

**STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE PUBLIC UTILITIES COMMISSION**

IN THE MATTER OF THE APPLICATION FOR A
ROUTE PERMIT FOR THE FARGO TO ST. CLOUD
345 KV TRANSMISSION LINE PROJECT

PUC DOCKET NO. ET-2, E-002/TL-09-1056
OAH DOCKET NO. 15-2500-20995-2

APPLICANTS' POST-HEARING BRIEF

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I. INTRODUCTION

Northern States Power Company, a Minnesota corporation (“Xcel Energy”), and Great River Energy, a Minnesota cooperative corporation (“Great River Energy”) (collectively, “Applicants”), respectfully submit this Post-Hearing Brief (“Brief”) and Proposed Findings of Fact, Conclusions of Law, and Recommendation (“Proposed Findings”) to the Administrative Law Judge (“ALJ”) for the Fargo-St. Cloud 345 kV transmission line project (“Fargo-St. Cloud Project” or “Project”).

After a thorough proceeding, the record has been fully developed to enable the ALJ and the Minnesota Public Utilities Commission (“Commission”) to assess the effects of the Project on human settlement, land based economies, archaeological and historic sites, rare and unique resources, and the environment and to determine the appropriate route for the Project.

Applicants appreciate the input from landowners, local governmental units and other stakeholders to help inform the route permit proceeding, particularly those who submitted written comments and those who attended the public meetings and hearings.

This Brief and the Proposed Findings detail Applicants’ proposal, the applicable law, and the record and show that Applicants have satisfied all requirements for a Route Permit for the Project. Applicants respectfully request that the ALJ conclude that Applicants’ Modified Preferred Route, with Option 13, fully satisfies the routing criteria and factors identified under Minnesota Rule 7850.4100 and Minnesota Statutes Section 216E.03, subdivision 7, and recommend that the Commission issue a Route Permit for the Modified Preferred Route with Option 13. In the alternative, Applicants support adoption of the Modified Preferred Route between the North Dakota border and Sauk Center with Route E, modified by Alternatives AS-4, Option 11, and the northern segment of Option 12, between Sauk Center and St. Cloud.

Applicants further request that the ALJ recommend a route width of up to 1,000 feet for the authorized route and, in certain identified areas, a route width of up to 1.25 miles to address site-specific concerns and to allow Applicants to work with landowners and other agencies to design the alignment of the facilities.

This brief is organized into three sections: The first section outlines the Project's scope and Applicants' proposed routes. The second section evaluates key issues raised during public and evidentiary hearings, including the quantity of interstate crossings, corridor sharing, electromagnetic fields and issues specific to the individual segments of the Project. The last section discusses application of the routing criteria more specifically, analyzing the North Dakota-Alexandria and Alexandria-Sauk Centre segments and then proceeding to the route alternatives pertaining to the Sauk Centre-St. Cloud portion of the Project.

II. PROCEDURAL BACKGROUND

See Applicants' Proposed Findings for a recitation of the procedural history in this Docket.

III. PROJECT SUMMARY

A. Fargo-St. Cloud Project Overview

The Fargo-St. Cloud Project is part of one of several transmission projects proposed by the CapX2020 Transmission Initiative ("CapX2020").¹ The overall Project consists of approximately 201 to 251 total miles of 345 kV transmission line and associated facilities between the new Bison Substation Siting Areas near Fargo, North Dakota, and the Quarry Substation located west of St. Cloud, Minnesota.² The Minnesota portion of the Project consists of approximately 151-189 miles

¹ The other CapX2020 projects are a 345 kV transmission line from Monticello, Minnesota to St. Cloud, Minnesota; a 345 kV transmission line between Hampton, Minnesota, Rochester, Minnesota, and La Crosse, Wisconsin; a 345 kV transmission line between Brookings County, South Dakota and Hampton, Minnesota; and a 230 kV transmission line from Bemidji, Minnesota to Grand Rapids, Minnesota.

² Ex. 2 at p. 6 (Lahr Direct).

of 345 kV transmission line and associated facilities between the Quarry Substation, located west of St. Cloud, Minnesota in unincorporated Stearns County, and the Minnesota/North Dakota border.³

B. Applicants' Proposed Routes in Application and at Hearing

On October 1, 2009, Applicants submitted a Route Permit Application (“RPA” or “Application”) identifying two proposed routes: the RPA Preferred Route and Route A, as well as five shorter route options.⁴ One of the route options for the Sauk Centre to St. Cloud portion of the Project was Applicants’ Preferred Route Segment Alternative 1, which was later re-named “Route E” in the scoping process.⁵ The proposed routes are shown in the tile maps provided as Hearing Exhibit 4.⁶

1. *RPA Preferred Route*

The preferred route proposed in the Route Permit Application (the “RPA Preferred Route”) begins at the Quarry Substation and largely parallels an existing 115 kV line and other linear features such as property lines, section lines, and field lines, heading north to an area west of St. Stephen.⁷ From this point, the RPA Preferred Route turns west, and generally parallels existing rights of way and other linear features such as property line, section lines, and field lines until intersecting with Interstate 94 (“I-94”) east of Sauk Centre.⁸

The RPA Preferred Route then proceeds northwest parallel to I-94 through Alexandria and to the Red River.⁹ The RPA Preferred Route diverges from I-94 north of Barnesville Township,

³ Ex. 2 at p. 6 (Lahr Direct).

⁴ Ex. 1A at § 5.0 (Application); Ex. 2 at pp. 8-9 (Lahr Direct).

⁵ Ex. 18 at p. 13 (EIS Scoping Decision).

⁶ Exhs. 4A-4W (Evidentiary Hearing Route Maps).

⁷ Ex. 2 at p. 8 (Lahr Direct).

⁸ Ex. 2 at p. 8 (Lahr Direct).

⁹ Ex. 2 at p. 8 (Lahr Direct).

where it turns due west and mostly parallels existing road rights-of-way and other linear features to the Red River at the Minnesota/North Dakota border.¹⁰

2. Modified Preferred Route

The Modified Preferred Route differs in certain respects from the RPA Preferred Route. First, the Modified Preferred Route includes a new Red River crossing location. After submission of the Application, North Dakota representatives expressed a preference for a more southerly Red River crossing in order to accommodate a river diversion project (“Diversion Project”) currently planned by the United States Army Corps of Engineers (“USACE”), as well as future growth of the general Fargo area to its south.¹¹ Applicants therefore proposed a new river crossing in Comstock Township, south of the RPA Preferred Route crossing.¹² To reach the existing Preferred Route from the alternate Red River crossing, Applicants initially proposed two route segments: (i) a 17-mile alteration to the RPA Preferred Route at its west end, proceeding east from the river crossing and following an existing 69 kV transmission line and various roads and property boundaries to I-94 (Alternative AS-1); or (ii) an alternative segment heading due east from the new Red River Crossing to County Road 75, where the route would proceed north briefly to join the RPA Preferred Route and then proceed east along the RPA Preferred Route to I-94 (Alternative AS-2).¹³ Both alternatives were included in the Environmental Impact Statement (“EIS”) Amended Scoping Decision.¹⁴ Applicants have included AS-1 in the Modified Preferred Route, as it is both most compatible with

¹⁰ Ex. 2 at p. 8 (Lahr Direct).

¹¹ Ex. 2 at p. 11 (Lahr Direct).

¹² Ex. 2 at pp. 10-11 (Lahr Direct).

¹³ Ex. 2 at p. 10-11 (Lahr Direct); Ex. 4 at Tile B-2. The RPA Preferred Route is 169 miles long. If AS-1 were substituted, the route would be 168 miles long. If AS-2 were substituted, the route would be 172 miles long. Ex. 2 at Schedule 3, p. 2 (Lahr Direct).

¹⁴ Ex. 21 at p. 1 and Maps 1-2 (EIS Amended Scoping Decision).

the potential location of the Diversion Project as well as one mile shorter than the Modified Preferred Route.¹⁵

Second, Applicants increased the Alexandria Switching Station expansion area to the east and south by 4.3 acres.¹⁶ This expansion was included in the Amended Scoping Decision as AS-3.¹⁷ The area is needed to provide extra space for the new equipment related to the 345 kV transmission line connection.¹⁸

3. Route A

Like the RPA Preferred Route and Modified Preferred Route, Route A largely follows existing linear features.¹⁹ However, rather than following a major transportation corridor, Route A typically parallels property lines and secondary roads.²⁰ Beginning at the Quarry Substation, it diverges from the Modified Preferred Route west of St. Stephen and then mostly parallels existing road rights-of-way and property lines to the Minnesota border.²¹ If Route A were adopted, Applicants would also request inclusion of AS-3 (the Alexandria Switching Station expansion).

4. Route E

Route E is a segment of the Project that lies solely between Sauk Centre and St. Cloud, and was originally proposed by the Applicants as an alternative route segment to the Modified Preferred Route.²² This segment was then re-labeled as Route E following the Office of Energy Security's ("OES") Advisory Task Force ("ATF") Scoping Process, in which the ATF identified six new

¹⁵ Ex. 3 at p. 10 at note 3 (Chezik Direct); Ex. 30 at Schedule 8 at p. 2 (Lahr Rebuttal).

¹⁶ Ex. 2 at p. 11 (Lahr Direct).

¹⁷ Ex. 2 at p. 15 (Lahr Direct); Ex. 21 at 1 (EIS Amended Scoping Decision).

¹⁸ Ex. 2 at p. 15 (Lahr Direct).

¹⁹ Ex. 2 at p. 8 (Lahr Direct).

²⁰ Ex. 2 at pp. 8-9 (Lahr Direct).

²¹ Ex. 2 at p. 9 and Schedule 2A (Lahr Direct).

²² Ex. 18 at p. 13 (EIS Scoping Decision).

alternate route segments between Sauk Centre and St. Cloud.²³ Route E is one of the nine routes, including Route A and the Modified Preferred Route, lying between Sauk Centre and St. Cloud that were evaluated in this proceeding.²⁴

Route E largely proceeds west out of the Quarry Substation, until it begins to turn north just west of Collegeville Township.²⁵ Route E then proceeds north until it turns west near Albany, then proceeds west into Oak Township, then turns north to join the Modified Preferred Route near Freeport.²⁶

C. Applicants' Current Supported Routes

Applicants recommend approval of the Modified Preferred Route with the addition of Option 13. Option 13 is located in Sections 16 and 21 of Alliance Township in Clay County.²⁷ If implemented, Option 13 would avoid direct impacts to the Lesmeister Flying Service. A map depicting the Modified Preferred Route with Option 13 is attached as **Schedule 1**.

In the alternative, applicants support Route E with three modifications:

- Alternative Scoping Amendment 4 (“AS-4”): AS-4 is a widening of the route near Albany, Minnesota by approximately 3,000 feet to accommodate potential expansion plans of local business Wells Concrete.²⁸ This alternative would address concerns expressed by the City of Albany and Wells Concrete if the Modified Preferred Route were to proceed directly adjacent to Wells Concrete.²⁹ Applicants commit to work with Wells Concrete and any other affected landowners to identify an alignment.

²³ Ex. 18 at pp. 12-14 (EIS Scoping Decision).

²⁴ Ex. 18 at p. 13 (EIS Scoping Decision); Ex. 2 at Schedule 2D (Lahr Direct).

²⁵ Ex. 2 at Schedule 2D (Lahr Direct).

²⁶ Ex. 2 at Schedule 2D (Lahr Direct).

²⁷ Ex. 2 at Schedule 4 (Lahr Direct); Ex. 4 at Tile B-2.

²⁸ Ex. 2 at Schedule 3 at p. 3 (Lahr Direct).

²⁹ Final Environmental Impact Statement (“FEIS”) at p. 2-89. The City of Albany indicated that Route E will be acceptable with the addition of AS-4. *Id.*

- Option 11: Option 11 follows existing roads, reduces housing impact, and would avoid a glacial moraine near the border of St. Joseph and Collegeville Townships.³⁰
- Northern alternative within Option 12: Segment E-5 of Option 12 is depicted on Figure 11 to the EIS Scoping Decision³¹ and on Map 5 of the Amended Scoping Decision.³² As originally proposed, Option 12 consisted of two alternate means of connecting Route E and ATF Routes F and G, or ATF Routes B, C, and D, to the Quarry Substation.³³ Segment E-5 of Option 12 is the superior means because it is more direct and follows an existing railroad corridor.³⁴

Hereafter, references to Route E include the above three amendments. A map depicting Route E with these amendments is attached as **Schedule 2**. Route E is a constructible route that compares favorably to other alternatives to the Modified Preferred Route.

D. Project Construction

The Project is currently proposed to be built with double circuit capable structures.³⁵ This entails poles supporting two circuits, meaning davit arms for both circuits will be installed during initial construction of the Project.³⁶ In most instances, only one circuit (three sets of bundled conductors) will actually be installed during initial construction.³⁷ To facilitate the efficient addition of a second circuit if required and to reduce associated construction impacts to the transmission line and interstate highway, Applicants proposed to install all six bundled conductors at highway crossings and interchange locations during initial construction.³⁸ The conductors will be tied

³⁰ Ex. 18 at p. 13 (EIS Scoping Decision); Ex. 2 at p. 24 (Lahr Direct).

³¹ Ex. 18 at Figure 1 (EIS Scoping Decision).

³² Ex. 21 at Map 5 (EIS Amended Scoping Decision).

³³ Ex. 2 at p. 24 (Lahr Direct); Ex. 22A at Figure 1-10 (Draft Environmental Impact Statement); Ex. 21 at Map 5 (EIS Amended Scoping Decision).

³⁴ Ex. 2 at p. 24 (Lahr Direct).

³⁵ Ex. 3 at pp. 3-4 (Chezik Direct).

³⁶ Ex. 3 at p. 4 (Chezik Direct).

³⁷ Ex. 3 at p. 6 (Chezik Direct).

³⁸ Ex. 3 at pp. 6-7 (Chezik Direct).

together in pairs and will, therefore, act as a single circuit (three phase) with no additional transmission capacity being provided.³⁹ Minnesota Department of Transportation (“Mn/DOT”) supports this approach to minimize highway impacts,⁴⁰ and would further support installing six conductors at highway crossings as a condition in the route permit.⁴¹

E. Applicants’ Proposed Alignments

Each of the proposed routes depicts an estimated alignment.⁴² For the Modified Preferred Route, which parallels the I-94 right-of-way for a portion of the route, Applicants propose placing the alignment at least 25 feet from the Mn/DOT right-of-way.⁴³ This alignment would generally allow the poles to be placed far enough away from highway rights-of-way that there would be no permanent overhang by the conductors or support arms.⁴⁴ On non-interstate roads, Applicants propose to place the poles five (5) to eight (8) feet outside the road right-of-way.⁴⁵ Precise pole placement will be determined after a route is selected.⁴⁶

³⁹ Ex. 3 at p. 7 (Chezik Direct).

⁴⁰ Evidentiary Hearing Transcript Vol. 4 (“Vol. 4”) at p. 94 (Seykora) (“We stated that we supported that in the Monticello to St. Cloud proposal for the reason that it accomplishes all of the stringing of wires across the highway all at once so that we don’t need to go back and disrupt the traffic in the future if and when the second circuit is strung, and the same applies today, we would support that in the Fargo to St. Cloud route as well.”).

⁴¹ Vol. 4 at p. 95 (Seykora) (“Well, we feel it’s a good enough idea that we would certainly have no objection and, in fact, the support of that [sic] as a condition of the permit.”).

⁴² Ex. 1A at § 2.3.2 (Application).

⁴³ Ex. 2 at pp. 26-27 (Lahr Direct).

⁴⁴ Ex. 2 at p. 27 (Lahr Direct).

⁴⁵ Vol. 2 at p. 50 (Lahr).

⁴⁶ Ex. 1A at p. 2-5 (Application).

F. Applicants' Proposed Route Width

Pursuant to Minn. Stat. § 216E.02, subd. 1, Applicants request a route width of up to 1,000 feet for the majority of the length of the route.⁴⁷ In particular constrained areas, Applicants also request a route of up to 1.25 miles in width.⁴⁸ Specifically, there are locations on Applicants' Modified Preferred Route for which Applicants requested a route width up to 1.25 miles to retain the flexibility for structure placement near the I-94 right-of-way, in heavily populated areas, or in areas where protected areas such as MN/DOT scenic easement areas create the need for additional flexibility.⁴⁹ These wider route width areas are set forth in Figures 2-3 and 2-4 to the Application.⁵⁰

There are also areas where site-specific considerations warrant a reduced route width of no less than 400 feet to avoid U.S. Fish and Wildlife Service ("USFWS") lands, in which overhead transmission lines would not be permitted.⁵¹

G. Required Right-of-Way

A 150-foot wide right-of-way will be needed for the majority of the 345 kV transmission line.⁵² In some limited instances, where specialty structures are required for long spans or in environmentally sensitive areas, a 180-foot wide right-of-way may be required.⁵³ If the Modified Preferred Route were selected, it is anticipated that a right-of-way of up to 300 foot would be

⁴⁷ Ex. 1A at § 2.3.1 (Application); Ex. 2 at p. 15 (Lahr Direct).

⁴⁸ Ex. 1A at Figures 2-3 and 2-4 (Application); Ex. 1B at Appendix B.2 (Application); Ex. 2 at p. 15 (Lahr Direct).

⁴⁹ Ex. 1A at § 2.3.1 and Figures 2-3 and 2-4 (Application); Ex. 2 at pp. 15-16 (Lahr Direct).

⁵⁰ Ex. 1A

⁵¹ Ex. 1A at § 2.3.1 (Application). Applicants also requested widened route widths in some areas along Route A, for similar reasons. Ex. 1A at Figures 2-3 and 2-4 (Application).

⁵² Ex. 1A at p. 3-3 (Application); Ex. 3 at p. 7 (Chezik Direct).

⁵³ Ex. 1A at p. 3-3 (Application); Ex. 3 at p. 7 (Chezik Direct).

required for the installation of two side-by-side 345 kV transmission lines through the Sauk Center Airport area. This would allow for one circuit now and reserve space for a future circuit.

IV. APPLICATION OF RELEVANT CRITERIA

A. The Statutes and Rules

1. *Power Plant Siting Act*

The Power Plan Siting Act, at Minn. Stat. § 216E.03, subd. 7(b), identifies twelve factors to guide the Commission's route designations:

- (1) evaluation of research and investigations relating to the effects on land, water and air resources of large electric power generating plants and high-voltage transmission lines and the effects of water and air discharges and electric and magnetic fields resulting from such facilities on public health and welfare, vegetation, animals, materials and aesthetic values, including baseline studies, predictive modeling, and evaluation of new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment;
- (2) environmental evaluation of sites and routes proposed for future development and expansion and their relationship to the land, water, air and human resources of the state;
- (3) evaluation of the effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects;
- (4) evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants;⁵⁴
- (5) analysis of the direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired;
- (6) evaluation of adverse direct and indirect environmental effects that cannot be avoided should the proposed site and route be accepted;
- (7) evaluation of alternatives to the applicant's proposed site or route proposed pursuant to subdivision 1 and 2;
- (8) evaluation of potential routes that would use or parallel existing railroad and highway rights-of-way;

⁵⁴ Subfactor 4 is not applicable since Applicants are not proposing to site a large electric generating plant.

- (9) evaluation of governmental survey lines and other natural division lines of agricultural land so as to minimize interference with agricultural operations;
- (10) evaluation of future needs for additional high-voltage transmission lines in the same general area as any proposed route, and the advisability of ordering the construction of structures capable of expansion in transmission capacity through multiple circuiting or design modifications;
- (11) evaluation of irreversible and irretrievable commitments of resources should the proposed site or route be approved; and
- (12) when appropriate, consideration of problems raised by other state and federal agencies and local entities.

For applications filed after April 30, 2010, Section 216E.16, subd. 7(e) further requires the Commissioner to consider existing highways and transmission line routes.⁵⁵

2. *Minn. R. 7850.4100 Factors*

The Commission must also consider Minn. R. 7850.4000 and 7840.4100, which established criteria and factors mirroring the criteria and factors established by Minn. Stat. § 216E.03, subd. 7.

The rule factors are as follows:

- A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;
- B. effects on public health and safety;
- C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;
- D. effects on archaeological and historic resources;
- E. effects on the natural environment, including effects on air and water quality resources and flora and fauna;
- F. effects on rare and unique natural resources;
- G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;

⁵⁵ The Fargo Project Route Permit Application was filed prior to this date.

- H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;
- I. use of existing large electric power generating plant sites;⁵⁶
- J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way;
- K. electrical system reliability;
- L. costs of constructing, operating, and maintaining the facility which are dependent on design and route;
- M. adverse human and natural environmental effects which cannot be avoided; and
- N. irreversible and irretrievable commitments of resources.

Application of the relevant routing factors to the record evidence in this matter demonstrates that several of the routes on balance have similar impacts, but that each route has a distinct mix of impacts associated with it. The record shows that the Modified Preferred Route with Option 13 satisfies the public interest in developing reliable, cost-effective electric facilities while minimizing impacts to the environment, human settlement and other land use conflicts.

B. Individual Public Comment and Evidentiary Hearing Issues

1. *Generally*

a. *Quantity of Interstate Crossings*

Pursuant to Minnesota Statute, utility facilities may be constructed, placed, or maintained across or along any State trunk highway in accordance with reasonable rules prescribed by Mn/DOT.⁵⁷ Consistent with Mn/DOT's rules, Minn. R. 8810.3100-8810.3600, Applicants will need to obtain Utility Permits from Mn/DOT to occupy trunk highway rights-of-way, including interstate rights-of-way, for any crossings or longitudinal installations.

⁵⁶ This criterion is not applicable here since it applies solely to power plant siting.

⁵⁷ Minn. Stat. § 222.37, subd. 1; Minn. Stat. § 161.45, subd. 1.

Mn/DOT expressed concerns about the number of potential I-94 freeway crossings if the Modified Preferred Route were selected, stating that a large number of crossings of the same highway may conflict with future highway construction and raise public safety concerns.⁵⁸ Mn/DOT did not express general concerns for safety or expansion at any specific crossing.⁵⁹

Applicants provided record evidence explaining that a final alignment has not yet been selected and would be determined at the appropriate time with full consideration given to minimizing the number of freeway crossings.⁶⁰ This approach was taken in the Monticello-St. Cloud docket, and resulted in a significant reduction in the number of I-94 crossings from the time of the route permit application to when the final alignment was selected.⁶¹

It will not, of course, be possible to avoid highway crossings altogether. In many instances, it is necessary to cross the highway to avoid a Mn/DOT rest area, Mn/DOT scenic easement, Waterfowl Production Area or Wildlife Management Area.⁶² In other situations, highway crossings are proposed to avoid homes along I-94.⁶³ But despite such obstacles, transmission line projects run along or next to highway rights-of-way throughout the state and country and Applicants believe that highway crossings are allowed by Minnesota law and Mn/DOT's policies and can be managed in consultation with the transportation authority. Applicants will work with Mn/DOT to reduce the

⁵⁸ Ex. 41 at p. 3 (Mn/DOT Draft Environmental Impact Statement (“DEIS”) Comment Letter).

⁵⁹ See Vol. 4 at p. 91 (Seykora) (“I don't think I can point today to one specific crossing that is in and of itself the problem.”).

⁶⁰ Ex. 1A at p. 2-5 (Application) (“Once a route is approved by the Commission, the utility then does more detailed engineering and contacts landowners to gather additional information about the circumstances of their property. Only after considering all inputs does the utility establish an exact alignment and pole placement.”); Vol. 1 at p. 187 (Lahr).

⁶¹ Vol. 4 at p. 92 (Seykora) (“From the initial proposals that we saw on the Monticello to St. Cloud to the final alignments that we looked at, there was a significant reduction in the number of crossings that occurred...”).

⁶² E.g., Vol. 6 at pp. 124-129 (Lahr).

⁶³ E.g., Vol. 6 at pp. 128-129 (Lahr).

number of highway crossings and plan for construction and maintenance of the facilities in a manner that minimizes impacts to Mn/DOT and the traveling public.

b. Corridor Sharing/Non-Proliferation

Several Intervenors and members of the public expressed interest in ensuring that the route selected follows existing corridors wherever possible.⁶⁴ Consistent with those comments, Minnesota’s policy of non-proliferation provides that transmission line infrastructure development should be contained, where possible, to areas where such development already exists.⁶⁵ However, the use of existing corridors is only one of several routing factors that must be considered when selecting the appropriate route for new transmission infrastructure.⁶⁶

Likewise, this policy is reflected in the siting rules and statutes applicable to this Project.⁶⁷ The routing statutes and rules require an evaluation of the use of survey lines and natural division lines to minimize agricultural impacts, as well as the use of existing roads and transmission line corridors.⁶⁸ In addition, Minn. Stat. § 216E.03, subd. 7(e) provides:

The commission must make specific findings that it has considered locating a route for a high-voltage transmission line on an existing high voltage transmission route and the use of parallel existing highway right-of-way and, to the extent those are not used for the route, the commission must state the reasons.

⁶⁴ See, e.g., Ex. 12 (Hylla/Schmitt Direct); Ex. 11 at p. 3 (Avon Township Chapman Direct).

⁶⁵ *People for Environmental Enlightenment and Responsibility v. Minnesota Environmental Quality Council*, 266 N.W.2d 858 (Minn. 1978).

⁶⁶ Minn. Stat. § 216E.03, subd. 7(b); Minn. R. 7850.4100(A)-(N).

⁶⁷ See Minn. Stat. § 216E.03, subd. 7(b)(8) (requiring evaluation of “potential routes that would use or parallel existing railroad and highway rights-of-way”); Minn. R. 7850.4100 (H) (requiring analysis of “use or paralleling of existing rights-of-way...”) and (J) (requiring analysis of “use of existing transportation, pipeline, and electrical transmission systems or rights-of-way”).

⁶⁸ Minn. Stat. § 216E.03, subd. 7(b)(9); Minn. R. 7850.4100(H).

Although the Application for this Project was filed prior to the enactment date,⁶⁹ paralleling highway rights-of-way and following existing transmission line routes has been fully considered in this docket through pre-existing siting criteria.

It is important to note that the Power Plant Siting Act and associated rules governing routing decisions require analysis of multiple other factors in addition to corridor sharing, all of which must be considered when assessing the appropriate route.⁷⁰ Moreover, the corridor sharing requirements do not place more importance on the consideration of corridor sharing than on other factors; rather, they require the Commission to consider corridor sharing and provide explanation when existing corridors are not followed. Likewise, Applicants were required to consider and did consider all routing factors and criteria, including paralleling existing rights-of-way, survey lines, and other natural division lines, in developing potential routes.⁷¹

In many areas, Applicants identified constraints that may compete with non-proliferation goals. For example, human settlement tends to be concentrated along roads and other existing corridors.⁷² Therefore, to minimize impacts to homes, a transmission line may need to be routed away from a road. Applicants' witness Darrin Lahr explained some of the constraints along Route D (I-94) in the area of Avon Township, which serve as an example of these competing considerations:

As one approaches Avon from the east, the south side of I-94 is constrained by a service road and commercial buildings as well as a cemetery, several houses, Spunk Lake, and a Mn/DOT rest area. On the north side of I-94 the area is constrained by service roads, commercial properties, a larger cemetery, significant housing, Spunk

⁶⁹ 2010 Minn. Laws ch. 288 sec. 3 Effective Date: April 30, 2010.

⁷⁰ Minn. Stat. § 216E.03, subd. 7(b); Minn. R. 7850.4100(A) through (N).

⁷¹ Ex. 30 at p. 6 (Lahr Rebuttal); Vol. 2 at p. 78 (Lahr).

⁷² Ex. 30 at p. 6 (Lahr Rebuttal).

Lake, and another Mn/DOT rest area. This congested area presents some of the most difficult and challenging routing along the entire Project.⁷³

A further example exists in the St. Wendel Township/Tamarack Bog area. The Modified Preferred Route follows an existing 115 kV transmission line through this area.⁷⁴ Certain parties and members of the public nonetheless expressed concern about routing the Project through the bog area.⁷⁵

Moreover, when evaluating corridor sharing, an end-to-end analysis is appropriate.⁷⁶ It would be possible to distill the Project into any length or number of segments, and thereby affect the corridor sharing analysis to achieve a particular result.⁷⁷ In addition, the EIS Scoping Decision divided the Project into three segments: North Dakota/Minnesota border to Alexandria, Alexandria to Sauk Centre, and Sauk Centre to St. Cloud, such that it is appropriate to evaluate corridor sharing for these segments. When all of the route alternatives and options are considered from the North Dakota border to St. Cloud and all the routing criteria and factors relating to corridor sharing⁷⁸ are evaluated, the routes have fairly similar degrees of corridor sharing.⁷⁹

c. *Electric and Magnetic Fields*

At the public hearings, members of the public and the North Route Citizens' Alliance, United Citizens Action Network, and NoCapX2020 (collectively "NoRCA") intervenors expressed

⁷³ Ex. 2 at p. 21 (Lahr Direct).

⁷⁴ Ex. 30 at p. 6 (Lahr Rebuttal).

⁷⁵ Ex. 12 at pp. 18-19 and 22 (Hylla/Schmitt Direct); *See* Scepianiak, Public Hearing, St. Joseph, Dec. 2, 2010, 12:30 p.m. at 38.

⁷⁶ Ex. 30 at p. 7 (Lahr Rebuttal).

⁷⁷ Ex. 30 at p. 7 (Lahr Rebuttal).

⁷⁸ Minn. Stat. § 216E.03, subd. 7(b)(8), (b)(9), and (e); Minn. R. 7850.4100(H) and (J).

⁷⁹ Ex. 30 at p. 7 and Schedule 11 (Lahr Rebuttal).

concern and asked questions about “EMFs,” or electromagnetic fields.⁸⁰ To address these concerns, Applicants provided additional information about electric and magnetic fields and provided an expert in the area of human health and safety with respect to these fields.

Electric fields are a function of the voltage of a transmission line, while magnetic fields are related to the current flowing on the line.⁸¹ Based on standards set forth by widely respected national and international scientific bodies, neither type of field around power lines is sufficient to present a discernible threat to human health.

(1) *Electric Fields*

Electric fields are measured in kilovolts per meter (“kV/m”).⁸² The intensity of the electric field is proportional to the voltage of the transmission line.⁸³ While there is no federal standard for transmission line electric fields, the Commission has imposed a maximum electric field limit of 8 kV/meter measured at one meter above the ground.⁸⁴ The maximum electric field associated with

⁸⁰ Buckhouse, Public Hearing, Barnesville, Nov. 16, 2010, 12:30 p.m. at 56-57; Hovland, Public Hearing, Barnesville, Nov. 16, 2010, 12:30 p.m. at 60-61; Cichosz, Public Hearing, Fergus Falls, Nov. 16, 2010, 6:30 p.m. at 30; Vasberg, Public Hearing, Fergus Falls, Nov. 16, 2010, 6:30 p.m. at 35-36; Arnhalt, Public Hearing, Breckenridge, Nov. 17, 2010, 12:30 p.m. at 23; Overland, Public Hearing, Breckenridge, Nov. 17, 2010, 12:30 p.m. at 10, 24, and 25; Hanson, Public Hearing, Elbow Lake, Nov. 17, 2010, 6:30 p.m. at 23-24; Heinen, Public Hearing, Albany, Dec. 1, 2010, 12:30 p.m. at 37; Theisen, Public Hearing, St. Joseph, Dec. 2, 2010, 12:30 p.m. at 20; Torell, Public Hearing, St. Joseph, Dec. 2, 2010, 12:30 p.m. at 58, Lange, Public Hearing, St. Cloud, Dec. 2, 2010, 6:30 p.m. at 40. “Electromagnetic field” or “EMF” refers to electric and magnetic fields associated with transmission lines.

⁸¹ Ex. 1A at p. 3-16 (Application).

⁸² Ex. 1A at p. 3-16 (Application).

⁸³ Ex. 1A at p. 3-16 (Application).

⁸⁴ Ex. 1A at p. 3-16 (Application).

Applicants' proposal, measured at one meter above the ground, is calculated to be 4.3 kV/m and therefore satisfies the Commission's requirements.⁸⁵

(2) Magnetic Fields

Magnetic fields are measured in milliGauss ("mG").⁸⁶ The intensity of the magnetic field is proportional to the current flow through the conductors.⁸⁷ While there are no federal or Minnesota standards for transmission line magnetic fields,⁸⁸ several agencies have established guidelines for general public and occupational magnetic field exposure.⁸⁹ These guidelines were discussed at some length by Dr. Peter Valberg, a former Harvard professor with both an M.A. and Ph.D. degrees in Physics from Harvard University, and an M.S. degree in Human Physiology from the Harvard University School of Public Health.⁹⁰ These guidelines include the International Commission on Non-Ionizing Radiation Protection ("ICNIRP"), which recently increased magnetic field exposure guidelines for the general public from 833 mG to 2,000 mG,⁹¹ and the Institute of Electrical Engineers ("IEEE") and Electronic Engineers, which sets magnetic field exposure guidelines for the general public at 9,040 mG.⁹²

The record evidence establishes that the Project's maximum fields are consistent with the maximum states' MF levels of other, comparable 345 kV projects and well under ICNIRP, IEE and

⁸⁵ Ex. 2 at Schedule 6 at p. 1 (Lahr Direct). Exhibit 2, Schedule 6 provides that the electric field for a single pole delta configuration may reach 4.34 kV/m. However, this conductor configuration will not be used for the Project.

⁸⁶ Ex. 1A at p. 3-16 (Application).

⁸⁷ Ex. 1A at p. 3-16 (Application).

⁸⁸ Ex. 22A at p. 5-19 (DEIS).

⁸⁹ Ex. 22A at p. 5-19 (DEIS); Ex. 35 at pp. 6-8 (Valberg Surrebuttal).

⁹⁰ Ex. 35 at pp. 1-2 (Valberg Surrebuttal).

⁹¹ Ex. 35 at p. 8 (Valberg Surrebuttal).

⁹² Ex. 22A at p. 5-19 (DEIS).

other guidelines.⁹³ Applicants provided MFs under two conditions for 2015: average and peak system intact loading.⁹⁴ The highest calculated MF level during peak system intact operation of the line at 2015 projected load levels, with both circuits in service, occurs at the centerline of the right-of-way at 30.03 mG.⁹⁵ With only one circuit in service, the highest calculated MF level at the centerline would be 25.62 mG.⁹⁶ MFs are not estimated to be higher than 11.10 mG at the edge of the right-of-way.⁹⁷

Applicants were also asked to calculate potential magnetic fields associated with maximum conductor capacity load levels.⁹⁸ While Applicants calculated load levels at 600 and 1500 MVA, it is highly unlikely that such loads would occur.⁹⁹ Applicants developed these higher operating amperage scenarios assuming several thousands of megawatts (> 4,000 MW) of new generation in South Dakota, North Dakota, and Manitoba.¹⁰⁰ Applicants also assumed a major facility, such as the Brookings-Hampton 345 kV line, would have an unplanned outage.¹⁰¹ Finally, Applicants assumed only limited major transmission system improvements were added to the system.¹⁰² Even then,

⁹³ Ex. 35 at p. 9 (Valberg Surrebuttal).

⁹⁴ Ex. 2 at Schedule 6 at p. 2 (Lahr Direct).

⁹⁵ Ex. 2 at Schedule 6 at p. 2 (Lahr Direct); FEIS at p. 2-17 (“The Applicant and the state have reviewed potential health impacts from the transmission line, including a request by the state to look at higher operating amperages that could occur in the future. The result of the analysis indicate that electric and magnetic fields will be less than the maximum standards established in other states and below standards in other countries.”).

⁹⁶ Ex. 2 at Schedule 6 at p. 2 (Lahr Direct). Exhibit 2, Schedule 6 provides that the MF for a single pole delta configuration may reach 31.89 mG. However, this conductor configuration will not be used for the Project.

⁹⁷ Ex. 2 at Schedule 6 at p. 2 (Lahr Direct).

⁹⁸ Ex. 29 at p. 9 (Kline Surrebuttal).

⁹⁹ FEIS at p. 3-13.

¹⁰⁰ Ex. 29 at p. 7 (Kline Surrebuttal).

¹⁰¹ Ex. 29 at p. 7 (Kline Surrebuttal).

¹⁰² Ex. 29 at p. 7 (Kline Surrebuttal).

modeling software did not reach flows of 1200 to 1500 MVA.¹⁰³ Based on a theoretical assumption that under specific conditions 1200 and 1500 MVA could be reached, the maximum calculated magnetic field at the centerline would be 259.9 mG – significantly below state and international guidelines.¹⁰⁴

NoRCA offered testimony from a separate routing proceeding suggesting that MF guidelines should be established at around 2-4 mG.¹⁰⁵ However, Dr. Valberg explained at some length, both in written testimony and at the evidentiary hearings, that Dr. Carpenter’s theory is not supported by scientific studies or endorsed by recognized health or government entity.¹⁰⁶ Such a standard would also preclude the continued use of common technologies:

A 2 mG limit is completely at odds with the opinion of major public health agencies in the United States and around the world. As documented in my report... no state agency, no federal agency, and no international public health agency has determined that these levels represent an unacceptable level of power-line MFs.

Also, as explained in that report, the magnetic fields associated with many household appliances exceed 2 mG, even at 2 feet from the appliance. ... To achieve household levels below 2-4 mG, many common appliances would need to be removed from the home, and portions of the home close to the power service drop wires would have to be cordoned off. Public transportation based on AC electric motors would have to be prohibited, and electric cars or hybrid cars would have to be discontinued.¹⁰⁷

Dr. Valberg also explained the flaws in the reasoning of those who would advocate for a 2 to 4 mG limit, finding three critical flaws:

- First, the basis for the 2 to 4 mG limit is “taking the – or certain of the epidemiology studies 100 percent at face value, assuming that the association they report statistically is causal, assuming that there are no confounders, that, in

¹⁰³ Ex. 29 at p. 7 (Kline Surrebuttal).

¹⁰⁴ Ex. 29 at p. 7 and Schedule 2 (Kline Surrebuttal); Ex. 35 at p. 8 (Valberg Surrebuttal); Ex. 22A at p. 5-19 (DEIS).

¹⁰⁵ Ex. 49 (Carpenter Direct—Brookings Docket).

¹⁰⁶ *E.g.*, Ex. 35 at p. 10 (Valberg Surrebuttal).

¹⁰⁷ Ex. 35 at p. 10 (Valberg Surrebuttal).

fact, that the effect is due to power line magnetic fields and that the effect is specific to the frequency and intensity of those power line magnetic fields.”¹⁰⁸

- Second, these conclusions do not take into account the empirical laboratory studies of the effects of magnetic fields on animals, “which, in fact, are quite uniformly negative.”¹⁰⁹
- Third, these conclusions ignore “that all the effort that was put into the RAPID program – that was the acronym, R-A-P-I-D – that was funded by the U.S. Congress and that took these questions to the laboratory couldn't identify a biophysical mechanism that could cause this effect.”¹¹⁰

In sum, a 2-4 mG limit finds no support in state, federal, or international standards, in laboratory studies, or in scientific testing that would establish a causal relationship. In contrast, the anticipated magnetic fields of the Project are calculated to be well below accepted scientific standards. Applicants therefore recommend finding of facts stating that:

- Electric and magnetic field levels for the Project are within the typical range for facilities of this size;
- The record evidence demonstrates that there is no impact on human health and safety that is not adequately addressed by the existing State and ICNIRP standards for magnetic field exposure. The record shows that the current exposure standard for EMF is adequately protective of human health and safety;¹¹¹ and
- Proposed magnetic field limits of 2-4 mG are not supported by reliable scientific evidence.

¹⁰⁸ Vol. 3 at pp. 16-17 (Valberg) (emphasis added).

¹⁰⁹ Vol. 3 at p. 17 (Valberg); likewise, the President’s Cancer Panel’s 2008-2009 annual report published the results of a study of the potential harm from ELF-MF’s (the kind of magnetic fields created by transmission lines), and stated that “U.S. environmental organizations ... generally conclude that the link between ELF-[MF] and cancer is controversial or weak.”. Ex. 35 at pp. 7-8 (Valberg Surrebuttal).

¹¹⁰ Vol. 3 at p. 17 (Valberg).

¹¹¹ See *In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET-2/TL-08-1474, Findings of Fact and Conclusions of Law, and Recommendation at p. 44, Finding No. 216 (April 22, 2010).

2. North Dakota to Sauk Centre

a. Red River Crossing

To reach Fargo, the Project must cross the Red River. As discussed in Section III.B.2 above, Applicants initially proposed two Red River crossing locations, one north (the RPA Preferred Route) and one south (Route A). After the Application was filed, Applicants had further meetings with county, city, and township officials from the Fargo, North Dakota area regarding reasonable locations for the river crossing.¹¹² North Dakota stakeholders encouraged Applicants to develop a crossing location south of the RPA Preferred Route crossing to coordinate with the USACE Diversion Project and minimize impacts to the Fargo area by locating the new transmission line on the “wet side.”¹¹³

As a result, Applicants proposed alternative AS-1, which is compatible with the current favored plan for the Diversion Project. AS-1 is a direct east-west connection from the Modified Preferred Route along I-94 at a point near Barnesville Township and to the south of the comparable segment of the RPA Preferred Route.¹¹⁴ While this alternate segment is shorter and more compatible with the Diversion Project, it would impact the Lesmeister Flying Service, a personal use airport in Alliance Township, Clay County, between County Road 2 and County Road 4.¹¹⁵ This airport impact is discussed in the next section.

As a more general matter with respect to North Dakota, an application for a Certificate of Corridor Compatibility (“CCC”) was filed with the North Dakota Public Services Commission on December 30, 2010. The North Dakota portion of the Project will be 31 to 82 miles in length.¹¹⁶

¹¹² Ex. 2 at p. 11 (Lahr Direct).

¹¹³ Ex. 2 at p. 11-12 (Lahr Direct).

¹¹⁴ Ex. 2 at p. 11-12 (Lahr Direct).

¹¹⁵ Ex. 2 at p. 12 (Lahr Direct).

¹¹⁶ Ex. 1A at pp. ES-2 and 2-3 (Application).

The length of the Project in North Dakota will depend on whether the Modified Preferred Route or Route A is selected by the Commission, and which location of the Red River crossing is selected. If Route A were to be selected for the Minnesota portion of the Project, the length of the Project in North Dakota will be substantially longer.¹¹⁷ In the CCC application, Xcel Energy identified four potential corridors beginning at the Red River crossings proposed in this proceeding. North Dakota Corridors A and B enter North Dakota at the AS-1 crossing of the border south of Fargo, whereas Corridors C and D enter North Dakota at the Route A crossing of the border south of Wahpeton before heading in a generally northerly direction to the Bison Substation Siting Areas.

b. *Lesmeister Flying Service and Option 13*

The proposed AS-1 would intersect one or two airstrips at a personal airport (the Lesmeister Flying Service).¹¹⁸ To avoid impacts to the north/south runway, Applicants proposed Option 13, set forth on Exhibit 4, Tile B-2 and on Schedule 4 to Exhibit 2 (Lahr Direct).

The Lesmeister Flying Service includes both a north/south paved runway and a northwest/southeast grass runway.¹¹⁹ Because the airport qualifies as a “personal use” airport under Minnesota law, Federal Aviation Administration (“FAA”) obstruction standards do not govern the use of the airstrip.¹²⁰ Moreover, Minnesota Rules do not specify a specific clearance zone for personal use airports.¹²¹ A personal use airport is only required to be of “sufficient length and width and the approaches shall be sufficiently clear of obstructions to permit safe operations by the aircraft intended to use it.” Minn. R. 8800.2200, Subp. 3.

¹¹⁷ See Ex. 1A at pp. ES-2 and 2-3 (Application).

¹¹⁸ Ex. 2 at p. 12 (Lahr Direct).

¹¹⁹ Ex. 2 at p. 12 (Lahr Direct).

¹²⁰ Ex. 2 at p. 13 (Lahr Direct).

¹²¹ Ex. 2 at p. 13 (Lahr Direct).

To be conservative, Applicants analyzed the impacts of AS-1 on the Lesmeister Flying Service by calculating the clearances (“cones”) required for a hypothetical private use airport – which would be subject to FAA and Minnesota obstruction regulations – and applied them to the runways at the Lesmeister Flying Service.¹²² Applicants determined that AS-1 would not impact the cones for the grass runway, but would intersect the paved runway.¹²³ Applicants therefore proposed Option 13, and provided notice of this option to potentially affected landowners.¹²⁴ To Applicants’ knowledge, neither the Lesmeisters nor surrounding homeowners have provided comment on Option 13.

Applicants support adoption of Option 13 to avoid impacts to the Lesmeister Flying Service. Should this option be approved, Applicants will work with the Lesmeisters and neighboring landowners to determine an alignment that best minimizes impacts to landowners and the flying service.

c. *Fergus Falls-River Oaks Subdivision*

Near Fergus Falls, Minnesota, the River Oaks housing subdivision lies west of I-94.¹²⁵ In this area, alignment flexibility is limited because of the close proximity of Fergus Falls on the north side of I-94 and a Mn/DOT scenic easement bisected by I-94.¹²⁶ Specifically, alignment of the Modified Preferred Route cannot be located east of the freeway due to proximity to Fergus Falls, but it cannot be located immediately west of the freeway because of the Mn/DOT scenic easement.¹²⁷ These constraints require the alignment of the Modified Preferred Route to be located

¹²² Ex. 2 at p. 12 (Lahr Direct).

¹²³ Ex. 30 at p. 14 (Lahr Rebuttal).

¹²⁴ Ex. 52.

¹²⁵ Ex. 30 at p. 15 and Schedule 14 (Lahr Rebuttal).

¹²⁶ Ex. 4 at Tile D-5.

¹²⁷ Ex. 30 at p. 15 and Schedule 14 (Lahr Rebuttal).

farther west of I-94 and in closer proximity to the River Oaks subdivision, such that the nearest home would be approximately 1,100 feet from the edge of the Modified Preferred Route.¹²⁸

The River Oaks subdivision homeowners association supported an alignment that crosses the Mn/DOT scenic easement and encouraged evaluation of whether Mn/DOT might approve such an alignment.¹²⁹ Mn/DOT stated that transmission lines are prohibited in scenic areas, but that there is an exception process.¹³⁰ Applicants could make a letter request to Mn/DOT discussing the factors set forth in the “Scenic Considerations” section of the Utility Accommodation Policy (pp. 23-24).¹³¹ Should the Modified Preferred Route be approved, Applicants do not oppose submitting an exception request to Mn/DOT to move the route closer to the freeway, if possible.¹³²

d. Iverson Rest Area

Southeast of Fergus Falls township, the Modified Preferred Route proceeds along I-94 to the Iverson Lake area in Buse Township, Otter Tail County.¹³³ In this area, the Modified Preferred Route is widened in part to avoid the Mn/DOT Iverson Lake Rest Area on the west side of the freeway.¹³⁴ Members of the public commented that this rest area is flooded and has not been in use for some time.¹³⁵ Mr. David Seykora of Mn/DOT concurred with this assessment.¹³⁶ Members of the public therefore advocated for the Project to cross the rest area on the west side of the freeway,

¹²⁸ Ex. 30 at p. 15 (Lahr Rebuttal).

¹²⁹ Cichosz, Public Hearing, Fergus Falls, Nov. 16, 2010, 6:30 p.m. at pp. 31-32.

¹³⁰ Vol. 4 at pp. 101-02 (Seykora).

¹³¹ Vol. 4 at pp. 101-02 (Seykora).

¹³² See Vol. 6 at p. 126 (Lahr).

¹³³ Ex. 4 at Tile D-5.

¹³⁴ Ex. 4 at Tile D-5; Vol. 6 at p. 127 (Lahr).

¹³⁵ See, e.g., Hanson, Public Hearing, Elbow Lake, Nov. 17, 2010, 6:30 p.m. at p. 20

¹³⁶ Vol. 4 at p. 53 (Seykora) (“We feel that it's unlikely that this rest area will be able to reopen so we have begun evaluations on alternate locations for a rest area to serve the traveling public in this vicinity.”).

rather than proceeding to the east side of the freeway and going around a Wildlife Management Area adjacent to I-94 on the east side.¹³⁷ Although Mn/DOT has not made any final plans with regard to this rest area and it is not known when a determination will be made, Mn/DOT is evaluating the possibility of eliminating the Iverson Lake Rest Area because the rising water in this location may necessitate closing the rest area permanently.¹³⁸ The Iverson Lake Rest Area was purchased using federal funds and Mn/DOT has specific requirements it must follow when disposing of this type of land, including communication and concurrence with the Federal Highway Administration.¹³⁹ Mn/DOT has not determined whether it will dispose of the property and is unsure when such a decision may be made.¹⁴⁰ If the Modified Preferred Route were selected, Applicants are not opposed to submitting a request to cross the Mn/DOT rest area on the basis set forth above.¹⁴¹

e. Route Width in Moe Township

A wider portion of the Modified Preferred Route was also developed in sections 13 and 24 of Moe Township, MN.¹⁴² Applicants proposed a wider route in this area to avoid a residence located near I-94.¹⁴³

Since the filing of the Application, it has been demonstrated that the house has been abandoned for a number of years, the house is likely not habitable, and the owner has expressed his

¹³⁷ Hanson, Public Hearing, Elbow Lake, Nov. 17, 2010, 6:30 p.m. at pp. 20-21; Otter Tail County Board of Commissioners January 24, 2011 Letter to ALJ Heydinger (eFiled January 27, 2011).

¹³⁸ Vol. 4 at p. 55 (Seykora).

¹³⁹ Vol. 4 at pp. 55-56 (Seykora).

¹⁴⁰ Vol. 4 at pp. 104-05 (Seykora).

¹⁴¹ Vol. 6 at p. 128 (Lahr).

¹⁴² Ex. 4 at Tile E-7.

¹⁴³ Hegg, Public Hearing, Alexandria, Nov. 18, 2010, 6:30 p.m. at p. 28; Lahr, Public Hearing, Alexandria, Nov. 18, 2010, 6:30 p.m. at pp. 32-33.

intent to remove the house from the property.¹⁴⁴ As a result, Applicants do not anticipate deviating from the I-94 corridor in this area.¹⁴⁵

f. *Sauk Centre Airport*

The Sauk Centre Airport is located within the Alexandria-Sauk Centre segment of the Project.¹⁴⁶ A 69 kV transmission line currently crosses a clearance zone for the main runway of the airport.¹⁴⁷ The Modified Preferred Route alignment in this area was proposed to lie along 12th Street in Sauk Centre to avoid impacts to the airport. Route A proceeds south of the airport and avoids the Sauk Centre area and airport entirely.¹⁴⁸

The City of Sauk Centre expressed concern about routing the Project along 12th Street.¹⁴⁹ The Mayor of Sauk Centre testified at public hearings that the City would be interested in moving a runway to accommodate the route along I-94 rather than 12th Street.¹⁵⁰ The City representative further stated that Route A would be an acceptable alternative.¹⁵¹

After the hearing, Applicants, Mn/DOT, FAA and Sauk Centre representatives met to review possible design modifications that would address Mn/DOT's concerns, meet the requirements of the Project, and address the City of Sauk Centre's preference that the Project not

¹⁴⁴ Public Exhibits 7 and 8; Hegg, Public Hearing, Alexandria, Nov. 18, 2010, 6:30 p.m. at p. 29. Mr. Roth, an attorney for Larry Zavadil of Zavadil Development Inc (the current owner of the abandoned home property), indicated that it is his client's intent to remove the home at this location. Roth December 29, 2010 Email to ALJ Heydinger, Public Comment, eDocket Document No. 20111-58663-02 (eFiled Jan. 19, 2011).

¹⁴⁵ Lahr, Public Hearing, Alexandria, Nov. 18, 2010, 6:30 p.m. at pp. 32-33.

¹⁴⁶ Ex. 30 at pp. 10-11 (Lahr Rebuttal).

¹⁴⁷ Ex. 4 at Tile G-8; Applicants' January 5, 2011 Letter to ALJ Heydinger at Attachments 1 and 2, eDocket Document No. 20111-58170-01.

¹⁴⁸ Ex. 4 at Tile G-8.

¹⁴⁹ Kirckof, Public Hearing Transcript, Sauk Centre Nov. 30, 2010, 12:30 p.m. at pp. 17-21.

¹⁵⁰ Kirckof, Public Hearing Transcript, Sauk Centre Nov. 30, 2010, 12:30 p.m. at pp. 17-21.

¹⁵¹ Kirckof, Public Hearing Transcript, Sauk Centre Nov. 30, 2010, 12:30 p.m. at pp. 17-21.

follow 12th Street.¹⁵² The consensus of those present at the meeting was that a transmission line alignment within the Modified Preferred Route north of I-94 could be developed that would avoid 12th Street in Sauk Centre and avoid impacts to both runways as they currently exist.¹⁵³

The potential impacts to the Sauk Centre Airport are different if the two runways are expanded in accordance with the 1999 Sauk Centre Airport Layout Plan (“ALP”).¹⁵⁴ While a schedule for the upgrades presented in the ALP has not been established, the ALP represents the most current plan for the airport.¹⁵⁵

If the Modified Preferred Route were constructed south of 12th Street and north of I-94 with the use of limited height structures, it would be compatible with the future configuration of the north/south paved runway.¹⁵⁶ If the east/west runway were expanded, the design would need to be revised from that contained in the current ALP.¹⁵⁷ The City of Sauk Centre filed comments

¹⁵² Applicants’ January 5, 2011 Letter to ALJ Heydinger at p. 1, eDocket Document No. 20111-58170-01; Mn/DOT January 5, 2011 Letter to ALJ Heydinger at p. 3, eDocket Document No. 20111-58173-01; FAA January 5, 2011 Letter to ALJ Heydinger at p. 1, eDocket Document Nos. 20111-58417-01 and 20111-58417-02; City of Sauk Centre Letter to ALJ Heydinger, eDocket Document No. 20111-58417-04 (eFiled Jan. 11, 2011).

¹⁵³ Applicants’ January 5, 2011 Letter to ALJ Heydinger at p. 2, eDocket Document No. 20111-58170-01; Mn/DOT January 5, 2011 Letter to ALJ Heydinger at p. 4, eDocket Document No. 20111-58173-01; City of Sauk Centre Letter to ALJ Heydinger, eDocket Document No. 20111-58417-04 (eFiled Jan. 11, 2011).

¹⁵⁴ Applicants’ January 5, 2011 Letter to ALJ Heydinger at p. 2, eDocket Document No. 20111-58170-01; Mn/DOT January 5, 2011 Letter to ALJ Heydinger at p. 5, eDocket Document No. 20111-58173-01.

¹⁵⁵ Mn/DOT January 5, 2011 Letter to ALJ Heydinger at p. 1, eDocket Document No. 20111-58173-01. Mn/DOT noted in its letter that “if the ALP were presented today, more stringent criteria would be applied to reflect recent advances in aviation technology and safety standards.”

¹⁵⁶ Applicants’ January 5, 2011 Letter to ALJ Heydinger at p. 2, eDocket Document No. 20111-58170-01; Mn/DOT January 5, 2011 Letter to ALJ Heydinger at p. 5, eDocket Document No. 20111-58173-01.

¹⁵⁷ Applicants’ January 5, 2011 Letter to ALJ Heydinger at p. 2, eDocket Document No. 20111-58170-01; Mn/DOT January 5, 2011 Letter to ALJ Heydinger at p. 5, eDocket Document No. 20111-58173-01.

reaffirming its willingness to work through permitting issues for expansion of the runway and to adjust the east/west runway as necessary.¹⁵⁸

Applicants, Mn/DOT, FAA and the City of Sauk Centre also noted in comments that Route A would avoid impacts to the airport under current and future conditions.¹⁵⁹ Likewise, Option 6 provides a means to proceed south from the Modified Preferred Route from a point west of Sauk Centre to Route A, and then follow Route A south around the Sauk Centre area and airport until Route A meets the Modified Preferred Route at a point east of Sauk Centre.¹⁶⁰ In this way, it is possible to follow I-94 for the majority of the North Dakota to Sauk Centre portion of the Project, then utilize Route A to avoid impacts to the Sauk Centre airport and return to the Modified Preferred Route east of Sauk Centre. Option 6 presents a challenge, however, in that Route A would cross the Sauk River Wildlife Management Area southeast of Sauk Centre.¹⁶¹ A license from MnDNR would be required to cross public lands in this area, and MnDNR has not yet assessed whether a permit could be issued.¹⁶²

Applicants believe that they can continue to work with the City of Sauk Centre, Mn/DOT and the FAA to develop alignments for the east/west runway and the transmission line that would enable the Project to be constructed along the Modified Preferred Route south of downtown 12th Street, north of I-94. Should the ALJ not recommend the Modified Preferred Route in this area, Applicants request that the ALJ recommend Option 6 and the portion of Route A that connects the

¹⁵⁸ City of Sauk Centre January 5, 2011 Letter to ALJ Heydinger, eDocket Document No. 20111-58417-04 (eFiled Jan. 11, 2011).

¹⁵⁹ Applicants' January 5, 2011 Letter to ALJ Heydinger at p. 2, eDocket Document No. 20111-58170-01; Kirckof, Public Hearing Transcript, Sauk Centre Nov. 30, 2010, 12:30 p.m. at pp. 17-21; FAA January 5, 2011 Letter to ALJ Heydinger at p. 2, edocket Document No. 20111-58173-01.

¹⁶⁰ Ex. 4 at Tile G-8; Ex. 21 at Figure 4 (EIS Amended Scoping Decision).

¹⁶¹ Ex. 30 at p. 11 (Lahr Rebuttal).

¹⁶² Ex. 30 at p. 11 (Lahr Rebuttal); Vol. 5 at pp. 64-65 (Schrenzel).

southerly point of Option 6 and proceeds east to re-join the Modified Preferred Route between Sauk Centre and Melrose.

g. Other Airports

In addition to the Sauk Centre airport, Mn/DOT offered DEIS comments regarding the potential impact of the Project on the Fergus Falls, Alexandria, and Elbow Lake airports.¹⁶³ Mn/DOT's assessment is that there will be no anticipated impact to the Fergus Falls airport, and that any impacts to the Alexandria and Elbow Lake airports can be avoided through alignment selection and pole height reductions.¹⁶⁴ Applicants concur with these conclusions.

3. Sauk Centre to St. Cloud

a. Avon Hills Conservation Area

Intervenor Avon Township and members of the public advocated for a routing selection that avoids the Avon Hills Conservation Area, which is the subject of Stearns County's Comprehensive Plan.¹⁶⁵ A map of the Avon Hills Conservation Overlay District is attached as Schedule 5 to the Direct Testimony of Avon Township witness Kim Chapman,¹⁶⁶ but other commentary indicates that the Avon Hills geography extends beyond the boundaries of the Conservation Overlay District.¹⁶⁷ With the exception of Route F, all routes traverse the Avon Hills

¹⁶³ Ex. 41 (Mn/DOT DEIS Comment Letter).

¹⁶⁴ Ex. 41; Vol. 5 at p. 12 (Seykora).

¹⁶⁵ Ex. 11 at p. 5 (Avon Township Chapman Direct). The Stearns County Avon Hills Conservation Overlay District is substantially smaller than the area identified as the Avon Hills Priority Conservation Area ("Avon Hills Conservation Area"). Ex. 11 at Schedules 4 and 5 (Avon Township Chapman Direct).

¹⁶⁶ Ex. 11 at Schedule 5 (Avon Township Chapman Direct); Ex. 5 at Schedule 5 (St. John's Chapman Direct).

¹⁶⁷ The Nature Conservancy December 1, 2010 Letter to ALJ Heydinger, Public Comment, eDocket Document No. 201012-57785-01 (eFiled Dec. 22, 2010).

Conservation Area in some manner.¹⁶⁸ Notably, however, the Modified Preferred Route traverses only the very edges of both the Avon Hills Conservation Area and Overlay District, and wholly avoids its core south of the town of Avon.¹⁶⁹ Likewise, Route E (as well as routes G and H) avoids both the Conservation Area and the Overlay District if Option 11 is incorporated.¹⁷⁰ The impacts of the various routing options are tabulated in Applicants' written testimony and included within the portions of this Brief applying various routing criteria.

b. Human Settlement Data Adjustments

Applicants' initial analysis of human settlement impacts between Sauk Centre and St. Cloud indicated that 83 homes were within 500 feet of the Modified Preferred Route alignment and 116 homes were within 500 feet of the Alternate Route A alignment.¹⁷¹ NoRCA subsequently provided testimony that raised concerns about houses that were omitted from the tabulations. NoRCA's supplemental response to an Information Request identified 41 addresses NoRCA believed to be missing.¹⁷² Of these addresses, Applicants confirmed that five were omitted from the Applicants' initial analysis – two from the Modified Preferred Route and three from Route A.¹⁷³

While Applicants have updated their house counts to reflect confirmed missing homes along the Modified Preferred Route and Route A (see Section IV.D.2.a, below), the changes did not have a

¹⁶⁸ The Nature Conservancy December 1, 2010 Letter to ALJ Heydinger, Public Comment, eDocket Document No. 201012-57785-01 (eFiled Dec. 22, 2010).

¹⁶⁹ Ex. 38 at Schedule 7 (St. John's Chapman Rebuttal).

¹⁷⁰ Ex. 38 at Schedule 7 (St. John's Chapman Rebuttal).

¹⁷¹ Ex. 30 at Schedule 9 at p. 9 (Lahr Rebuttal).

¹⁷² Ex. 33 at p. 1 (Updated Home Count).

¹⁷³ Ex. 33 at p. 1 (Updated Home Count). The remainder of the homes NoRCA identified were located farther than 500 feet from the alignment, were included in prior counts, or were considered inconclusive (meaning that based on several methods Applicants were not able to locate a building at the address provided or were unable to determine the use of the specific building as residential). *Id.* NoRCA also testified that several of the residences it included in testimony were beyond 500 feet from the alignment.

material impact on the relative residential impacts of the Project if constructed along the Modified Preferred Route, Alternate Route A, and other routes proposed for the Sauk Centre to St. Cloud segment.¹⁷⁴ Furthermore, NoRCA's analysis was not conducted for all routes between Sauk Centre and St. Cloud, making a fair comparison of all routes under consideration difficult.¹⁷⁵ As currently updated, the Modified Preferred Route continues to contain fewer homes within 500 feet of the alignment between Sauk Centre and St. Cloud, as compared to any route other than Routes C and E. Applicants likewise believe that based on the current alignment there will be no displacement of homes along the Modified Preferred Route¹⁷⁶ and Applicants' data and the record evidence support this conclusion.¹⁷⁷

c. *Undergrounding*

To avoid both the Avon Hills Conservation Area and the towns of Albany, Freeport, and St. Joseph if Route D were selected, the ATF proposed undergrounding approximately 13-14 miles of Route D in these areas. Applicants do not support underground design for any segment of the Project because of reliability concerns, environmental impacts, and costs.

There are currently no underground transmission facilities in the state of Minnesota higher than 161 kV and placing any transmission line underground has implications for system reliability. Outage incidents tend to be less frequent but of significantly longer duration (2-3 weeks rather than

¹⁷⁴ Ex. 31 at p. 4 (Lahr Surrebuttal).

¹⁷⁵ This analysis was not conducted for routes other than the Modified Preferred Route and Route A between Sauk Centre and St. Cloud. Vol. 6 at p. 41 (Hylla); Ex. 31 at pp. 2-3 (Lahr Surrebuttal). NoRCA's analysis was also conducted by a different method than Applicants employed; Applicants' understanding is that NoRCA representatives drove the routes, contacted landowners, and may have personally inspected properties, while Applicants undertook an analysis of all routes based on aerial photography and on-site review from public areas. Ex. 31 at pp. 2 & 4 (Lahr Surrebuttal).

¹⁷⁶ Applicants note that the FEIS includes a table indicating that there is conflicting data on this point one home within 75 feet of the estimated alignment of the Modified Preferred Route, but also states that "No likely displacement locations within the proposed ROWs were identified." FEIS at p. 3-34.

¹⁷⁷ Ex. 30 at Schedule 8 (Lahr Rebuttal).

24 hours) for underground lines.¹⁷⁸ Because this would be the first and only underground 345 kV line in Minnesota, specialty crews and equipment would have to be brought in and maintained specifically for repairs.¹⁷⁹ And because the Project serves as a vital tie to North Dakota, an outage could have regional as well as local impacts.¹⁸⁰

Environmental impacts would also be significant. While the underground transmission line and poles would not be visible, clearing of the right-of-way and considerable excavation are still required.¹⁸¹ This would displace trees and vegetation along the entire right-of-way.¹⁸² It may also impact or displace roads, sewer systems, electric and gas lines, and other infrastructure along the alignment.¹⁸³ Connecting transition facilities are also required at either end of the underground portion.¹⁸⁴

Moreover, underground construction is substantially more costly per mile than above ground construction. Overhead construction is estimated at \$1.7 million per mile, whereas underground construction is estimated to cost approximately \$20 million per mile for a single circuit and \$40 million per mile for a double circuit.¹⁸⁵

¹⁷⁸ Ex. 2 at p. 22 (Lahr Direct); Ex. 3 at p. 12 (Chezik Direct).

¹⁷⁹ Ex. 2 at p. 22 (Lahr Direct); Vol. 1 at pp. 100-01 and 104-05 (Chezik).

¹⁸⁰ Ex. 2 at p. 22 (Lahr Direct).

¹⁸¹ Ex. 2 at p. 22 (Lahr Direct).

¹⁸² Ex. 2 at p. 22 (Lahr Direct).

¹⁸³ Ex. 2 at p. 22 (Lahr Direct).

¹⁸⁴ Vol. 1 at p. 75 (Chezik).

¹⁸⁵ Ex. 2 at p. 21-22 (Lahr Direct); Ex. 3 at p. 11 (Chezik Direct). This Project has been directed to be built as double-circuit capable so that the second circuit could be added in the future. Ex. 3 at pp. 4-5 (Chezik Direct). Applicants propose that if undergrounding were required, it would be most prudent to construct the second circuit at the same time as the first circuit to avoid additional future excavation and associated work. Ex. 3 at p. 11 (Chezik Direct). While Applicants do not support undergrounding of any portion of this Project for the aforementioned reasons, if undergrounding were required Applicants request that they be authorized to construct the underground portion of the second circuit during initial construction of the Project.

Applicants request that the ALJ find that the record evidence does not support an underground alternative for the Project.

C. Additional Analysis of Routing Factors: North Dakota to Sauk Centre

The following discussion pertains to the North Dakota-Alexandria and Alexandria-Sauk Centre portions of the route, and therefore applies the routing criteria to two routes in this area, the Modified Preferred Route and Route A. The record evidence demonstrates that the Modified Preferred Route satisfies the applicable statutory and regulatory routing criteria.

1. *Effects on Human Settlement*

Minn. R. 7850.4100(A) requires consideration of the proposed routes' effects on human settlement, including displacement of residences and businesses; noise created during construction and by operation of the Project; and aesthetic impacts.

a. *Displacement*

For purposes of this proceeding, displacement of a residence or business was defined to occur when a structure is within 75 feet of the proposed route centerline.¹⁸⁶ The record evidence demonstrates that the Modified Preferred Route based on the current alignment would not result in displacement between the North Dakota border and Sauk Centre and that the two routes would have relatively similar impacts on human settlement:¹⁸⁷

¹⁸⁶ Ex. 1A at § 7.1.1.3 (Application).

¹⁸⁷ Ex. 30 at Schedule 8 (Lahr Rebuttal).

Route	Homes Within 0 to 75 Feet of Alignment	Homes Within 75 to 150 Feet of Alignment	Homes Within 150 to 300 Feet of Alignment	Homes Within 300 to 500 Feet of Alignment	Homes Within 0 to 500 Feet of Alignment	Acres of Residential Land Use within ROW
Modified Preferred Route						
North Dakota to Alexandria	0	8	21	27	56	88
Alexandria to Sauk Centre	0	12	13	16	41	117
Route A						
North Dakota to Alexandria	0	7	33	36	76	106
Alexandria to Sauk Centre	0	8	13	13	34	104

b. Noise

For residential, commercial and industrial land, Minnesota Pollution Control Agency (“MPCA”) noise limits are 60-65 A-weighted decibel (“dBA”) during the daytime and 50-55 dBA during the nighttime.¹⁸⁸ Noise levels generated during the operation and maintenance of transmission lines are minimal and should not exceed the MPCA Noise Limits outside the right-of-way.¹⁸⁹

2. Aesthetics

The Modified Preferred Route includes two scenic trail crossings in the North Dakota to Alexandria segment of the Project.¹⁹⁰ Route A includes one crossing in this segment.¹⁹¹ Both the

¹⁸⁸ Minn. R. 7030.0040-.0050; Ex. 1A at p. 7-15 (Application).

¹⁸⁹ Ex. 1A at p. 7-14 (Application).

¹⁹⁰ Ex. 30 at Schedule 8 at p. 2 (Lahr Rebuttal); Ex. 1A at p. 7-19 (Application).

Modified Preferred Route and Route A likewise cross the King of Trails between Alexandria and Sauk Centre.¹⁹² The Modified Preferred Route would also parallel county trails for five miles between Alexandria and Sauk Centre, while Route A does not parallel or cross county trails in this area.¹⁹³ Since visual impacts would be greater on byways that are paralleled versus crossed at a single location, and impacts can be further minimized when pole placement is further explored, no material impacts are expected.¹⁹⁴

Recreational resources are also located near the Modified Preferred Route between North Dakota and Alexandria.¹⁹⁵ No impacts on recreational uses that would alter or limit the use of these resources are anticipated.¹⁹⁶

3. *Effects on Public Health and Safety*

Minn. R. 7850.4100(B) requires consideration of the Project's effect on public health and safety. As set forth below, the record evidence demonstrates that health and safety concerns will be fully addressed during construction and operation of the facilities.

a. *Construction and Operation of Facilities*

Applicants will ensure that all safety requirements are met during the construction and operation of the proposed transmission line and associated facilities.¹⁹⁷ The Project will be designed and constructed according to state, local and National Electric Safety Code ("NESC") standards regarding ground clearance, crossing utilities clearance, building clearance, strength of materials and

¹⁹¹ Ex. 30 at Schedule 8 at p. 2 (Lahr Rebuttal).

¹⁹² Ex. 30 at Schedule 8 at p. 5 (Lahr Rebuttal).

¹⁹³ Ex. 30 at Schedule 8 at p. 5 (Lahr Rebuttal).

¹⁹⁴ FEIS at p. 3-15.

¹⁹⁵ Ex. 30 at Schedule 8 at pp. 2 and 5 (Lahr Rebuttal).

¹⁹⁶ FEIS at p. 3-15.

¹⁹⁷ Ex. 1A at p. 6-3 (Application).

right-of-way widths.¹⁹⁸ The proposed transmission lines will be equipped with protective devices (breakers and relays located where transmission lines connect to substations) to safeguard the public in the event of an accident, or if the structure or conductor falls to the ground.¹⁹⁹ In addition, the substations will be properly fenced and accessible only by authorized personnel.²⁰⁰

b. *EMF*

Minn. Stat. § 216E.03, subd. 7 requires consideration of the effects of electric and magnetic fields on public health and welfare. As set forth previously in Section IV.B.1.c, the record evidence demonstrates that the Project will comply with the Commission's standards for electric fields and with agency guidelines for magnetic fields. The EMF for the Project are well within other states' and international safety standards.

4. *Effects on Land-Based Economies*

Minn. R. 7850.4100(C) requires consideration of the Project's effects on land-based economies, specifically agriculture, forestry, tourism, and mining. The record evidence demonstrates that the impacts of the Modified Preferred Route versus Route A are comparable.

a. *Agriculture*

The Project will result in permanent and temporary impacts to farmland.²⁰¹ Permanent impacts will occur as a result of structure placement along the route centerline. Applicants estimate that the permanent impacts to agricultural fields will be 1,000 square feet per pole, as follows:²⁰²

¹⁹⁸ Ex. 1A at p. 7-2 (Application).

¹⁹⁹ Ex. 1A at p. 7-2 (Application).

²⁰⁰ Ex. 1A at p. 7-2 (Application).

²⁰¹ Ex. 1A at § 7.1.2.1 (Application).

²⁰² Ex. 1A at p. 7-29 (Application).

Route/Alignment	Permanent Impacts to Agricultural Land (sq. ft.) ²⁰³
Modified Preferred Route	
North Dakota to Alexandria	358,000
Alexandria to Sauk Centre	118,000
Route A	
North Dakota to Alexandria	278,000
Alexandria to Sauk Centre	151,000

Temporary impacts, such as soil compaction and crop damage, may also occur during construction.²⁰⁴ Applicants estimate temporary impacts to agricultural field to be one acre per pole for construction as follows:²⁰⁵

Route/Alignment	Temporary Impacts to Agricultural Land (acres) ²⁰⁶
Modified Preferred Route	
North Dakota to Alexandria	358
Alexandria to Sauk Centre	118
Route A	
North Dakota to Alexandria	278
Alexandria to Sauk Centre	151

²⁰³ Ex. 30 at Schedule 8 at pp. 2 & 5 (Lahr Rebuttal).

²⁰⁴ Ex. 1A at p. 7-29 (Application).

²⁰⁵ Ex. 1A at p. 7-29 (Application).

²⁰⁶ Ex. 30 at Schedule 8 at pp. 2 & 5 (Lahr Rebuttal).

b. Forestry

The Modified Preferred Route is located primarily in grassland and cultivated land with some forested areas adjacent to farmsteads, waterways, and within MnDNR managed lands.²⁰⁷ Much of the affected land is private, and not held for commercial forestry operations.²⁰⁸ Impacts on forest resources will occur at locations where trees will be cleared within the right-of-way.²⁰⁹ Impacts to wooded areas are expected to be as follows:

Route/Alignment	Wooded Lands (acres)²¹⁰
Modified Preferred Route	
North Dakota to Alexandria	21
Alexandria to Sauk Centre	24
Route A	
North Dakota to Alexandria	8
Alexandria to Sauk Centre	41

c. Mining

There is no record evidence of potential impacts to mining resources along these segments of the Modified Preferred Route or Route A.²¹¹

d. Tourism

Neither of Applicants' proposed routes is located near any tourist attractions outside of recreational property.²¹²

²⁰⁷ Ex. 1A at p. 7-31 (Application).

²⁰⁸ Ex. 1A at p. 7-31 (Application).

²⁰⁹ Ex. 1A at p. 7-31 (Application).

²¹⁰ Ex. 30 at Schedule 8 at pp. 2 & 5 (Lahr Rebuttal).

²¹¹ Ex. 30 at Schedule 8 at pp. 2 and 5 (Lahr Rebuttal).

5. *Effects on Archaeological and Historic Resources*

Minn. R. 7850.4100(D) requires consideration of the Project's effects on archaeological and historic resources. There are known archaeological sites in the general vicinity of the Project:

Route/Alignment	Number of Archaeological Sites within ROW ²¹³
Modified Preferred Route	
North Dakota to Alexandria	3
Alexandria to Sauk Centre	0
Route A	
North Dakota to Alexandria	1
Alexandria to Sauk Centre	0

Route/Alignment	Number of Historic Sites within ROW ²¹⁴
Modified Preferred Route	
North Dakota to Alexandria	0
Alexandria to Sauk Centre	1
Route A	
North Dakota to Alexandria	3
Alexandria to Sauk Centre	0

²¹² Ex. 1A at p. 7-32 (Application).

²¹³ Ex. 30 at Schedule 8 at pp. 2 and 5 (Lahr Rebuttal).

²¹⁴ Ex. 30 at Schedule 8 at pp. 2 and 5 (Lahr Rebuttal).

Applicants do not anticipate impacts to previously or newly identified resources as a result of the Project.²¹⁵

6. *Effects on Natural Environment*

Minn. R. 7850.4100(E) requires consideration of the effects on the natural environment, including effects on air and water quality resources and flora and fauna. As set forth below, the Project is not anticipated to have a material effect on the natural environment if either the Modified Preferred Route or Route A were selected

a. *Air Quality*

The Project will have only minimal, temporary air quality impacts. Construction of the Project will result in temporary air quality impacts caused by construction-vehicle emissions and fugitive dust from right-of-way clearing.²¹⁶ Regardless of route, the operation of the Project is not anticipated to cause anything more than nominal impacts to air quality.²¹⁷

b. *Water Quality Resources*

Numerous surface water resources including lakes, rivers, streams, wetlands and floodplains will be crossed by or located in the right-of-way of the proposed routes.²¹⁸ The Project's temporary impacts could include sedimentation reaching surface waters during construction due to ground disturbance by excavation, grading, construction traffic, and dewatering of holes drilled for transmission structures, which could temporarily degrade water quality due to turbidity.²¹⁹ These

²¹⁵ Ex. 1A at p. 7-36 (Application).

²¹⁶ Ex. 1A at p. 7-37 (Application).

²¹⁷ Ex. 1A at p. 7-38 (Application).

²¹⁸ Ex. 30 at Schedule 8 at pp. 4 & 7 (Lahr Rebuttal).

²¹⁹ Ex. 1A at p. 7-47 (Application).

impacts will be avoided and minimized using appropriate sediment control practices and construction practices.²²⁰

Applicants will also endeavor to minimize permanent impacts to wetlands and drainage systems by spanning wetlands and drainage systems, where possible.²²¹ When it is not possible to span a wetland, Applicants employ construction techniques to minimize impacts.²²² Permanent impacts on wetlands will take place where structures must be located within wetland boundaries.²²³ But once the Project is completed, there will be no significant impact on surface water quality because wetland impacts will be minimized and mitigated, disturbed soil will be restored to previous conditions or better, and the amount of land area converted to an impervious surface will be small.²²⁴ The record evidence demonstrates the following impacts to wetlands and flood plains:

Route/Alignment	Forested Wetlands in the Right-of-Way (acres) ²²⁵
Modified Preferred Route	
North Dakota to Alexandria	4
Alexandria to Sauk Centre	7
Route A	
North Dakota to Alexandria	6
Alexandria to Sauk Centre	14

²²⁰ Ex. 1A at p. 7-48 (Application).

²²¹ Ex. 1A at p. 7-45 (Application).

²²² Ex. 1A at p. 7-45 (Application).

²²³ Ex. 1A at pp. 7-47, 7-48 (Application).

²²⁴ Ex. 1A at pp. 7-47 to 7-48 (Application).

²²⁵ Ex. 30 at Schedule 8 at pp. 1 & 4 (Lahr Rebuttal).

Route/Alignment	Permanent Impacts to 100-Year Floodplains (sq. ft.)²²⁶
Modified Preferred Route	
North Dakota to Alexandria	770
Alexandria to Sauk Centre	165
Route A	
North Dakota to Alexandria	550
Alexandria to Sauk Centre	330

c. Flora and Fauna

(1) Impacts to flora and fauna

Impacts to flora and fauna cannot be avoided in these areas. The record evidence demonstrates that impacts to flora and fauna will be as follows:

Route/Alignment	Number of Minnesota County Biological Survey Sites of Biodiversity Significance Within ROW²²⁷
Modified Preferred Route	
North Dakota to Alexandria	1
Alexandria to Sauk Centre	0
Route A	
North Dakota to Alexandria	1
Alexandria to Sauk Centre	2

²²⁶ Ex. 30 at Schedule 8 at pp. 1 & 4 (Lahr Rebuttal).

²²⁷ Ex. 30 at Schedule 8 at pp. 3 & 6 (Lahr Rebuttal).

(2) Flora

Applicants have committed to working with the MnDNR and USFWS to minimize impacts on sensitive flora along the route and minimize impacts on any areas known to contain native vegetation, wherever possible.²²⁸ MnDNR encourages Applicants to take measures to discourage invasive plant species and encourage native plant establishment.²²⁹ Applicants have likewise proposed mitigating measures such as spanning native plant areas, re-seeding disturbed areas, and weed spraying.²³⁰

(3) Fauna

Raptors, waterfowl, and other bird species may be affected by the construction and placement of the proposed transmission lines. Avian collisions are a possibility after the construction of the transmission lines, but due to the larger size of conductors associated with transmission lines, as well as bundling them, they are typically more visible than distribution lines.²³¹ The risk of avian collision can be minimized by marking shield wires with Swan Flight Diverters.²³² Due to the size of the facilities in combination with the Swan Flight Diverters, no significant impacts are anticipated.²³³

In addition, Applicants are committed to implementing appropriate mitigation measures for this Project. In 2002, Xcel Energy entered into a voluntary Memorandum of Understanding (“MOU”) with the USFWS, agreeing to work together to address avian issues throughout Xcel

²²⁸ Ex. 1A at p. 7-54 (Application).

²²⁹ Ex. 43 at p. 3 (MnDNR comments on DEIS).

²³⁰ Ex. 1A at pp. 7-54 and 7-55 (Application).

²³¹ Ex. 30 at p. 12 (Lahr Rebuttal); Ex. 1A at p. 7-56 (Application).

²³² Ex. 30 at pp. 12-13 (Lahr Rebuttal).

²³³ Ex. 30 at p. 12 (Lahr Rebuttal).

Energy's service territories.²³⁴ The intent of an Avian Protection Plan is to minimize risk of avian collision or electrocution with transmission lines.²³⁵ The Project will likewise be constructed in a manner to minimize potential risk to avian species.

7. *Effects on Rare and Unique Resources*

Minn. R. 7850.4100(F) requires consideration of the effects on rare and unique resources. Six species listed as endangered, threatened, or special concern by the State of Minnesota have been documented within the Modified Preferred Route.²³⁶ No federally listed species have been identified within one mile of the Modified Preferred Route.²³⁷ Applicants will span, as possible, rivers, streams and wetlands. Wherever it is not feasible to span, a survey will be conducted to determine the presence of special status species or suitability of habitat for such species and coordination will occur with the appropriate agencies to avoid and minimize any impact.²³⁸

The record evidence demonstrates that there are no Scientific and Natural Areas ("SNA"), Wildlife Management Areas ("WMA"), or Waterfowl Protection Areas ("WPA") in the Modified Preferred Route right-of-way between North Dakota and Sauk Centre.²³⁹ Route A would cross the Sauk River WMA east of the Sauk Centre Airport.²⁴⁰

8. *Application of Various Design Considerations*

Minn. R. 7850.4100(G) requires consideration of applied design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of

²³⁴ Ex. 1A at p. 7-57 (Application).

²³⁵ Ex. 1A at p. 7-57 (Application).

²³⁶ Ex. 1A at pp. 7-63 (Application).

²³⁷ Ex. 1A at pp. 7-63 (Application).

²³⁸ Ex. 1A at pp. 7-63 (Application).

²³⁹ Ex. 30 at Schedule 8 at pp. 3 and 6 (Lahr Rebuttal).

²⁴⁰ Ex. 30 at p. 11 (Lahr Rebuttal).

transmission or generating capacity. The record evidence demonstrates that appropriate design alternatives were considered.²⁴¹ The entire length of the 345 kV transmission line will be constructed with double circuit capable poles so that a second circuit can be strung when conditions justify expansion. This will allow for maximizing the use of existing right-of-way and minimizing the construction time for a new circuit when circumstances merit expansion.²⁴²

Applicants also propose to install six conductors during initial construction at highway crossings and interchanges to facilitate the addition of a second circuit in the future.²⁴³ Initial installation of six conductors will minimize construction-related conflicts with the existing transmission line and disruptions to highway facilities at the time the second circuit is added.²⁴⁴

9. *Use or Paralleling of Existing Rights-of-Way, Survey Lines, Natural Division Lines, Agricultural Field Boundaries, Transportation Pipelines, and Electrical Transmission Systems*

Minn. R. 7850.4100(H) requires consideration of the proposed routes' use or paralleling of existing rights-of-way and linear features. A discussion of this factor is set forth above. The relative percentages of corridor sharing for each route are set forth below:

²⁴¹ Ex. 1A at p. 6-5 (Application).

²⁴² Ex. 1A at p. 3-5 (Application).

²⁴³ Ex. 3 at pp. 6-7 (Chezik Direct).

²⁴⁴ Ex. 3 at pp. 6-7 (Chezik Direct); Vol. 4 at p. 94 (Seykora).

Route/Alignment	Percentage of Paralleling Existing ROW	Percent Paralleling Existing Linear Features
Modified Preferred Route (entire route)	76% ²⁴⁵	96% ²⁴⁶
North Dakota to Alexandria	77% ²⁴⁷	95% ²⁴⁸
Alexandria to Sauk Centre	94% ²⁴⁹	100% ²⁵⁰
Route A (entire route)	66% ²⁵¹	97% ²⁵²
North Dakota to Alexandria	79% ²⁵³	100% ²⁵⁴
Alexandria to Sauk Centre	36% ²⁵⁵	93% ²⁵⁶

It is worth noting that the RPA Preferred Route paralleled existing rights-of-way for 84% of its length, as compared to the Modified Preferred Route which parallels existing rights-of-way for 76% of its end-to-end length.²⁵⁷ The difference can be primarily attributed to the new Red River crossing and the substitution of AS-1 in the Modified Preferred Route.²⁵⁸ The RPA Preferred Route

²⁴⁵ Ex. 30 at Schedule 11 (Lahr Rebuttal).

²⁴⁶ Ex. 30 at Schedule 11 (Lahr Rebuttal).

²⁴⁷ Ex. 30 at Schedule 8 at p. 2 (Lahr Rebuttal).

²⁴⁸ Ex. 30 at Schedule 8 at p. 2 (Lahr Rebuttal).

²⁴⁹ Ex. 30 at Schedule 8 at p. 5 (Lahr Rebuttal).

²⁵⁰ Ex. 30 at Schedule 8 at p. 5 (Lahr Rebuttal).

²⁵¹ Ex. 30 at Schedule 11 (Lahr Rebuttal).

²⁵² Ex. 30 at Schedule 11 (Lahr Rebuttal).

²⁵³ Ex. 30 at Schedule 8 at p. 2 (Lahr Rebuttal).

²⁵⁴ Ex. 30 at Schedule 8 at p. 2 (Lahr Rebuttal).

²⁵⁵ Ex. 30 at Schedule 8 at p. 5 (Lahr Rebuttal).

²⁵⁶ Ex. 30 at Schedule 8 at p. 5 (Lahr Rebuttal).

²⁵⁷ Ex. 30 at Schedule 11 (Lahr Rebuttal).

²⁵⁸ Ex. 30 at Schedule 8 at p. 2 (Lahr Rebuttal).

followed I-94 further north, then follows an existing highway west to the Red River crossing.²⁵⁹ In contrast, the Modified Preferred Route turns west off of I-94 earlier, and largely follows property boundaries and section lines to the more southerly Red River crossing.²⁶⁰ Option 13 follows existing rights of way for 33% of its distance and existing linear features for 100% of its distance, and would thereby impact the Modified Preferred Route accordingly if added.²⁶¹ While these options reduce the overall corridor sharing of the Modified Preferred Route, Applicants continue to believe they are preferable due to the requests of North Dakota officials, the impacts of a more northerly river crossing on the Fargo area, and the impacts of the original AS-1 on the Lesmeister Flying Service.

10. *Electrical System Reliability*

Minn. R. 7850.4100(K) requires consideration of electrical system reliability. The Project is proposed to be constructed with double circuit capable structures – strung with a single circuit initially and the capability to add a second circuit at a later date.²⁶² Undergrounding any portion of the Project could negatively affect system reliability.²⁶³ The record evidence demonstrates that all overhead designs will ensure system reliability and that reliability is best maintained by constructing the Project above ground.²⁶⁴

11. *Costs*

Minn. R. 7850.4100(L) requires consideration of the each proposed route's cost of construction, operation and maintenance. The record evidence demonstrates that it will cost less to

²⁵⁹ Ex. 4 at Tiles B-2 and C-2.

²⁶⁰ Ex. 4 at Tiles B-2 and C-2.

²⁶¹ Ex. 30 at Schedule 11 at p. 2 (Lahr Rebuttal).

²⁶² Ex. 1A at pp. 2-3 to 2-4 (Application).

²⁶³ Ex. 2 at p. 22 (Lahr Direct); Ex. 3 at p. 12 (Chezik Direct); Vol. 1 at pp. 100-01 and 104-05 (Chezik).

²⁶⁴ Ex. 6 at pp. 4-5 (Kline Direct); Ex. 3 at p. 12 (Chezik Direct).

construct the 345 kV transmission line along the Modified Preferred Route with Option 13 as compared to Route A:

Route	Cost to Construct (in millions) ²⁶⁵
Modified Preferred Route	
North Dakota to Alexandria	\$146.4
Option 13	\$3.4
Alexandria to Sauk Centre	\$40.1
Route A	
North Dakota to Alexandria	\$174.1
Alexandria to Sauk Centre	\$51.4

12. *Unavoidable Adverse Human and Natural Environmental Effects*

Minn. R. 7850.4100(M) requires consideration of the adverse human and natural environmental effects that cannot be avoided for each proposed route. Unavoidable adverse impacts include the physical impacts to the land, primarily agricultural land, due to the construction of the Project.²⁶⁶ These agricultural impacts are addressed above at Section IV.C.4.a. The Modified Preferred Route permanently impacts more acres of land in Minnesota as compared to Route A, but likely fewer acres overall when the portion of the Project in North Dakota is factored in.²⁶⁷ In addition, Applicants have identified mitigation measures to address adverse environmental effects during construction of the Project.²⁶⁸ Applicants will also work with the public and public agencies

²⁶⁵ Ex. 3 at p. 10 (Chezik Direct).

²⁶⁶ Ex. 1A at p. 6-6 (Application).

²⁶⁷ Ex. 1A at p. 6-6 (Application).

²⁶⁸ Ex. 1A at § 7.0 (Application).

to minimize the unavoidable adverse environmental effects that may arise during and after construction of the Project.²⁶⁹

13. *Irreversible and Irretrievable Commitments of Resources*

Minn. R. 7850.4100(N) requires consideration of the irreversible and irretrievable commitments of resources that are necessary for each proposed route. The Project will require few irreversible and irretrievable commitments of resources.²⁷⁰ Only construction resources, such as concrete, steel and hydrocarbon fuels, will be irreversibly and irretrievably committed to this Project.²⁷¹ These commitments of resources for the Minnesota portion of the Project are approximately the same for the Modified Preferred Route and Route A, but Route A would likely require more resources overall once the longer portion of the Project in North Dakota is factored in.²⁷²

14. *Segments Conclusion*

In sum, the Modified Preferred Route compares favorably to Route A in the portions of the Project from the North Dakota border to Sauk Centre. Applicants concluded that the Modified Preferred Route (and RPA Preferred Route) is preferable to Route A because the Modified Preferred Route impacts fewer homes, is less costly, and makes better use of existing rights-of-way.

D. Additional Analysis of Routing Factors: Sauk Centre to St. Cloud

The Sauk Centre to St. Cloud portion of the Project has been the source of greatest public interest, was the focus of the ATF process, and was the primary subject of the evidentiary hearings in this matter. Routing analysis in this project area requires consideration of nine potential routes:

²⁶⁹ Ex. 1A at § 7.0 (Application).

²⁷⁰ Ex. 1A at p. 6-7 (Application).

²⁷¹ Ex. 1A at p. 6-7 (Application).

²⁷² Ex. 1A at p. 6-7 (Application).

the RPA/Modified Preferred Route, and Routes A, B, C, D, E, F, G, and H. Several route options have also been proposed. The following discussion provides comparative information for these routes and the route options proposed by Applicants. As the record evidence establishes, impacts of the various routes are similar in many respects.

1. The Parties’ Route Preferences

The parties to this proceeding have stated the following route preferences between Sauk Centre and St. Cloud:

Party	Route Supported
Applicants	Modified Preferred Route (including Option 13) from Red River to Quarry Substation; ²⁷³ or in the alternative substitute Route E between Sauk Centre and Quarry Substation, with AS-4, Option 11, and Segment ES-5 of Option 12.
St. John’s University/Abbey	Route A ²⁷⁴
Avon Township	Routes G and H (with Option 11), and Route A is “somewhat preferable” to the Modified Preferred Route. ²⁷⁵
NoRCA	Routes D, E, F, G or H. ²⁷⁶

2. Application of Routing Factors

The following discussion applies the routing factors to the segment of the Project between Sauk Centre and St. Cloud. However, for a number of the criteria, the considerations are the same throughout the Project. To avoid redundancy, for those criteria Applicants will refer to and incorporate the earlier portion of the brief where the relevant criterion is discussed.

²⁷³ Ex. 2 at pp. 14-15 (Lahr Direct).

²⁷⁴ Ex. 6 at p. 5 (Kroll Direct); Ex. 5 at p. 11 (St. John’s Chapman Direct).

²⁷⁵ Ex. 10 at p. 7 (Bresnahan Direct).

²⁷⁶ Ex. 12 at p. 2 (Hylla/Schmitt Direct).

Application of the routing factors, taken in combination with the discussion of specific concerns raised above, establishes that there are multiple constructible options where the impacts of the routes are relatively comparable. Applicants suggest that the Modified Preferred Route in this section satisfies the applicable routing criteria, with Route E comparing favorably to alternatives to the Modified Preferred Route. In the following tables, route impacts of Option 11, the north portion of Option 12, and AS-4 are incorporated into the stated impacts of Routes E, G, and H.

a. Effects on Human Settlement

(1) Displacement

The record evidence demonstrates that the Modified Preferred Route would not result in displacement between Sauk Centre and St. Cloud:²⁷⁷

Route	Homes Within 0 to 75 Feet of Alignment	Homes Within 75 to 150 Feet of Alignment	Homes Within 150 to 300 Feet of Alignment	Homes Within 300 to 500 Feet of Alignment	Homes Within 0 to 500 Feet of Alignment	Acres of Residential Land Use within ROW²⁷⁸
Modified Preferred Route	0 ²⁷⁹	8	48	29	85	9
Route A	0	21	57	41	119	3
Route B	0	32	102	57	191	14

²⁷⁷ Ex. 30 at Schedule 8 at p. 9 (Lahr Rebuttal); Ex. 33 at p. 3 (Updated Home Comment).

Likewise, the City of Waite Park advocates for the Modified Preferred Route because routes leaving the Quarry Substation to the north “will have the least impact on development” in the City of Waite Park/Quarry Substation area. Letter of January 12, 2011 from City of Waite Park Building and Planning Coordinator to ALJ Heydinger (eFiled January 27, 2011).

²⁷⁸ Ex. 30 at Schedule 8 at p. 8 (Lahr Rebuttal).

²⁷⁹ The FEIS indicates one home may be displaced along the Modified Preferred Route. FEIS at p. 3-34. Applicants have not been able to assess this data because the home address was not given and the segment of the Project where the home is located was not identified. Applicants’ data continue to indicate that no homes will be displaced along the Modified Preferred Route.

Route	Homes Within 0 to 75 Feet of Alignment	Homes Within 75 to 150 Feet of Alignment	Homes Within 150 to 300 Feet of Alignment	Homes Within 300 to 500 Feet of Alignment	Homes Within 0 to 500 Feet of Alignment	Acres of Residential Land Use within ROW ²⁷⁸
Route C	1	8	42	26	77	19
Route D	11	22	83	77	193	56
Route E	0	12	32	26	70	10
Route F	0	12	94	105	211	41
Route G	0	9	45	29	83	9
Route H	0	9	56	28	93	9

(2) Noise

Please see Section IV.C.1.B, above.

b. Aesthetics

The Lake Wobegon Trail is a significant regional trail that is crossed or paralleled by several potential routes.²⁸⁰ Portions of the Modified Preferred Route and Route D parallel the Lake Wobegon Trail. While some parties and members of the public expressed concern about visual impacts on the trail,²⁸¹ others noted that there has previously been discussion that the Trail is a good location to place future existing infrastructure because it is an existing corridor.²⁸² No route is expected to change or limit the use of the Trail, and therefore no significant impacts are anticipated. While there are recreational areas in this portion of the Project area, such as park lands and open space, no route is expected to change or limit the use of these areas.²⁸³

²⁸⁰ FEIS at p. 3-36.

²⁸¹ Ex. 12 at p. 24 (Hylla/Schmitt Direct); FEIS at p. 2-124.

²⁸² *E.g.*, FEIS at pp. 2-77, 2-86, 2-121.

²⁸³ FEIS at p. 3-42.

c. *Effects on Public Health and Safety*

Minn. R. 7850.4100(B) requires consideration of the Project’s effect on public health and safety. The public health and safety effects will be the same throughout the Project area, as set forth in Section IV.C.3 above.

d. *Effects on Land-Based Economies*

Minn. R. 7850.4100(C) requires consideration of the Project’s effects on land-based economies, specifically agriculture, forestry, tourism, and mining. The route alternatives are comparable in many respects.

(1) *Agriculture*

The Project will result in permanent and temporary impacts to farmland.²⁸⁴ Permanent impacts will occur as a result of structure placement along the route centerline. Applicants estimate that the permanent impacts to agricultural fields will be 1,000 square feet per pole, as follows for the portion of the Project between Sauk Centre and St. Cloud:²⁸⁵

Route/Alignment	Permanent Impacts to Agricultural Land (sq. ft.)²⁸⁶
Modified Preferred Route	163,000
Route A	158,000
Route B	116,000
Route C	129,000
Route D	99,000
Route E	137,000

²⁸⁴ Ex. 1A at § 7.1.2.1 (Application).

²⁸⁵ Ex. 1A at p. 7-29 (Application).

²⁸⁶ Ex. 30 Schedule 8 at p. 8 (Lahr Rebuttal).

Route/Alignment	Permanent Impacts to Agricultural Land (sq. ft.)²⁸⁶
Route F	149,000
Route G	139,000
Route H	167,000

Temporary impacts, such as soil compaction and crop damage, may also occur during construction.²⁸⁷ Applicants estimate temporary impacts to agricultural fields to be one acre per pole for construction as follows:²⁸⁸

Route/Alignment	Temporary Impacts to Agricultural Land (acres)²⁸⁹
Modified Preferred Route	163
Route A	158
Route B	116
Route C	129
Route D	99
Route E	137
Route F	149
Route G	140
Route H	168

²⁸⁷ Ex. 1A at p. 7-29 (Application).

²⁸⁸ Ex. 1A at p. 7-29 (Application).

²⁸⁹ Ex. 30 Schedule 8 at p. 8 (Lahr Rebuttal).

(2) Forestry

The Modified Preferred Route is located primarily in grassland and cultivated land with some forested areas adjacent to farmsteads, waterways, and within MnDNR managed lands.²⁹⁰ Much of the affected land is private, and not held for commercial forestry operations.²⁹¹ Certain forestry between Sauk Centre and St. Cloud is owned and used by St. John’s University/Abbey and surrounding areas.²⁹² Impacts on forest resources will occur at locations where trees will be cleared within the right-of-way.²⁹³ Impacts to wooded areas are expected to be as follows:

Route/Alignment	Wooded Lands (acres)²⁹⁴
Modified Preferred Route	71
Route A	59
Route B	43
Route C	57
Route D	37
Route E	55
Route F	48
Route G	50
Route H	56

²⁹⁰ Ex. 1A at p. 7-31 (Application).

²⁹¹ Ex. 1A at p. 7-31 (Application).

²⁹² See, e.g., Ex. 6 (Kroll Direct); Ex. 8 (McGee Direct); Ex. 7 (Restani Direct).

²⁹³ Ex. 1A at p. 7-31 (Application).

²⁹⁴ Ex. 30 Schedule 8 at p. 8 (Lahr Direct).

(3) Mining

There are mining resources along several of the route alternatives between Sauk Centre and St. Cloud. They are as follows:

Route/Alignment	Total Number of Aggregate Source Pits within ROW²⁹⁵
Modified Preferred Route	1
Route A	0
Route B	0
Route C	1
Route D	1
Route E	3
Route F	1
Route G	3
Route H	3

The aggregate source pit along the Modified Preferred Route is not active; it is a prospective pit.²⁹⁶ Applicants will work with any interested parties to select an alignment that will avoid or minimize impacts to potential aggregate mining.

(4) Tourism

The Hemker Park & Zoo is located in Freeport, Minnesota, in the vicinity of the Modified Preferred Route.²⁹⁷ Use of the zoo is not expected to be limited or altered;²⁹⁸ therefore, no significant impact to the zoo is expected.

²⁹⁵ Ex. 30 at Schedule 8 p. 8 (Lahr Direct).

²⁹⁶ Ex. 30 at Schedule 8 p. 8 (Lahr Rebuttal).

²⁹⁷ FEIS at p. 2-50.

e. *Effects on Archaeological and Historic Resources*

Minn. R. 7850.4100(D) requires consideration of the Project’s effects on archaeological and historic resources. There are no known archaeological or historic sites in the vicinity of the Modified Preferred Route:

Route/Alignment	Number of Archaeological Sites within ROW²⁹⁹
Modified Preferred Route	0
Route A	0
Route B	0
Route C	0
Route D	0
Route E	1
Route F	1
Route G	0
Route H	0

Route/Alignment	Number of Historic Structures within ROW³⁰⁰
Modified Preferred Route	0
Route A	0

²⁹⁸ FEIS at p. 2-50. Dr. Valberg likewise explained that stray voltage is not a material risk with regard to transmission lines near animals. Vol. 3 at pp. 33-35 (Valberg). Dr. Chapman also explained that animals kept in captivity typically do not have endangered species status. Vol. 3 at pp. 61-62 (Chapman).

²⁹⁹ Ex. 30 at Schedule 8 p. 8 (Lahr Rebuttal).

³⁰⁰ Ex. 30 at Schedule 8 p. 8 (Lahr Rebuttal).

Route/Alignment	Number of Historic Structures within ROW ³⁰⁰
Route B	1
Route C	0
Route D	3
Route E	0
Route F	0
Route G	0
Route H	0

Applicants do not anticipate impacts to previously or newly identified resources as a result of the Project.³⁰¹ Applicants plan to avoid impact to any newly discovered resources by adjusting pole spacing to span resources, adjusting the alignment, and designating no-traffic areas during construction and operation.³⁰²

f. *Effects on Natural Environment*

Minn. R. 7850.4100(E) requires consideration of the effects on the natural environment, including effects on air and water quality resources and flora and fauna. As set forth below, the Project is not anticipated to have a material effect on the natural environment.

(1) *Air Quality*

Air quality impacts of the Project are discussed in Section IV.C.6.a above, and are not anticipated to be material.

³⁰¹ Ex. 1A at p. 7-36 (Application).

³⁰² Ex. 1A at p. 7-36 (Application).

(2) Water Quality Resources

Numerous surface water resources including lakes, rivers, streams, wetlands and floodplains will be crossed by or located in the right-of-way of the proposed routes.³⁰³ The Project’s temporary impacts could include sedimentation reaching surface waters during construction due to ground disturbance by excavation, grading, construction traffic, and dewatering of holes drilled for transmission structures, which could temporarily degrade water quality due to turbidity.³⁰⁴ These impacts will be avoided and minimized using appropriate sediment control practices and construction practices.³⁰⁵

Applicants will also endeavor to minimize permanent impacts to wetlands and drainage systems by spanning wetlands and drainage systems, where possible.³⁰⁶ When it is not possible to span a wetland, Applicants employ construction techniques to minimize impacts.³⁰⁷ But once the Project is completed, there will be no significant impact on surface water quality because wetland impacts will be minimized and mitigated, disturbed soil will be restored to previous conditions or better, and the amount of land area converted to an impervious surface will be small.³⁰⁸ The record evidence demonstrates the following impacts to wetlands and flood plains:

Route/Alignment	Forested Wetlands in the Right-of-Way (acres)³⁰⁹
Modified Preferred Route	32
Route A	35

³⁰³ Ex. 30 at Schedule 8 at p. 7 (Lahr Rebuttal).

³⁰⁴ Ex. 1A at p. 7-47 (Application).

³⁰⁵ Ex. 1A at p. 7-48 (Application).

³⁰⁶ Ex. 1A at p. 7-45 (Application).

³⁰⁷ Ex. 1A at p. 7-45 (Application).

³⁰⁸ Ex. 1A at pp. 7-47 to 7-48 (Application).

³⁰⁹ Ex. 30 at Schedule 8 p. 7 (Lahr Rebuttal).

Route/Alignment	Forested Wetlands in the Right-of-Way (acres)³⁰⁹
Route B	15
Route C	10
Route D	7
Route E	7
Route F	13
Route G	7
Route H	6

Route/Alignment	Permanent Impacts to 100-Year Floodplains (sq. ft.)³¹⁰
Modified Preferred Route	440
Route A	440
Route B	330
Route C	330
Route D	330
Route E	275
Route F	495
Route G	275
Route H	330

³¹⁰ Ex. 30 at Schedule 8 p. 7 (Lahr Rebuttal).

(3) Flora and Fauna

(a) Impacts to flora and fauna

Impacts to flora and fauna cannot be avoided in these areas. The record evidence demonstrates that impacts to flora and fauna will be as follows. The Modified Preferred Route and Route E compare favorably to the other routes in this segment.

Route/Alignment	Number of Minnesota County Biological Survey Sites of Biodiversity Significance Within ROW³¹¹
Modified Preferred Route	2
Route A	2
Route B	3
Route C	0
Route D	2
Route E	1
Route F	4
Route G	2
Route H	2

(b) Flora

Applicants have committed to working with the MnDNR and USFWS to avoid or minimize impacts on sensitive flora along the route, and will avoid and minimize impacts on any areas known to contain native vegetation, wherever possible.³¹²

³¹¹ Ex. 30 at Schedule 8 at p. 9 (Lahr Rebuttal).

³¹² Ex. 1A at p. 7-54 (Application).

(c) Fauna

Raptors, waterfowl, and other bird species may be affected by the construction and placement of the proposed transmission lines. Avian collisions are a possibility after the construction of the transmission lines, but due to the larger size of conductors associated with transmission lines they are typically more visible than distribution lines.³¹³ The risk of avian collision can be minimized by marking shield wires with Swan Flight Diverters.³¹⁴ Due to the size of the facilities in combination with the Swan Flight Diverters, no significant impacts are anticipated.³¹⁵

g. Effects on Rare and Unique Resources

Minn. R. 7850.4100(F) requires consideration of the effects on rare and unique resources. As discussed previously, six species listed as endangered, threatened, or special concern by the State of Minnesota have been documented within the Modified Preferred Route.³¹⁶ No federally listed species have been identified within one mile of the Modified Preferred Route.³¹⁷ The Modified Preferred Route compares favorably to other routes in minimizing impacts to rivers, streams, and wetlands.³¹⁸ The data is comparable across several routes, favoring some routes in some categories and other routes in other categories.³¹⁹

³¹³ Ex. 30 at p. 12 (Lahr Rebuttal); Ex. 1A at p. 7-56 (Application).

³¹⁴ Ex. 30 at p. 12-13 (Lahr Rebuttal).

³¹⁵ Ex. 30 at p. 12 (Lahr Rebuttal).

³¹⁶ Ex. 1A at p. 7-63 (Application).

³¹⁷ Ex. 1A at p. 7-63 (Application).

³¹⁸ Ex. 30 at Schedule 8 at p. 7 (Lahr Rebuttal).

³¹⁹ Ex. 30 at Schedule 8 at p. 7 (Lahr Rebuttal).

The record evidence demonstrates that there are no Scientific and Natural Areas (“SNA”), Wildlife Management areas (“WMA”) or Waterfowl Protection Areas (“WPA”) in the Modified Preferred Route right-of-way between Sauk Centre and St. Cloud.³²⁰

h. *Application of Various Design Considerations; Electrical System Reliability; Unavoidable Adverse Human and Natural Environmental Effects; and Irreversible and Irretrievable Commitments of Resources*

Minn. R. 7850.4100 requires consideration of these factors, which are discussed earlier in this Brief and which are the same throughout the Project. Please see Sections IV.C.8, IV.C.10, IV.C.12, and IV.C.13, supra, for application of these factors to this Project.

i. *Use or Paralleling of Existing Rights-of-Way, Survey Lines, Natural Division Lines, Agricultural Field Boundaries, Existing Transportation Pipelines, and Electrical Transmission Systems or Rights-of-Way*

The issue of corridor sharing has been previously discussed. The comparative percentages of corridor sharing for the routes is set forth below:

Route/Alignment	Percentage of Paralleling Existing ROW³²¹ (Total Route)	Percent Paralleling Existing Linear Features³²² (Total Route)	Percentage of Paralleling Existing ROW³²³ (Sauk Centre to St. Cloud)	Percent Paralleling Existing Linear Features³²⁴ (Sauk Centre to St. Cloud)
Modified Preferred Route	76	96	61	97
Route A	66	97	69	95
Route B	72	97	88	97

³²⁰ Ex. 30 at Schedule 8 at p. 9 (Lahr Rebuttal).

³²¹ Ex. 30 at Schedule 11 (Lahr Rebuttal).

³²² Ex. 30 at Schedule 11 (Lahr Rebuttal).

³²³ Ex. 30 at Schedule 8 at p. 8 (Lahr Rebuttal).

³²⁴ Ex. 30 at Schedule 8 at p. 8 (Lahr Rebuttal).

Route/Alignment	Percentage of Paralleling Existing ROW ³²¹ (Total Route)	Percent Paralleling Existing Linear Features ³²² (Total Route)	Percentage of Paralleling Existing ROW ³²³ (Sauk Centre to St. Cloud)	Percent Paralleling Existing Linear Features ³²⁴ (Sauk Centre to St. Cloud)
Route C	81	97	83	95
Route D	81	96	80	97
Route E	79	97	73	100
Route F	84	97	91	100
Route G	80	97	75	100
Route H	79	97	71	98

j. *Costs*

Route/Alignment	Costs to Construct (Total Route) ³²⁵ (in millions)	Costs to Construct (Sauk Centre to St. Cloud) ³²⁶ (in millions)
Modified Preferred Route	\$252.0	\$63.8
Route A	\$290.7	\$65.2
Route B	\$291.8	\$66.3
Route C	\$249.1	\$60.9
Route D	\$248.5	\$60.3
Route D (underground)	\$796.2	\$608.0
Route E	\$252.9	\$64.7
Route F	\$262.4	\$74.2
Route G	\$253.4	\$65.2

³²⁵ Ex. 3 at p. 10 (Chezik Direct).

³²⁶ Ex. 3 at p. 10 (Chezik Direct).

Route/Alignment	Costs to Construct (Total Route) ³²⁵ (in millions)	Costs to Construct (Sauk Centre to St. Cloud) ³²⁶ (in millions)
Route H	\$253.0	\$64.8
Option 11	(\$1.7)	(\$1.7) ³²⁷

3. Segment Conclusion

Applicants believe that the Modified Preferred Route satisfies the relevant routing criteria, for the reasons set forth above. In the alternative, Route E (as amended) is constructible and compares favorably to the other alternatives to the Modified Preferred Route. Applicants request that if the Modified Preferred Route is not selected for the Sauk Centre to St. Cloud section, that Route E (as amended) be recommended.

V. CONCLUSION

Applicants respectfully request that the ALJ recommend approval of the Modified Preferred Route and route width, with the addition of Option 13. In the alternative, Applicants respectfully request that the ALJ recommend approval of the Modified Preferred Route with the addition of Option 13 for the North Dakota border to Sauk Centre portion of the line and Route E with AS-4, Option 11, and Segment E-5 of Option 12 for the Sauk Centre to St. Cloud section.

³²⁷ Vol. 1 at pp. 132-33 (Chezik).

Dated: January 28, 2011

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Respectfully submitted:

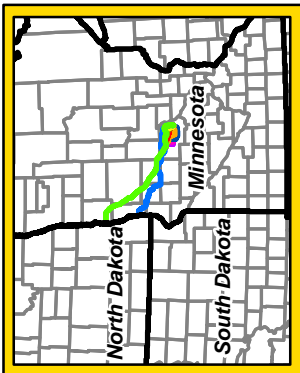
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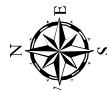
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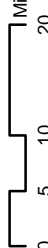


Legend

-  Modified Preferred Route (includes AS-1 and AS-3)
-  Option 13
-  Municipal Boundary
-  River
-  Lake

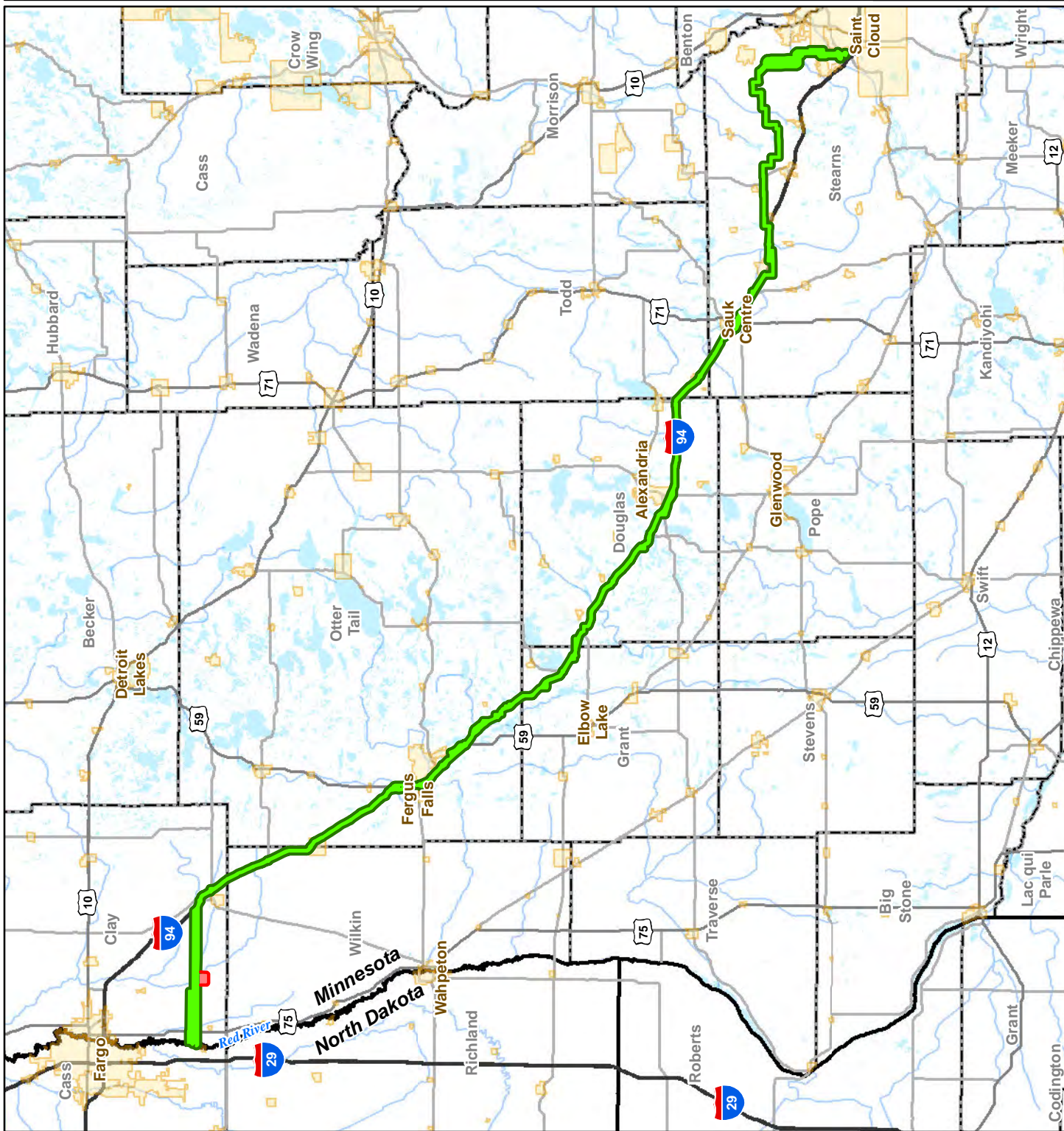


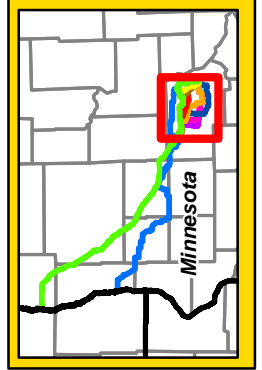
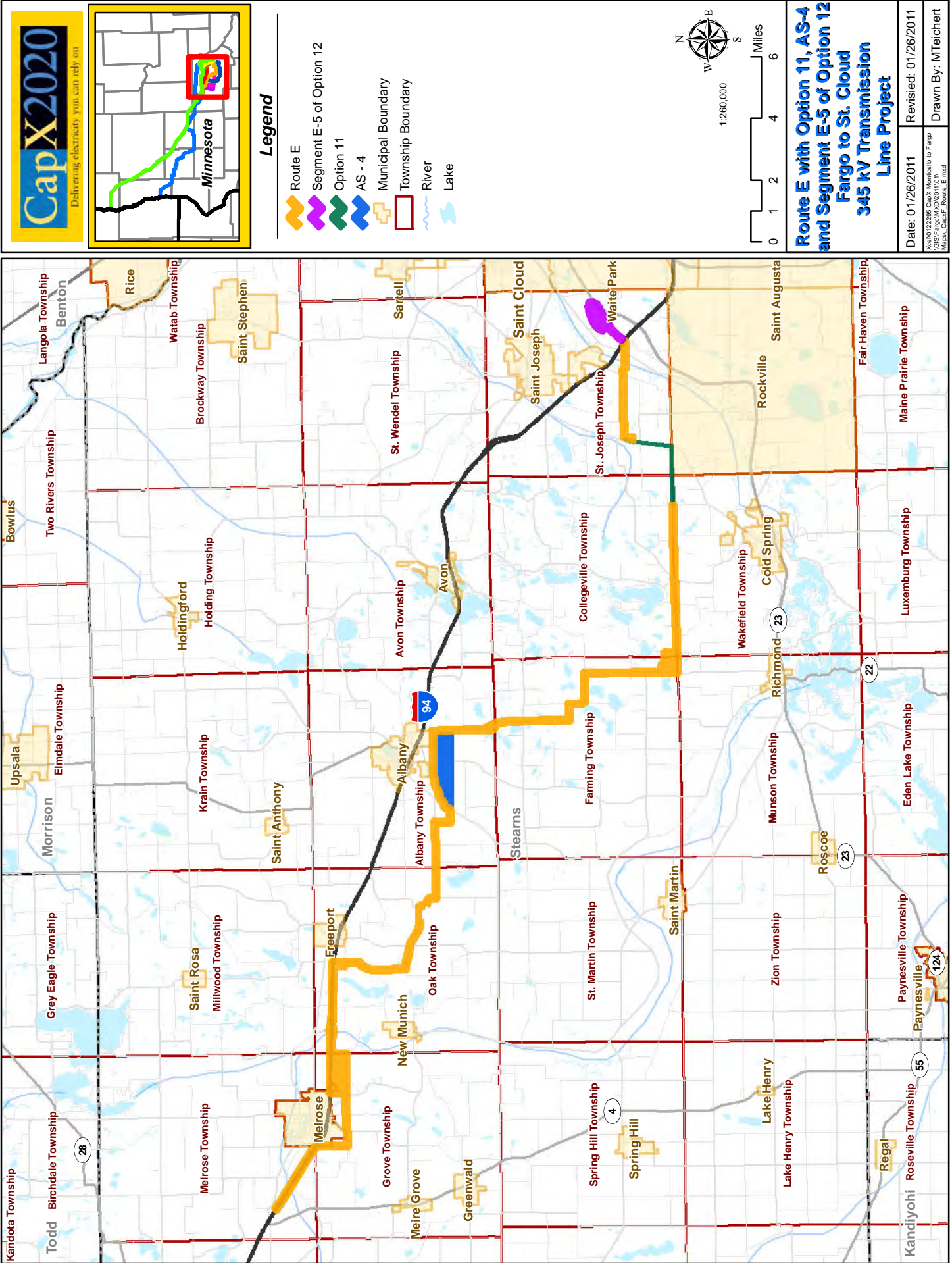
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**Modified Preferred Route
 with Option 13
 Fargo to St. Cloud
 345 kV Transmission
 Line Project**

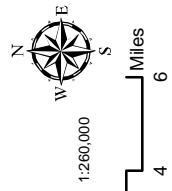
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 Revised: 01/26/2011
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Legend

- Route E
- Segment E-5 of Option 12
- Option 11
- AS - 4
- Municipal Boundary
- Township Boundary
- River
- Lake



Route E with Option 11, AS-4 and Segment E-5 of Option 12 Fargo to St. Cloud 345 kV Transmission Line Project

Date: 01/26/2011	Revised: 01/26/2011
Prepared by: MTEichert	Drawn By: MTEichert

MapXtreme 2011 v. 11.0
 GIS/MapXtreme 2011 v. 11.0
 Maps: Capx, Route E.mxd