacts to VORs are expected.</p>			
Effects on Wireless Technologies				

Factor	Route E	Route F	Route G	Route H
Wireless Technologies	No widespread interference to radio, television, or cellular phones is anticipated.			
Effects on Archaeological and Historic Resources				
Archaeological & Historic Resources	One archaeological resource and four historic facilities are located within the route area..	No discussion of cultural resources has occurred for this permit application.		
Effects on Land-base Economics				
Agriculture	Approximately 96% of the route is zoned for agricultural use, of which approximately 268 acres are considered prime farmland. Permanent impacts due to pole placement are 5.24 acres.	Approximately 77% of the route is zoned for agricultural use, of which approximately 238 acres are considered prime farmland. Permanent impacts due to pole placement are 5.39 acres.	Approximately 97% of the route is zoned for agricultural use, of which approximately 246 acres are considered prime farmland. Permanent impacts due to pole placement are 5.43 acres.	Approximately 96% of the route is zoned for agricultural use, of which approximately 162 acres are considered prime farmland. Permanent impacts due to pole placement are 5.34 acres.
Forestry	Impacts approximately 72 acres of wooded land.	Impacts approximately 80 acres of wooded land.	Impacts approximately 78 acres of wooded land.	Impacts approximately 78 acres of wooded land.
Tourism	No impacts to tourism are anticipated.			
Mining	Three aggregate sources have been identified within the ROW.	One aggregate source has been identified within the ROW.	Two aggregate sources have been identified within the ROW.	Two aggregate sources have been identified within the ROW.
Effects on Water Resources				
Surface Waters	Crosses 42 small or unnamed streams and 9 PWI streams.	Crosses 36 small or unnamed streams and 10 PWI streams.	Crosses 45 small or unnamed streams and 12 PWI streams.	Crosses 55 small or unnamed streams and 13 PWI streams.
Groundwater Resources	All well locations within the routes would be avoided; therefore no impacts to groundwater resources are anticipated.			
Wetlands	ROW includes 104 acres of wetlands and crosses 128 wetlands. Twenty poles would be placed within these wetlands.	ROW includes 106 acres of wetlands and crosses 105 wetlands. Twenty-seven poles would be placed within these wetlands.	ROW includes 91 acres of wetlands and crosses 102 wetlands. Eighteen poles would be placed within these wetlands.	ROW includes 86 acres of wetlands and crosses 90 wetlands. Eighteen poles would be placed within these wetlands.
Floodplains	ROW includes approximately 14 acres designated as 100-year floodplain.	ROW includes approximately 25 acres designated as 100-year floodplain.	ROW includes approximately 14 acres designated as 100-year floodplain.	ROW includes approximately 20 acres designated as 100-year floodplain.
Effects on the Natural Environment				

Factor	Route E	Route F	Route G	Route H
Flora	Would permanently impact approximately 3,216 square feet of vegetation.	Would permanently impact approximately 3,404 square feet of vegetation.	Would permanently impact approximately 3,005 square feet of vegetation.	Would permanently impact approximately 3,125 square feet of vegetation.
Fauna	There is a potential for temporary displacement of wildlife during construction and for loss of small amounts of habitat. Because transmission line routing avoids direct impacts to lakes and rivers, impacts on fisheries will be small. Any impacts, temporary or permanent, are unlikely to affect population levels of are wildlife.			
Rare and Unique Natural Resources	One USFWS easement, one WMA, eleven Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance, and five Native Plant Communities are crossed by Route E. No WPAs, SNAs, MCBS Railroad Prairies, or BWSR RIM Easements are crossed.	One USFWS easement, two SNAs, fifteen Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance, and eight Native Plant Communities are crossed by Route F. No WMAs, WPAs, MCBS Railroad Prairies, or BWSR RIM Easements are crossed.	One USFWS easement, eleven Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance, and six Native Plant Communities are crossed by Route G. No WMAs WPAs, SNAs, MCBS Railroad Prairies, or BWSR RIM Easements are crossed.	One USFWS easement, one WMA, eleven Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance, and six Native Plant Communities are crossed by Route H. No WPAs, SNAs, MCBS Railroad Prairies, or BWSR RIM Easements are crossed.
	No state-listed threatened, endangered or candidate species identified within any of the ROWs.			
Air Quality	During construction there would be limited emissions due to exhaust from vehicles and other construction equipment and fugitive dust from ROW clearing. The magnitude of the construction emissions is influenced heavily by the specific construction activity occurring. Adverse impacts to the surrounding environment would be minimal because of the short and intermittent nature of the exhaust emission and dust-producing construction phases.			

Table K-3. Summary Table, Proposed Options, Option 8 through Option 10

Resources	Option 8		Option 9		Option 10	
	Applicant Preferred Route Segment	Option 8	Applicant Preferred Route Segment	Option 9	Route A	Option 10
Effects on Human Settlement						
Socioeconomic Resources	The construction, operation and maintenance of the transmission lines are not anticipated to negatively impact socioeconomic resources in the Project area. Immediate short-term positive economic gains would likely result from activities associated with the construction of the proposed Project. Long-term beneficial impacts include incremental increases in revenues from utility property tax and landowners would receive compensation for the rights to build, operate and maintain the transmission facilities within the easements area.					
Land Use, Zoning and Planning	Affects 15 acres of agricultural and 1 acre of residential zoned land. No other land uses are affected.	Affects 9 acres of agricultural and 3 acres of residential zoned land. No other land uses are affected.	Affects 21 acres of agricultural zoned land. No other land uses are affected.	Affects 78 acres of agricultural, 7 acres of commercial/industrial, and 2 acres of residential zoned land. No other land uses are affected.	Affects 25 acres of agricultural zoned land. No other land uses are affected.	Affects 27 acres of agricultural zoned land. No other land uses are affected.
Displacement	No residences are located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.
	The alignment would be designed to avoid residential displacements.					

Resources	Option 8		Option 9		Option 10	
	Applicant Preferred Route Segment	Option 8	Applicant Preferred Route Segment	Option 9	Route A	Option 10
Property Values	Based on research conducted, it is not anticipated that the proposed transmission line routes evaluated would significantly affect the value of properties adjacent to the proposed transmission lines.					
Pipelines	None of the options would be crossed by pipelines.					
Noise	Noise associated with the operation of the proposed 345 kV transmission line is not predicted to exceed the limits identified by the MPCA.					
Effects on Public Health and Safety						
EMF	The proposed HVTL would conform to all applicable local, state, and North American Electric Reliability Corporation (NERC) standards and National Electric Safety Code (NESC) standards regarding clearance to the ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths. There are no anticipated impacts attributed to EMF from the Project however; three primary methods to reduce EMF exposure for the Project include: avoiding residences to the greatest possible extent, compacting phases, and rearranging phase conductors to cancel EMF.					
Magnetic Fields	Actual current flow on the transmission line would be less than peak levels during most hours of the year. Predicted magnetic field levels are considerably less than the recommended exposure guidelines. Based on the proposed design and operation of the project, no impacts are anticipated.					
Stray Voltage	Poor grounding conditions, inadequate connections, lightning strikes, or undersized neutral conductors can be the cause for stray voltage. Therefore, impacts attributed to stray voltage are not anticipated.					
Effects on Recreation						
Recreation Land	There are no federal or state parks near this segment. No recreation land is affected or trails crossed.	There are no federal or state parks near this option. No recreation land is affected or trails crossed.	There are no federal or state parks near this segment. No recreation land is affected. The route crosses one trail.	There are no federal or state parks near this option. No recreation land is affected. The route crosses one trail.	There are no federal or state parks near this route. No recreation land is affected. The route crosses one trail.	There are no federal or state parks near this option. No recreation land is affected. The route crosses one trail.
	No scenic byways are crossed by either route option.					

Resources	Option 8		Option 9		Option 10	
	Applicant Preferred Route Segment	Option 8	Applicant Preferred Route Segment	Option 9	Route A	Option 10
Aesthetics	No homes are located within 500 feet of the alignment.	No homes are located within 500 feet of the alignment.	There are approximately 3 homes within 500 feet of the alignment.	There are approximately 7 homes within 500 feet of the alignment.	There is approximately 1 home within 500 feet of the alignment.	No homes are located within 500 feet of the alignment.
	Would likely affect visual quality within open landscapes, WMA, wayside rest areas, and campgrounds in proximity of the transmission line.					
Effects on Transportation						
Roadways	No impacts to future roadway projects are expected from construction activities along the options.					
Airports	There are no public-use airports within 5 miles of any route in the Sauk Centre-St Cloud section. Therefore, construction notice to FAA would not be required. No impacts to VORs are expected.					
Effects on Wireless Technologies						
Wireless technologies	No widespread interference to radio, television, or cellular phones is anticipated.					
Effects on Archaeological and Historic Resources						
Archaeological & Historic Resources	No discussion of cultural resources has occurred for this permit application.					
Effects on Land-based Economics						

Resources	Option 8		Option 9		Option 10	
	Applicant Preferred Route Segment	Option 8	Applicant Preferred Route Segment	Option 9	Route A	Option 10
Agriculture	Approximately 94% of the route is zoned for agricultural use, of which approximately 3 acres are considered prime farmland. Permanent impacts due to pole placement are 0.10 acres.	Approximately 75% of the route is zoned for agricultural use, of which approximately 0 acres are considered prime farmland. No permanent impacts due to pole placement.	Approximately 89% of the route is zoned for agricultural use, of which approximately 0 acres are considered prime farmland. Permanent impacts due to pole placement are between 0.61 and 0.64 acres.	Approximately 90% of the route is zoned for agricultural use, of which approximately 23 acres are considered prime farmland. Permanent impacts due to pole placement are 0.47 acres.	Approximately 100% of the route is zoned for agricultural use, of which approximately 7 acres are considered prime farmland. Permanent impacts due to pole placement are 0.20 acres.	Approximately 100% of the route is zoned for agricultural use, of which approximately 5 acres are considered prime farmland. Permanent impacts due to pole placement are 0.19 acres.
Forestry	No wooded land is impacted.	No wooded land is impacted.	Impacts approximately between 4 and 6 acres of wooded land.	Impacts approximately 3 acres of wooded land.	No wooded land is impacted.	Impacts approximately 2 acres of wooded land.
Tourism	No impacts to tourism are anticipated.					
Mining	No aggregate sources have been identified within the ROW.					
Effects on Water Resources						
Surface Waters	Crosses 2 small or unnamed streams and no PWI streams.	Crosses 2 small or unnamed streams and no PWI streams.	Crosses 3 small or unnamed streams and 1 PWI stream.	Crosses 6 small or unnamed streams and 1 PWI stream.	Crosses 1 small or unnamed stream and no PWI streams.	Crosses 1 small or unnamed stream and no PWI streams.
Groundwater Resources	All well locations within the routes would be avoided; therefore no impacts to groundwater resources are anticipated.					

Resources	Option 8		Option 9		Option 10	
	Applicant Preferred Route Segment	Option 8	Applicant Preferred Route Segment	Option 9	Route A	Option 10
Wetlands	ROW includes 4 acres of wetlands and crosses 2 wetlands. Two poles would be placed within these wetlands.	ROW includes 11 acres of wetlands and crosses 2 wetlands. Four poles would be placed within these wetlands.	ROW includes 3 acres of wetlands and crosses 11 wetlands. No poles would be placed within these wetlands.	ROW includes 13 acres of wetlands and crosses 16 wetlands. Two poles would be placed within these wetlands.	ROW includes 1 acre of wetlands and crosses 2 wetlands. No poles would be placed within these wetlands.	ROW includes 3 acres of wetlands and crosses 5 wetlands. No poles would be placed within these wetlands.
Floodplains	No land designated as 100-year floodplain is located within these route segments.		ROW includes approximately 1 acre designated as 100-year floodplain.	ROW includes approximately 7 acres designated as 100-year floodplain.	No land designated as 100-year floodplain is located within these route segments.	
Effects on the Natural Environment						
Flora	Would permanently impact approximately 68 square feet of vegetation.	Would permanently impact approximately 216 square feet of vegetation.	Would permanently impact between 121 and 173 square feet of vegetation.	Would permanently impact approximately 334 square feet of vegetation.	No vegetation would be impacted.	Would permanently impact approximately 73 square feet of vegetation.
Fauna	There is a potential for temporary displacement of wildlife during construction and for loss of small amounts of habitat. Because transmission line routing avoids direct impacts to lakes and rivers, impacts on fisheries will be small. Any impacts, temporary or permanent, are unlikely to affect population levels of are wildlife.					
Rare and Unique Natural Resources	No impacts.			One USFWS easement is crossed.	No impacts.	
	No state-listed threatened, endangered or candidate species identified within any of the ROWs.					

Resources	Option 8		Option 9		Option 10	
	Applicant Preferred Route Segment	Option 8	Applicant Preferred Route Segment	Option 9	Route A	Option 10
Air Quality	During construction there would be limited emissions due to exhaust from vehicles and other construction equipment and fugitive dust from ROW clearing. The magnitude of the construction emissions is influenced heavily by the specific construction activity occurring. Adverse impacts to the surrounding environment would be minimal because of the short and intermittent nature of the exhaust emission and dust-producing construction phases.					

Table K-4. Summary Table, Proposed Options, Option 11 and Option 12

Resource	Option 11		Option 12	
	Route E	Option 11	Route B	Route E
Effects on Human Settlement				
Socioeconomic Resources	The construction, operation and maintenance of the transmission lines are not anticipated to negatively impact socioeconomic resources in the Project area. Immediate short-term positive economic gains would likely result from activities associated with the construction of the proposed Project. Long-term beneficial impacts include incremental increases in revenues from utility property tax and landowners would receive compensation for the rights to build, operate and maintain the transmission facilities within the easements area.			
Land Use, Zoning and Planning	Affects 57 acres of agricultural zoned land. No other land uses are affected.	Affects 53 acres of agricultural and 11 acres of special agricultural zoned land. No other land uses are affected.	Affects 18 acres of agricultural, 4 acres of commercial/industrial, and 10 acres of residential zoned land. No other land uses are affected.	Affects 22 acres of agricultural zoned land. No other land uses are affected.
Displacement	No residences are located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.	No residences are located within 75 feet of the centerline alignment.
	The alignment would be designed to avoid residential displacements.			
Property Values	Based on research conducted, it is not anticipated that the proposed transmission line routes evaluated would significantly affect the value of properties adjacent to the proposed transmission lines.			
Pipelines	None of the options would be crossed by pipelines.			
Noise	Noise associated with the operation of the proposed 345 kV transmission line is not predicted to exceed the limits identified by the MPCA.			
Effects on Public Health and Safety				
EMF	The proposed HVTL would conform to all applicable local, state, and North American Electric Reliability Corporation (NERC) standards and National Electric Safety Code (NESC) standards regarding clearance to the ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths. There are no anticipated impacts attributed to EMF from the Project however; three primary methods to reduce EMF exposure for the Project include: avoiding residences to the greatest possible extent, compacting phases, and rearranging phase conductors to cancel EMF.			

Resource	Option 11		Option 12	
	Route E	Option 11	Route B	Route E
Magnetic Fields	Actual current flow on the transmission line would be less than peak levels during most hours of the year. Predicted magnetic field levels are considerably less than the recommended exposure guidelines. Based on the proposed design and operation of the project, no impacts are anticipated.			
Stray Voltage	Poor grounding conditions, inadequate connections, lightening strikes, or undersized neutral conductors can be the cause for stray voltage. Therefore, impacts attributed to stray voltage are not anticipated.			
Effects on Recreation				
Recreation Land	There are no federal or state parks near this route. No recreation land is affected or trails or scenic byways crossed.	There are no federal or state parks near this option. No recreation land is affected or trails or scenic byways crossed.	There are no federal or state parks near this route. No recreation land is affected or trails or scenic byways crossed.	There are no federal or state parks near this route. No recreation land is affected or trails or scenic byways crossed.
Aesthetics	There are approximately 11 homes within 500 feet of the alignment.	There are approximately 4 homes within 500 feet of the alignment.	There are approximately 3 homes within 500 feet of the alignment.	No homes are located within 500 feet of the alignment.
	Would likely affect visual quality within open landscapes, WMA, wayside rest areas, and campgrounds in proximity of the transmission line.			
Effects on Transportation				
Roadways	No impacts to future roadway projects are expected from construction activities along the options.			
Airports	There are no public-use airports within 5 miles of any route in the Sauk Centre-St Cloud section. Therefore, construction notice to FAA would not be required. No impacts to VORs are expected.			
Effects on Wireless Technologies				
Wireless technologies	No widespread interference to radio, television, or cellular phones is anticipated.			
Effects on Archaeological and Historic Resources				
Archaeological & Historic Resources	No discussion of cultural resources has occurred for this permit application.			
Effects on Land-based Economics				

Resource	Option 11		Option 12	
	Route E	Option 11	Route B	Route E
Agriculture	Approximately 88% of the route is zoned for agricultural use, of which approximately 22 acres are considered prime farmland. Permanent impacts due to pole placement are 0.40 acres.	Approximately 83% of the route is zoned for agricultural use, of which approximately 17 acres are considered prime farmland. Permanent impacts due to pole placement are 0.43 acres.	Approximately 56% of the route is zoned for agricultural use, of which approximately 6 acres are considered prime farmland. Permanent impacts due to pole placement are 0.03 acres.	Approximately 100% of the route is zoned for agricultural use, of which approximately 0 acres are considered prime farmland. Permanent impacts due to pole placement are 0.07 acres.
Forestry	Impacts approximately 11 acres of wooded land.	Impacts approximately 11 acres of wooded land.	Impacts approximately 8 acres of wooded land.	Impacts approximately 4 acres of wooded land.
Tourism	No impacts to tourism are anticipated.			
Mining	No aggregate sources have been identified within the ROW.			One aggregate source has been identified within the ROW.
Effects on Water Resources				
Surface Waters	Crosses 4 small or unnamed streams and 2 PWI streams.	No stream crossings.	Crosses 2 small or unnamed streams and no PWI streams.	Crosses 1 small or unnamed stream and no PWI streams.
Groundwater Resources	All well locations within the routes would be avoided; therefore no impacts to groundwater resources are anticipated.			
Wetlands	ROW includes 3 acres of wetlands and crosses 10 wetlands. No poles would be placed within these wetlands.	ROW includes 1 acre of wetlands and crosses 8 wetlands. No poles would be placed within these wetlands.	ROW includes 17 acres of wetlands and crosses 4 wetlands. Six poles would be placed within these wetlands.	ROW includes 5 acres of wetlands and crosses 2 wetlands. No poles would be placed within these wetlands.

Resource	Option 11		Option 12	
	Route E	Option 11	Route B	Route E
Floodplains	No land designated as 100-year floodplain is located within these route segments.		No land designated as 100-year floodplain is located within these route segments.	
Effects on the Natural Environment				
Flora	Would permanently impact approximately 262 square feet of vegetation.	Would permanently impact approximately 244 square feet of vegetation.	Would permanently impact approximately 478 square feet of vegetation.	Would permanently impact approximately 248 square feet of vegetation.
Fauna	There is a potential for temporary displacement of wildlife during construction and for loss of small amounts of habitat. Because transmission line routing avoids direct impacts to lakes and rivers, impacts on fisheries will be small. Any impacts, temporary or permanent, are unlikely to affect population levels of are wildlife.			
Rare and Unique Natural Resources	Two Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance and 4 Native Plant Communities are crossed.	No impacts.	Two Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance is crossed.	One Minnesota County Biological Survey (MCBS) Sites of Biodiversity Significance is crossed.
	No state-listed threatened, endangered or candidate species identified within any of the ROWs.			
Air Quality	During construction there would be limited emissions due to exhaust from vehicles and other construction equipment and fugitive dust from ROW clearing. The magnitude of the construction emissions is influenced heavily by the specific construction activity occurring. Adverse impacts to the surrounding environment would be minimal because of the short and intermittent nature of the exhaust emission and dust-producing construction phases.			

Table K-5. Summary Table, Amended Scope Options and Undergrounding Alternatives

Factor	Amended Scope Alternatives		Undergrounding Alternatives	
	Option AS-5	Option D/E	Route D Undergrounding	Route D Above Ground
Effects on Human Settlement				
Socioeconomic Resources	The construction, operation and maintenance of the transmission lines are not anticipated to negatively impact socioeconomic resources in the Project area. Immediate short-term positive economic gains would likely result from activities associated with the construction of the proposed Project. Long-term beneficial impacts include incremental increases in revenues from utility property tax and landowners would receive compensation for the rights to build, operate and maintain the transmission facilities within the easements area.			
Land Use, Zoning and Planning	Affects 29 acres of agricultural, 11 acres of residential, and 0.75 acre of municipal zoned land. No other land uses are affected.	Affects 40 acres of agricultural zoned land. No other land uses are affected.	Affects 56.8 acres of agricultural, 16.9 acres of commercial/industrial, 11.2 acres of residential, 7.1 acres of municipal, and 2.7 acres of recreational zoned land. No other land uses are affected.	Affects 146.9 acres of agricultural, 34.3 acres of commercial/industrial, 28.8 acres of residential, 20.2 acres of municipal, and 6.3 acres of recreational zoned land. No other land uses are affected. These acreages are the comparable portion of the aboveground transmission line along Route D.
Displacement	No residences are located within 75 feet of the centerline alignment.	One residence is located within 75 feet of the centerline alignment.	One residence is located within 75 feet of the centerline alignment.	Seven residences are located within 75 feet of the centerline alignment.
	The alignment would be designed to avoid residential displacements.			
Property Values	Based on research conducted, it is not anticipated that the proposed transmission line routes evaluated would significantly affect the value of properties adjacent to the proposed transmission lines.			
Pipelines	None of the options would be crossed by pipelines.			
Noise	Noise associated with the operation of the proposed 345 kV transmission line is not predicted to exceed the limits identified by the MPCA.			
Effects on Public Health and Safety				

Factor	Amended Scope Alternatives		Undergrounding Alternatives	
	Option AS-5	Option D/E	Route D Undergrounding	Route D Above Ground
EMF	<p>The proposed HVTL would conform to all applicable local, state, and North American Electric Reliability Corporation (NERC) standards and National Electric Safety Code (NESC) standards regarding clearance to the ground, clearance to crossing utilities, clearance to buildings, strength of materials, and ROW widths.</p> <p>There are no anticipated impacts attributed to EMF from the Project however; three primary methods to reduce EMF exposure for the Project include: avoiding residences to the greatest possible extent, compacting phases, and rearranging phase conductors to cancel EMF.</p>			
Magnetic Fields	<p>Actual current flow on the transmission line would be less than peak levels during most hours of the year. Predicted magnetic field levels are considerably less than the recommended exposure guidelines. Based on the proposed design and operation of the project, no impacts are anticipated.</p>			
Stray Voltage	<p>Poor grounding conditions, inadequate connections, lightning strikes, or undersized neutral conductors can be the cause for stray voltage. Therefore, impacts attributed to stray voltage are not anticipated.</p>		<p>No impacts attributed to stray voltage because the electric fields are completely contained within the transmission cable by the insulation shield.</p>	<p>Poor grounding conditions, inadequate connections, lightning strikes, or undersized neutral conductors can be the cause for stray voltage. Therefore, impacts attributed to stray voltage are not anticipated.</p>
Effects on Recreation				
Recreation Land	<p>There are no federal or state parks near this option. No recreation land is affected or trails or scenic byways crossed.</p>	<p>There are no federal or state parks near this option. No recreation land is affected or trails or scenic byways crossed.</p>	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 2.7 acres of recreation/open space/park land would be impacted. The route crosses three trails.</p>	<p>There are no federal or state parks near this route. Depending on the alignment of the route, approximately 6.3 acres of recreation/open space/park land would be impacted. No trails or scenic byways are crossed.</p>
Aesthetics	<p>There are approximately 4 homes within 500 feet of the alignment.</p>	<p>There are no homes within 500 feet of the alignment.</p>	<p>There are approximately 100 homes within 500 feet of the alignment.</p>	<p>There are approximately 100 homes within 500 feet of the alignment.</p>

Factor	Amended Scope Alternatives		Undergrounding Alternatives	
	Option AS-5	Option D/E	Route D Undergrounding	Route D Above Ground
	Would likely affect visual quality within open landscapes, WMA, wayside rest areas, and campgrounds in proximity of the transmission line.			
Effects on Transportation				
Roadways	No impacts to future roadway projects are expected from construction activities along the options.		This route would prevent new roadways from being built on top of the 60 foot wide ROW. In addition, the installation of the line may require a permanent closure or rerouting of a portion of Upper Spunk Lake Road.	Route D primarily follows I-94. Construction activities along this route have the potential to impact two future roadway projects.
Airports	There are no public-use airports within 5 miles of any route in the Sauk Centre-St Cloud section. Therefore, construction notice to FAA would not be required. No impacts to VORs are expected.			
Effects on Wireless Technologies				
Wireless technologies	No widespread interference to radio, television, or cellular phones is anticipated.			
Effects on Archaeological and Historic Resources				
Archaeological & Historic Resources	No discussion of cultural resources has occurred for this permit application.			
Effects on Land-based Economics				
Agriculture	Approximately 79% of the route is zoned for agricultural use, of which approximately 0 acres are considered prime farmland. Permanent impacts due to pole placement are 0.30 acres.	Approximately 100 of the route is zoned for agricultural use, of which approximately 0 acres are considered prime farmland. Permanent impacts due to pole placement are 0.18 acres.	Approximately 57 acres of the route is zoned for agricultural use, of which approximately 21 acres are considered prime farmland. Permanent impacts due to pole placement are 66 acres.	Approximately 148 acres of the route are zoned for agricultural use, of which approximately 54 acres are considered prime farmland. Permanent impacts due to pole placement are 1.35 acres.

Factor	Amended Scope Alternatives		Undergrounding Alternatives	
	Option AS-5	Option D/E	Route D Undergrounding	Route D Above Ground
Forestry	Impacts approximately 2 acres of wooded land.	Impacts approximately 5 acres of wooded land.	Impacts approximately 12 acres of wooded land.	Impacts approximately 30 acres of wooded land.
Tourism	No impacts to tourism are anticipated.			
Mining	No aggregate sources have been identified with the ROW for either route.			
Effects on Water Resources				
Surface Waters	Crosses 1 small or unnamed stream and 1 PWI stream.	Crosses 2 small or unnamed streams and 1 PWI stream.	Crosses 9 small or unnamed streams and 5 PWI streams.	Crosses 32 small or unnamed streams and 8 PWI streams.
Groundwater Resources	All well locations within the routes would be avoided; therefore, no impacts to groundwater resources are anticipated.			
Wetlands	ROW includes 2 acres of wetlands and crosses 3 wetlands. No poles would be placed within these wetlands.	ROW includes 7 acres of wetlands and crosses 6 wetlands. No poles would be placed within these wetlands.	ROW includes 3 acres of wetlands and crosses 16 wetlands.	ROW includes 16 acres of wetlands and crosses 25 wetlands. Two poles would be placed within these wetlands.
Floodplains	ROW includes approximately 11 acres designated as 100-year floodplain.	ROW includes approximately 6 acres designated as 100-year floodplain.	There are no 100 year floodplains within the ROW.	There are no 100 year floodplains within the ROW.
Effects on the Natural Environment				
Flora	Would permanently impact approximately 50 square feet of vegetation.	Would permanently impact approximately 315 square feet of vegetation.	Would permanently impact approximately 19 square feet of vegetation.	Would not permanently impact any vegetation.
Fauna	There is a potential for temporary displacement of wildlife during construction and for loss of small amounts of habitat. Because transmission line routing avoids direct impacts to lakes and rivers, impacts on fisheries will be small. Any impacts, temporary or permanent, are unlikely to affect population levels of are wildlife.			

Factor	Amended Scope Alternatives		Undergrounding Alternatives	
	Option AS-5	Option D/E	Route D Undergrounding	Route D Above Ground
Rare and Unique Natural Resources	No impacts.	No impacts.	Impact approximately 3 acres of an MCBS site, 1 acre of one a native plant community.	Impact approximately 0.02acres of an MCBS site, three acres of the native plant community plus an additional 0.02 acres of an additional native plant community.
Air Quality	During construction there would be limited emissions due to exhaust from vehicles and other construction equipment and fugitive dust from ROW clearing. The magnitude of the construction emissions is influenced heavily by the specific construction activity occurring. Adverse impacts to the surrounding environment would be minimal because of the short and intermittent nature of the exhaust emission and dust-producing construction phases.			