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. E002/TL-09-1056 OAH DOCKET NO. 15-2500-20995-2

TESTIMONY OF

Darrin Lahr

On Behalf of

APPLICANTS

NORTHERN STATES POWER COMPANY, A MINNESOTA CORPORATION
and GREAT RIVER ENERGY, A MINNESOTA COOPERATIVE CORPORATION

October 13, 2010

Exhibit _____

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I. INTRODUCTION AND QUALIFICATIONS

Q. STATE YOUR NAME AND YOUR BUSINESS ADDRESS.

A. My name is Darrin Lahr and my business address is 8701 Monticello Lane Maple Grove Minnesota 55369

Q. BY WHOM ARE YOU EMPLOYED AND WHAT IS YOUR POSITION?

A. I am employed as the Supervisor, Siting and Permitting by Xcel Energy Services Inc., the service company provider for Northern States Power Company, a Minnesota corporation ("Xcel Energy"). In my current position, I am responsible for the permitting of the Fargo to St. Cloud 345 kV Transmission Line Project ("Fargo-St. Cloud Project" or "Project").

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science in Industrial Studies (emphasis in Energy and Transportation) from St. Cloud State University in 1988. I attended the University of Minnesota, Carlson School of Management, Minnesota Management Institute in 2000.

Since 1988, I have been employed by Xcel Energy Services Inc. or Northern States Power Company, where I am currently the Supervisor, Siting and Land Rights. I am responsible for managing the development of state and federal permit applications to construct major Xcel Energy facilities in a multi-state area, the acquisition of land and easements, and the acquisition of other permits to allow construction. I am also the routing lead for the Project.

Prior to this position, I was a Community and Local Government Relations Manager where I worked closely with communities, cities and counties for 12 years.

My resume is attached as **Schedule 1**.

Q. FOR WHOM ARE YOU TESTIFYING?

A. I am testifying on behalf of Xcel Energy and Great River Energy, a Minnesota cooperative corporation, the joint Applicants for a Route Permit in this proceeding.

Q. WHAT SCHEDULES ARE ATTACHED TO YOUR TESTIMONY?

A.
- Schedule 1: Darrin Lahr Resume
- Schedule 2: Master Route Maps
  - Schedule 2A: Project Overview
  - Schedule 2B: North Dakota to Alexandria
  - Schedule 2C: Alexandria to Sauk Centre
  - Schedule 2D: Sauk Centre to St. Cloud
- Schedule 3: June 28, 2010 Letter Requesting Amendment to Scoping Decision
- Schedule 4: Diagram of Lesmeister Airstrip with Hypothetical Clearance Cones for Private Use Airports
- Schedule 5: Index Comparison of Route Impacts
- Schedule 6: Electromagnetic Field Measurements Based on 2015 Projected Load
- Schedule 7: Electromagnetic Field Measurements Based on 600 MVA and 1000 MVA Load

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide an overview of the environmental and routing considerations for the proposed Fargo to St. Cloud 345 kV Transmission Line Project ("Project"). I am also providing testimony regarding proposed route and segment alternatives that were suggested in the environmental impact statement ("EIS") scoping process and included in the Minnesota Department of Commerce, Office of Energy Security ("OES"), Environmental Impact Statement Scoping Decision dated April 15, 2010 ("Scoping Decision") and the EIS Scoping Decision Amendment dated July 15, 2010 ("Amended Scoping Decision"). Additionally, my testimony addresses issues raised in the Draft Environmental Impact Statement ("DEIS") and various issues raised by other stakeholders.

Q. WERE YOU INVOLVED IN THE PREPARATION OF THE ROUTE PERMIT APPLICATION IN THIS PROCEEDING?

A. Yes. I was primarily responsible for identifying Applicants' proposed routes and overseeing the compilation of the Route Permit Application.

Q. ARE YOU AVAILABLE TO PROVIDE TESTIMONY IN SUPPORT OF PARTICULAR SECTIONS OF THE ROUTE PERMIT APPLICATION?

A. Yes. I am testifying in support of Chapter 1 (Introduction), Chapter 4 (Route Development and Selection Process), Chapter 5 (Description of Proposed Routes), Chapter 6 (Rationale for Selecting Preferred Route), Chapter 7 (Environmental Information), Chapter 8 (Public Participation and Agency Involvement), and Chapter 9 (Permits and Approvals). I am also supporting those portions of Chapter 3 relating to right-of-way and electric and magnetic fields and the appendices, specifically Section 3.2 Identification of Existing

Corridors and Boundaries, Section 3.3.1 Right-of-Way and Land Acquisition, and Section 3.4 Electric and Magnetic Fields.

Q. DESCRIBE THE PROCEDURAL HISTORY OF THE APPLICANTS' ROUTE PERMIT APPLICATION.

A. The Route Permit Application was submitted to the Minnesota Public Utilities Commission (the "Commission") on October 1, 2009. The Commission held a hearing on November 12, 2009, to determine if the Route Permit Application was complete, if the Commission should appoint a public advisor, and if the Commission should authorize an advisory task force. In an order dated November 23, 2009, the Commission accepted the Fargo to St. Cloud 345 kV Transmission line Route Permit Application as complete and authorized the OES to process the Route Permit Application under the full review process, to name a public advisor in this case, and to establish an advisory task force. The OES held public information and Environmental Impact Statement ("EIS") Scoping meetings on January 19, 20, 21, 26, 27, and 28, 2010, at 1:30 p.m. and 6:30 p.m. in each city, including Alexandria Broadway Ballroom, Melrose American Legion, St. Joseph El Paso Sports Bar and Grill, Fergus Falls Bigwood Event Center, Barnesville Hildebrand Hall, and Elbow Lake Dream Weaver's Banquet Facility, respectively. OES also accepted written comments through February 12, 2010.

The OES established an Advisory Task Force ("ATF") to address routing considerations within the Freeport to St. Cloud segment of the Project. The ATF met three times between January and February 2010 and made several recommendations for consideration in the EIS. The OES then issued its EIS Scoping Decision dated April 15, 2010.

In February, May, and June of 2010, Applicants met with city, county, and township officials from the Fargo area and conducted certain preliminary design work. Applicants also further examined the alternate routes proposed by the ATF in the April 15, 2010 Scoping Decision. As a result, on June 29, 2010, Applicants filed a request that the Draft Environmental Impact Statement ("DEIS") include a review of certain additional route alternatives. The OES issued an EIS Scoping Decision Amendment on July 15, 2010 agreeing to analyze the additional route alternatives.

OES then released its DEIS, dated August 31, 2010.

Q. ARE THERE ANY CLARIFICATIONS OR ADDITIONS THAT YOU WOULD LIKE TO MAKE WITH RESPECT TO INFORMATION PROVIDED IN THE ROUTE PERMIT APPLICATION?

A. Yes, there are two changes. First, the in-service date for the project is expected to be the first quarter of 2015, rather than the fourth quarter.

Second, the Application, at page 3-8, last paragraph, states that when a landowner obtains an appraisal during the right-of-way acquisition process, "[t]he commission can also award up to $3,000 in appraisal fees. Minn. Stat. § 117.189." On May 1, 2010, the applicable statutes were revised to provide for appraisal reimbursement prior to the Commissioners' award. Before commencing a condemnation proceeding, the Company must obtain at least one appraisal for the property proposed to be acquired and a copy of that appraisal must be provided to the property owner. Minn. Stat. § 117.036, subd. 2(a). The property owner may also obtain another appraisal and the Company must reimburse the property owner for the cost of the appraisal according to the limits and process set forth in Minnesota Statute § 117.036, subdivision

2(b). The property owner may be reimbursed for reasonable appraisal costs up to $1,500 for single-family and two-family residential properties; $1,500 for property with an acquisition value of $10,000 or less; and $5,000 for other types of properties.

II. PROJECT OVERVIEW

Q. WHAT IS THE GENERAL DESCRIPTION OF THE FARGO - ST. CLOUD 345 KV TRANSMISSION LINE PROJECT?

A. This Project consists of approximately 201 to 251 miles of 345 kV transmission line and associated facilities between the new Fargo area substation, known as the Bison Substation, in Fargo, North Dakota, and the new Quarry Substation located west of St. Cloud, Minnesota. The Minnesota portion of the Project will be approximately 151 to 189 miles long, extending from the Red River along the Minnesota/North Dakota border between Clay and Wilkin counties, to the Alexandria Switching Station near Alexandria, Minnesota, to the Quarry Substation. The portion of the Project within the State of North Dakota is subject to separate review and approval by the North Dakota Public Service Commission and affected local jurisdictions.

The Quarry Substation is being constructed as part of the Monticello - St. Cloud 345 kV Project for which the Commission issued a Route Permit on July 12, 2010. Facilities will be installed at the Quarry Substation to accommodate the Fargo to St. Cloud 345 kV transmission line. These facilities include 345 kV equipment (circuit breakers, switches, and control panels), foundations, and structures necessary to connect the line.

As discussed later in this testimony, modifications to the existing Alexandria Switching Station are also proposed to accommodate the proposed 345 kV transmission line.

Q. WHAT IS THE PURPOSE OF THE PROJECT?

A. The Project will serve three needs: regional reliability, generation outlet and local community service in the Red River Valley, Alexandria and St. Cloud areas.

Q. HAS THE COMMISSION ISSUED A CERTIFICATE OF NEED FOR THE PROJECT?

A. Yes. The Commission determined that the Project is needed in the CapX2020 Certificate of Need proceedings. Order Granting Certificates of Need with Conditions, In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and others for Certificates of Need for the CapX 345-kV Transmission Projects, Docket No. ET-2, E-002, et al./CN-06-1115 (May 22, 2009 as modified August 10, 2009) ("Certificate of Need Order").

The Commission determined that the Project is needed and also concluded that the facilities should be "upsized" to accommodate future growth. The upsized configuration consists of constructing the Project as one 345 kV circuit complete for the initial installation and the capability to add a second circuit to the same poles in the future when conditions warrant.

Q. HOW WILL THE PROJECT BE BUILT TO FACILITATE A FUTURE SECOND CIRCUIT?

A. The Project will consist of constructing one 345 kV single circuit transmission line on double circuit, self-weathering or galvanized steel structures. The poles will include a second set of davit arms that could carry a second circuit.

III. APPLICANTS' PROPOSED ROUTES

A. Route Permit Application

Q. DESCRIBE THE ROUTES PROPOSED IN THE APPLICATION.

A. Applicants proposed two routes, each beginning at the Quarry Substation near St. Cloud and ending in Fargo, North Dakota. Generally speaking, both routes largely follow existing rights-of-way.

Route Permit Application ("RPA") Preferred Route: The RPA Preferred Route begins at the Quarry Substation, and largely parallels an existing 115 kV line and property lines heading north to an area west of St. Stephen. From this point, the RPA Preferred Route turns west, and generally parallels existing rights-of-way and property lines until intersecting with Interstate 94 (I-94) east of Sauk Centre.

From an area east of Sauk Centre to the Alexandria Switching Station to the Red River, the RPA Preferred Route largely proceeds northwest parallel to I-94. North of Barnesville Township, the RPA Preferred Route diverges from I-94 and mostly parallels existing road rights-of-way to the Red River.

Alternate Route: Similar to the RPA Preferred Route, Route A follows existing linear features that occur within Route A. However, while the RPA

Preferred Route largely parallels "a pre-disturbed major transportation corridor [I-94] for most of its length," Route A typically parallels property lines and secondary roads. DEIS, p. 5-37.

Route A follows the RPA Preferred Route from the Quarry Substation, but diverges from the RPA Preferred Route west of St. Stephen. From St. Stephen, Route A mostly parallels existing road rights-of-way and property lines until it intersects I-94 east of Sauk Centre.

From an area east of Sauk Centre to the Alexandria Switching Station to the Red River, Route A largely parallels existing road rights of way and property lines.

Maps of the originally proposed RPA Preferred Route and Alternate Route are included in the Route Permit Application, and the DEIS.

Q. WHY DID APPLICANTS IDENTIFY ONE ROUTE AS PREFERRED?

A. Minnesota statutes and rules require an applicant to provide at least two proposed routes for a project and to state a preference for one of the proposed routes. Minn. Stat. § 216E.03, subd. 3; Minn. R. 7850.1900, Subp. 2(c). After consideration of numerous possibilities, the RPA Preferred Route and Route A were developed to comply with this provision.

Both the RPA Preferred Route and Route A satisfy the State routing criteria and are constructible. Applicants identified the RPA Preferred Route as preferred because it impacts fewer homes, makes use of existing linear features, minimizes impacts to agricultural land uses, minimizes impacts to natural resources and trails, and is shorter in length, which reduces costs. The RPA Preferred Route parallels I-94 for the greatest distance. The I-94 right-of-way

is an existing transportation corridor that has already altered and disturbed the natural surroundings for nearly the entire length of I-94 within the RPA Preferred Route. A summary comparison of Applicants' proposed routes is included in Chapter 6 of the Application.

B. Applicants' Current Preferred Route

Q. SINCE FILING THE ROUTE PERMIT APPLICATION, HAVE APPLICANTS CONTINUED TO ANALYZE THE RPA PREFERRED ROUTE AND ALTERNATIVES PROPOSED IN THE ROUTE PERMIT PROCEEDING?

A. Yes. Since submitting the Route Permit Application in October 2009, Applicants have continued to assess route alternatives. Based on this on-going analysis, Applicants recommended that new segments be included in the DEIS process. Applicants have also incorporated new segments in the RPA Preferred Route to develop a Modified Preferred Route. Our detailed analysis of all DEIS alternatives is provided later in my testimony.

Q. WHAT CHANGES WERE MADE TO THE RPA PREFERRED ROUTE TO DEVELOP THE MODIFIED PREFERRED ROUTE?

A. There are two segment alternatives that Applicants incorporated into the RPA Preferred Route to develop the Modified Preferred Route. The first is a 17-mile east/west segment alternative near Barnesville and just north of 150th Street North, traveling from I-94 to 70th Street South (identified in the DEIS as "Alternate Scope Area 1" or "AS-1."). In general, this alternative heads west from I-94 south of the RPA Preferred Route, parallels 140th Avenue South west to U.S. Highway 75 to the river crossing area. This segment is approximately 0.50 miles wide from I-94 west to 70th Street South, and is approximately 1.25 miles wide from 70th Street South to U.S. Highway 75. The purpose of these

route widths is to allow the transmission line to parallel linear features such as a 69 kV transmission line, and various roads and property boundaries or field lines in this area. This will help provide flexibility to determine the best route to a Red River crossing.

Maps showing Applicants' Modified Preferred Route are attached to my testimony as **Schedule 2**.

In addition, Applicants have expanded the area for expansion of the Alexandria Switching Station to the east and south by 4.3 acres. This expansion was included in the Amended Scoping Decision as AS-3.

Q. WHY ARE APPLICANTS RECOMMENDING ALTERNATIVE SEGMENT AS-1?

A. Applicants suggested that AS-1 be included in the DEIS and have incorporated it into the Modified Preferred Route to address North Dakota stakeholder concerns and impacts. (A copy of Applicants' request for an amended Scoping Decision is attached as **Schedule 3**.)

During meetings with county, city, and township officials from the Fargo area in February, May, and June of 2010, officials emphasized that the Fargo area is growing primarily to its south. This southern area is likely to become targeted for development once the United States Army Corps of Engineers ("USACE") flood-control diversion channel project ("Diversion Project") creates a protective barrier to prevent flooding of the Fargo area from the Red River. As a result of the pending Diversion Project, local government officials urged Applicants to consider routing the transmission line so that it crosses the Red River south of the original Preferred Route crossing at Clay County Highway 8,

and to co-locate transmission lines with the Diversion Project as much as possible.

At present, the Locally Preferred Plan ("LPP") for the Diversion Project is a 36-mile-long North Diversion channel that would start four miles south of the confluence of the Red and Wild Rice Rivers, head in a westerly and northerly direction around Fargo, and re-enter the Red River north of the confluence of the Red and Sheyenne Rivers. The overall right-of-way width would be approximately 2,400 feet, and the channel would have a depth of 29 feet. Total estimated cost for this project is $1.27 billion.

Q. HOW DO THE IMPACTS OF SEGMENT AS-1 COMPARE TO THE RPA PREFERRED ROUTE?

A. Segment AS-1 provides for a more southern Red River crossing location that is more compatible with the Diversion Project. AS-1 is a direct east-west segment to this location. Segment AS-1 would also impact a personal use airport, the Lesmeister Airstrip in Alliance Township, Clay County, between County Road 2 and County Road 4.

Q. HOW WOULD AS-1 IMPACT THE LESMEISTER AIRSTRIP?

A. The Lesmeister Airstrip includes two runways; a north/south paved runway and a grass northwest/southeast runway. AS-1 would impact the north/south runway because it would cross the southern edge of the runway. Applicants do not believe AS-1 would impact use of the grass runway.

Q. WHY NOT?

A. The Lesmeister Airstrip is a personal use airport under federal and Minnesota regulations. Because it is considered a "personal use" airport, Federal Aviation

Administration obstruction standards do not govern the use of the airstrip, and Minnesota Rules do not impose a specific clearance zone for personal use airports. Rather, a personal-use airport must 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.

To assess the potential impacts to the two runways, Applicants analyzed the requirements that would be imposed if the airstrip were a private airport, a category above and more restrictive than personal use. Private airports must maintain specific clearances set by the FAA. They are:

> The minimum obstruction clearance requires that no structure, tree, or mobile object that creates a hazard, other than those necessary and incidental to airport operation, may penetrate the imaginary airspace surfaces described in items A and B:
>
> A. Primary surface: an imaginary surface longitudinally centered on a runway and at the same elevation as the elevation of the nearest point on the runway centerline, extending to the ends of each runway. At airports where the longest runway is 2,000 feet or longer, the width of the primary surface is 200 feet. At airports where the longest runway is less than 2,000 feet, the width of the primary surface is 120 feet.
>
> B. Approach surface: an imaginary surface longitudinally centered on the extended centerline at each end of a runway. The inner edge of the approach surface is at the same width and elevation as, and coincides with, the end of the primary surface. At airports where the longest runway is 2,000 feet or longer, the approach surface inclines upward and outward at a slope of 20:1 for a

> horizontal distance of 5,000 feet, expanding uniformly to a width of 1,200 feet. At airports where the longest runway is less than 2,000 feet, the approach surface inclines upward and outward at a slope of 15:1 for a horizontal distance of 3,000 feet, expanding uniformly to a width of 1,020 feet.

Minn. R. 8800.1900.

These clearances are often referred to as "cones," which impose certain height restrictions on structures at various distances from the landing location. Applicants applied these more restrictive private airport clearances to the grass strip and determined that the clearances would be maintained if the transmission line were constructed on AS-1. Therefore, the grass airstrip would not be affected. A diagram showing how the clearance cones might apply if the airstrip were a private airport is attached as **Schedule 4**.

Q. HOW DO APPLICANTS PROPOSE TO ADDRESS THE IMPACTS ON THE NORTH/SOUTH RUNWAY?

A. The owners of the airstrip, Dean and Jacqui Lesmeister, provided written comments and spoke during the DEIS public meetings regarding their concerns. Applicants have further examined the issue and identified a new Option 13 that would be an alternate along AS-1 and would proceed to the south to go around the Lesmeister Airstrip. Option 13 is depicted on **Schedule 4**. Applicants propose that Option 13 would be appropriate for further consideration and evaluation. If AS-1 is selected, Applicants will also work with the Lesmeisters to determine whether the airport can be reoriented or relocated. Applicants have identified the landowners along and within Option 13 and will be providing written notice of this proposal to them.

Q. WHY ARE APPLICANTS EXPANDING THE AREA FOR THE ALEXANDRIA SWITCHING STATION?

A. Based on preliminary designs, it is anticipated the station will be expanded to provide adequate space for the new equipment related to the 345 kV transmission line connection. This Alexandria Switching Station Area Expansion was included in the Amended Scoping Decision, and carried forward as "AS-3" in the DEIS.

Q. WHAT ROUTE WIDTH IS PROPOSED FOR THE MODIFIED PREFERRED ROUTE AND ROUTE A?

A. Applicants generally propose a route width of at least 1,000 feet in width for the majority of the length of the routes. A route width of up to 1,000 feet and where necessary up to 1.25 miles is authorized under the Power Plant Siting Act, and is appropriate given the circumstances of this Project and to allow coordination with landowners and state and federal agencies to develop a final alignment and design.

In some areas, shown on **Schedule 2**, a route width wider than 1,000 feet is requested to accommodate site specific concerns. In those locations where the routes parallel a roadway, a large portion of the 1,000-foot route width is occupied by the road right-of-way, particularly within the control of access fence lines of I-94 along the Modified Preferred Route. The I-94 corridor is approximately 300 feet wide, which effectively reduces the usable amount of route width on either side of the road in which facilities could be placed. Locations where sections of Route A and the RPA Preferred Route exceed 1,000 feet in width are included in Figure 2-4 of the Application. These same areas are included in the Modified Preferred Route.

There are also areas where site-specific considerations warrant a reduced route width of no less than 400 feet. Route narrowing is appropriate where lands are held in fee by the United States Fish and Wildlife Service and an overhead transmission line would not be a permitted use.

IV. APPLICANTS' ANALYSIS OF OTHER PROPOSED ROUTES AND OPTIONS

Q. HAVE APPLICANTS REVIEWED ALL OF THE ROUTE ALTERNATIVES AND OPTIONS CONTAINED IN THE DEIS?

A. Yes. Applicants have reviewed the nine route alternatives (RPA Preferred Route and Routes A through H), 13 route Options (including 2a and 2b), and five Amended Scoping Areas in the DEIS, including those recommended by the ATF, the Applicants and other stakeholders. The RPA Preferred Route and Route A traverse the length of the project from Fargo to St. Cloud. Options 1, 2a, 2b, and 3, as well as AS-1 and AS-2, lie within the Fargo to Alexandria section of the Route. As discussed above, AS-3 represents the expansion of the Alexandria Switching Station. Options 4, 5, 6, and 7 lie within the Alexandria to Sauk Centre section of the RPA Preferred Route. Nine route alternatives, five route options, and two amended scoping areas lie between Sauk Centre and St. Cloud. Each of these various route alternatives, Options, and Amended Scoping Areas is set forth in DEIS Figures 1-1 through 1-15.

As part of our analysis, Applicants established a common starting point just east of Sauk Center and a Quarry Substation ending point for the route alternatives to facilitate comparisons. These starting and ending points are shown on **Schedule 2D**. Because the DEIS may have been working from

different starting points for its route comparisons, Applicants' route segments and comparisons may differ somewhat from the data set forth in the DEIS.

Q. WHAT IS THE RESULT OF APPLICANTS' ANALYSIS OF THE PORTION OF THE PROJECT BETWEEN FARGO AND ALEXANDRIA?

A. The Modified Preferred Route impacts fewer homes within 500 feet of the anticipated alignment, parallels I-94 for the greatest distance, and better utilizes existing rights-of-way as compared to Route A. In addition, modifying the RPA Preferred Route to include AS-1 provides for a Red River crossing that may be co-located with the Diversion Project, with otherwise comparable impacts between the options except with regard to the Lesmeister Airstrip.

Applicants further determined that none of the additional route Options would be clearly superior to the Modified Preferred Route for the reasons set forth below:

Option	Location	Comment
1.	3 miles southwest of Ashby	Longer route option affecting more wooded acreage.
2a, 2b.	5 and 8.5 miles west of Evansville	Longer route options with Waterfowl Production Areas on both sides of the interstate.
3.	3 miles west of Alexandria	Longer route option that passes through archaeological sites.
AS-2	Just east of the Alternate Red River Crossing	Would connect the Preferred Route to the Alternate Red River Crossing, but longer connector and unnecessary if AS-1 is adopted.

Q. WHAT IS THE RESULT OF APPLICANTS' ANALYSIS OF THE PORTION OF THE PROJECT BETWEEN ALEXANDRIA AND SAUK CENTRE?

A. The Modified Preferred Route makes better use of existing rights-of-way and minimizes impacts to agricultural land uses and natural resources. Applicants further determined that none of the route options would be clearly superior to the Modified Preferred Route, for the reasons set forth below:

Option	Location	Comment
4.	2 miles northeast of Forada	Crosses a PWI lake that cannot be spanned due to its size.
5.	Just south of West Union	Provides no reduction in potential for impacts but does require an additional angle structure.
6.	2 miles west of Sauk Centre	Only provides for transition between the RPA Preferred Route and Route A.
7.	5 miles west of Sauk Centre	Alignment option that is already within Route A.

Q. WHAT ARE THE RESULTS OF APPLICANTS' ANALYSIS OF THE ALTERNATIVES AND OPTIONS IN THE SAUK CENTRE TO ST. CLOUD SECTION OF THE PROJECT AREA?

A. The section of the Project between Sauk Centre and St. Cloud presents the greatest number of route alternatives (9) and Options (7). The Modified Preferred Route; Routes A, B, C, D, E, F, G, and H; Options 8, 9, 10, 11, and 12; as well as AS-4 and AS-5 all lie within the area between Sauk Centre and St. Cloud.

Applicants reviewed the impacts of the various routes set forth above, and do not believe any of the alternatives is clearly a more prudent and reasonable alternative than the Modified Preferred Route. Routes B, D and F in particular potentially impact significantly more residential properties than the Modified Preferred Route. Route D further presents significant engineering constraints and community impacts and, if portions are underground, these segments would be approximately twenty times the cost of an overhead alternative per mile. Route F is the most costly and longest overhead route, and would affect multiple cities and townships.

The Modified Preferred Route, Route C, and Route E minimize residential impacts; the Modified Preferred Route was in fact designed to avoid houses while still significantly following linear features such as roads, transmission line corridors, parcel lines, and the like. Except as described above, all other impacts do not materially differ. Given the length and scope of the Project Area, the variations on the balancing of environmental and human factors are generally small. For example, the Modified Preferred Route would cross Public Water Inventory ("PWI") waterways, but this is true of all routes. In addition, Applicants expect any impacts to be minimized through pole placement and alignments.

Consequently, having examined the potential impacts and costs of each proposed route, none is clearly superior to the Modified Preferred Route.

Q. DESCRIBE HOW ROUTE B INDIVIDUALLY COMPARES TO THE MODIFIED PREFERRED ROUTE.

A. A difference between Route B and the Modified Preferred Route is the potential impacts to residences, with Route B having greater impacts. As

shown in **Schedule 4**, Route B would have a greater impact on residential properties within 150, 300, or 500 feet of the right-of-way centerline compared to the Modified Preferred Route. Route B further crosses a United States Fish and Wildlife Service easement area and a Minnesota Land Trust Conservation Easement. Route B is also expected to be more expensive than the Modified Preferred Route. For these reasons, Applicants do not believe that Route B is superior to the Modified Preferred Route.

Q. HOW DOES ROUTE C COMPARE TO THE MODIFIED PREFERRED ROUTE?

A. Route C carries a different set of trade-offs, in that it is a shorter and potentially less costly route than the Modified Preferred Route. The route follows I-94 from the Quarry substation to just east of Avon, whereas the Modified Preferred Route tracks to the north and east avoiding the cities of St. Joseph and Collegeville. Route C would affect wooded areas in the Avon Hills area, as well as Collegeville and St. Joseph, and requires more angle structures than the Modified Preferred Route, resulting in greater costs per mile.

Q. HOW DOES ROUTE D COMPARE TO THE MODIFIED PREFERRED ROUTE?

A. In my judgment, of all the routes under consideration for the Sauk Center—St. Cloud segment, Route D and Route F would cause the most impacts, regardless of how the line is designed, overhead or underground. A detailed comparison of these impacts can be found in **Schedule 5**.

With regard to Route D, impacts to residential and commercial properties will be greater than the impacts of the Modified Preferred Route, regardless of whether the transmission lines are under or above ground. Applicants note that there are no 345 kV underground facilities in Minnesota. Eleven homes are within 75 feet of the center line of Route D and would have to be

displaced. By contrast, zero homes are within 75 of the right of way centerline of the Modified Preferred Route. Fifty-six acres of residential land use exist within the right-of-way for Route D, compared to 9 acres for the Modified Preferred Route. In addition, more non-residential structures sit within 150 feet of the center line of Route D than in the Modified Preferred Route.

Route D has challenges with homes, cemeteries, lakes, and Mn/DOT rest areas occurring simultaneously on both the north and south sides of the route. While undergrounding is proposed in this area, underground construction requires digging and placement of concrete underground structures through this area. 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 Lake and another Mn/DOT rest area. This congested area presents some of the most difficult and challenging routing on the entire Project.

Q. WHAT PORTION OF ROUTE D IS PROPOSED TO BE CONSTRUCTED UNDERGROUND?

A. The DEIS currently suggests that 13 to 14 miles of Route D would be constructed underground. *See* DEIS, pages 1-17, 1-40, 7-1.

Q. WHAT IS THE TYPICAL COST OF PLACING A HIGH-VOLTAGE TRANSMISSION LINE UNDERGROUND VERSUS CONSTRUCTING AN OVERHEAD LINE?

A. Undergrounding for Route D would increase the costs of Route D as compared to the Modified Preferred Route. As noted in Mr. Chezik's testimony, overhead construction is estimated at $1.7 per mile. For

underground construction, the report produced by Power Engineers estimates the cost would be approximately $20 million per mile for single circuit and approximately $40 million per mile for double circuit.

Q. HOW DO THE IMPACTS OF UNDERGROUND CONSTRUCTION COMPARE TO THE IMPACTS OF CONSTRUCTING AN OVERHEAD LINE?

A. If portions of the line were constructed underground, aesthetic impacts would be reduced, but there would be other impacts unique to underground construction. Placing a transmission line underground requires considerable excavation and clearing of the right-of-way. The excavation generally occurs along the entire route alignment, which would affect trees and vegetation as well as other area features. Depending on the location, this disruption could involve reconstruction of roads, water systems, sewer systems, electric and gas infrastructure, etc. Generally overhead construction allows these features to exist and not be disrupted between poles.

Q. HOW WOULD PLACING THE LINE UNDERGROUND BEAR ON SYSTEM RELIABILITY?

A. Placing a transmission line underground creates additional issues for electrical system reliability. Outage incidents tend to be less frequent for underground rather than overhead lines, but the duration of the outages are substantially longer. The average outage duration for an overhead line is 24 hours whereas an underground line can take several weeks to repair. Because this Project will serve as a vital tie to North Dakota, an outage on the line could potentially have regional, not just local, impacts.

Q. HOW DOES ROUTE F COMPARE TO THE MODIFIED PREFERRED ROUTE?

A. Route F is the most costly overhead route (at $74.2 million compared to $63.8 million for the comparable portion of the Modified Preferred Route), and is the longest route at 49 miles. Route F would have greater impacts on residences than the Modified Preferred Route, as it would proceed directly through the towns of Richmond, Cold Spring, and Rockville. Ninety-four residences would be within 150 to 300 feet of the Route F alignment, compared to 46 for the Modified Preferred Route. One hundred and five homes would be within 300-500 feet of the Route F right-of-way compared to 29 for the Modified Preferred Route. Route F also impacts greater residential, commercial, special protection agriculture, and recreational/open space/park acreage.

Q. HOW DO ROUTES E, G, AND H COMPARE TO THE MODIFIED PREFERRED ROUTE?

A. The impacts of Routes E, G, and H are similar, as they share a common portion west of St. Cloud and leading to the Quarry Substation. These routes present challenges along waterways, including public waters inventory ("PWI") streams and waterway crossings. None of these routes are clearly superior to the Modified Preferred Route.

Q. HAVE APPLICANTS EVALUATED THE ADDITIONAL ROUTE OPTIONS BETWEEN SAUK CENTRE AND ST. CLOUD?

A. Yes. Applicants have not found any of the proposed route options to be clearly superior to the comparable segment in the Modified Preferred Route. Specific comparative information is set forth in **Schedule 5**. Additional commentary is as follows:

Option	Location	Comment
8.	Just southwest of Melrose	An acceptable route option that requires further investigation in conjunction with party proposing option and adjacent landowner.
9.	Southeast of Melrose	Option near additional residences and would require additional corner structures.
10.	0.5 miles north of Saint Rosa	Bisects parcels rather than following parcel lines.

Q. WHAT ROUTE OPTIONS OR AMENDED SCOPING AREAS WOULD APPLICANTS PROPOSE WARRANT FURTHER CONSIDERATION AS PART OF OTHER ROUTES?

A. While Applicants have not found any route to be clearly superior to the Modified Preferred Route, Applicants support the following modifications to other routes if those routes were recommended. With respect to Route E, Applicants support Alternative Scoping Area 4 ("AS-4"), which would widen the route by approximately 3,000 feet south of Albany. This alternative would give Applicants flexibility to work with the owners of Wells Concrete to accommodate future expansion of its new concrete plant.

Applicants further propose that Option 11, as well as Segment E-5 of Option 12, appear to be superior route segments for Route E. Option 11 follows existing roads and appears to reduce residential impact. Option 12 is a direct comparison of two potential routes to reach the Quarry Substation; of those two alternatives, the Applicants believe that Segment E-5 is superior because it is a more direct route and follows an existing railroad corridor. Finally,

Applicants propose modifying the last portions of Routes B, C, and D to include AS-5, which facilitates entering the Quarry Substation from the west rather than the south. This alternative would avoid conflicts with the proposed Monticello - St. Cloud 345 kV transmission line connection.

V. OTHER AGENCY PARTICIPATION

A. Generally

Q. WILL THE PROJECT REQUIRE OTHER PERMITS PRIOR TO CONSTRUCTION?

A. Yes. Figure 9-1 of the Route Permit Application lists the agencies and types of approvals that will be required. The Applicants have been meeting with all of these agencies throughout the routing process to discuss the Project and to receive agency input on routes.

Q. ONCE A ROUTE PERMIT APPLICATION IS FILED, WHAT ROLE DO STATE AGENCIES HAVE IN ROUTING PROCEEDINGS?

A. State agencies authorized to issue permits required for construction of high voltage transmission lines have a statutory obligation to participate in the routing proceedings, including public hearings, and state whether the proposed routes and design under consideration for approval will be in compliance with its standards, rules, or policies. Minn. Stat. § 216E.10, subd. 3(a). The Applicants understand that the purpose of this participation is to enable the Commission to take into account any state agency concern so that a Commission-approved route does not conflict with any other agency's policies.

B. Minnesota Department of Transportation

Q. IF THE COMMISSION APPROVES ANY OF THE ROUTES PRESENTED IN THE DEIS, WILL A UTILITY PERMIT FROM MN/DOT BE REQUIRED BEFORE CONSTRUCTION?

A. Yes. Applicants will need to obtain Utility Permits from Mn/DOT to occupy state highway right-of-way, including interstate roads (also called freeways), for crossings and potentially longitudinal installations. Minn. R. 8810.3300, Subp. 1.

Q. DID APPLICANTS PROVIDE SPECIFIC INFORMATION IN THE ROUTE PERMIT APPLICATION TO ASSESS THE IMPACTS OF DIFFERENT ALIGNMENTS FOR THE RPA PREFERRED ROUTE AND ROUTE A ALONG INTERSTATE HIGHWAYS?

A. Yes. Applicants prepared an analysis for the RPA Preferred Route and Route A, both of which parallel the I-94 right-of-way at least in part. Three alignments were reviewed for the portions of the RPA Preferred Route and Route A portions that parallel the I-94 right-of-way: (i) five feet from the I-94 edge of right-of-way to provide data that maximizes corridor sharing with roadways—the arms and conductors at rest would overhang the road right-of-way; (ii) at least 25 feet from the I-94 edge of right-of-way to provide data that minimizes corridor sharing to "blow out" only, i.e., the occupancy of right-of-way under certain weather conditions that cause the conductors to move; and (iii) at least 75 feet from the I-94 edge of right-of-way that would avoid corridor sharing entirely. Each of these alignments creates a different set of impacts.

Q. WHAT ALIGNMENTS ARE APPLICANTS PROPOSING?

A. Applicants propose an alignment with no overhang on the road right-of-way, consistent with number (ii) above. While the DEIS refers to an average 25-foot distance from the Mn/DOT right-of-way, it is expected that the alignment would be at least 25 feet from the I-94 right-of-way from the road right-of-way.

C. Minnesota Department of Agriculture

Q. DESCRIBE APPLICANTS' AGRICULTURAL IMPACT MITIGATION PLAN ("AIMP") FOR THIS PROJECT.

A. In collaboration with the Minnesota Department of Agriculture, Applicants developed an AIMP that identifies the measures Applicants will take to avoid or mitigate any negative agricultural impacts to farmland that may result from transmission line construction. The AIMP addresses mitigation actions, where possible, restoration of damaged tiles, removal of construction debris, and restoration of soil to existing pre-construction conditions. A copy of the AIMP for this Project, which the Department of Agriculture approved, is included in Appendix I to the Application.

Q. DOES THE AIMP DISCUSS IRRIGATION SYSTEMS?

A. Yes. If transmission line and/or temporary work areas interest an operational (or soon-to-be operational) spray irrigation system, Applicants will establish with the landowner or tenant an acceptable amount of time the irrigation system may be out of service.

If, as a result of the transmission line construction activities, an irrigation system interruption results in crop damages, either on the right-of-way or off

the right-of-way, the AIMP provides a method for determining compensation. *See* AIMP, Section 12.

If feasible and mutually acceptable to the Applicants and the landowner or tenant, temporary measures will be implemented to allow an irrigation system to continue to operate across land on which the transmission line is also being constructed. AIMP at p. 5.

D. United States Army Corps of Engineers

Q. YOU INDICATED THAT APPLICANTS MET WITH THE UNITED STATES ARMY CORPS OF ENGINEERS REGARDING THE PROJECT. WHAT ISSUES WERE RAISED IN THOSE MEETINGS?

A. The Fargo Diversion Project was one topic, and is discussed earlier in this testimony. In addition, USACE asked that any route avoid or minimize wetland impacts where possible.

E. United States Fish and Wildlife Service

Q. Have the Applicants also consulted with the USFWS?

A. Yes. Applicants have consulted with the USFWS to review information regarding the location of USFWS lands or easements and potential impacts on these areas.

Q. Has the USFWS raised any concerns regarding permitting?

A. Yes. USFWS has raised concerns regarding bird impacts in wetland areas. USFWS also mentioned potential concerns with regard to migration of birds in two particular areas.

The DEIS notes that the first area of concern is between Pomme de Terre Lake, Pelican Lake, and Lake Christina about 25 miles northwest of Alexandria on either side of I-94. USFWS has indicated that 20 percent of the canvasback ducks that migrate across the United States congregate in this area.

USFWS's second area of concern is approximately 36 miles north of Alexandria along I-94 between North Ten Mile Lake, Mineral Lake, and Swan Lake. USFWS and the Minnesota Department of Natural Resources ("MnDNR") expressed concern about avian collision in these areas, which would be at greatest risk during inclement weather and low flight over I-94 between the lakes.

USFWS further expressed concern with an area along Route A, where it crosses Mustinka River in Elbow Lake Township.

As the DEIS notes, wildlife communities and habitats occur throughout the western portion of Minnesota. Applicants commit to continuing to work with the USFWS and MnDNR to identify areas of concern and potential mitigation measures, including locating the route along existing rights-of-way rather than wetland areas were possible, avoiding known species locations and habitats, and marking transmission line shield wires to reduce impacts.

F. Minnesota Department of Natural Resources

Q. HAVE THE APPLICANTS ALSO CONSULTED WITH THE MNDNR?

A. Yes. Applicants have consulted with the MnDNR to review permitting requirements for the Project. Along all of the routes there are certain public waters that require a MnDNR permit to cross.

MnDNR likewise stated concern regarding bird impacts, particularly with regard to swans. MnDNR advocated for the use of bird diverters to mitigate impact. Applicants will work with MnDNR to identify appropriate locations for diverters.

VI. ELECTROMAGNETIC FIELDS

Q. DURING PUBLIC HEARINGS, THERE WERE QUESTIONS RAISED ABOUT FUTURE LOADING ON THE TRANSMISSION LINES AND POTENTIAL IMPACTS ON MAGNETIC FIELDS ("MF"). WHAT IS APPLICANTS' UNDERSTANDING OF THESE CONCERNS?

A. Applicants have provided information about calculated electric field and magnetic fields for the Project based on loadings when the line is initially placed in service (2015) consistent with prior proceedings. This information is partially set forth in the DEIS at pages 5-22 and 5-24 (Tables 5.2-5 and 5.2-6, respectively). However, the tables in the DEIS did not print in their entirety, so I have attached them to this testimony as **Schedule 6.**

As part of the Certificate of Need docket, Applicants have provided information about potential future loading on the line and one of the intervenors requested information on these potential future loading levels.

Q. HAVE APPLICANTS PREPARED ADDITIONAL CALCULATIONS RELATING TO ELECTRIC FIELDS AND MAGNETIC FIELDS?

A. Yes. Attached to my testimony are calculations assuming loading at 600 MVA and 1000 MVA on every segment of the line. These calculations were prepared by engineers at Xcel Energy and are attached as **Schedule 7**. I caution that there are many unknowns about the design of the transmission system in the

future, and assumptions about additional lines, generating stations, outages, etc. all will impact any estimate on a future scenario. With that in mind, the engineers estimate that these levels would not be achieved, if at all, until 2020 or later.

VII. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes.

Darrin Lahr

414 Nicollet Mall, MP-8A, Minneapolis, Minnesota 55401; 866-876-2869

PROFFESSIONAL EXPERIENCE

Supervisor, Siting and Permitting 2007 – Present
Xcel Energy Services Inc., Minneapolis MN

- Manage the development of state and federal permit applications to construct major Xcel Energy facilities in a multi state area, to acquire land, easements and permits to allow construction.
- Support preparation of need applications to regulatory commissions.
- Manage oversight of Federal and State site permit conditions and establish project files, records and reports.
- Supervise Permitting Analysts and contract employees to ensure quality permit applications and compliance with company standards and procedures.
- Provide instruction and technical guidance to Siting and Land Rights employees in their day-to-day activities regarding permitting and siting work.
- Develop, implement and maintain policies and procedures for all activities associated with siting of major projects.

Community and Local Government Relations Manager 1995 – 2007
Northern States Power Company, Minneapolis MN

- Successfully led a team to implement and standardize the City Requested Facilities Surcharge process allowing the collection of forced undergrounding costs.
- Assisted in franchise process improvements and the creation of a franchise communication leave-behind.
- Developed franchise fee calculation tool for determining appropriate franchise fee amounts.
- Negotiated service territory sales and documented transactions for future process development.
- Secured formal support from state and local stakeholders for spent fuel storage and relicensure at the Monticello Nuclear plant while simultaneously working to reduce property taxes.
- Collaborated on a communications plan to manage local reaction to Toxics Release Inventory with the Sherburne County Generating Plant.
- Delivered presentations on business concerns such as company status, reliability, resource plan, and property tax relief.
- Partnered to negotiate revenue stabilization agreements assisting in the reduction of property taxes.
- Secured competitive gas franchise in an existing single-supplier community.
- Finalized Delano Gas franchise aiding in the completion of the Western Gas acquisition.
- Effectively managed positive relationships with 40 communities representing over 300,000 in population.
- Collaboratively worked with communities to avoid unreasonable electric and gas facility relocation costs.
- Managed communication with seven cities during the four-day September 2005 outage effecting over 85,000 customers and received a city council resolution of thanks for my efforts.
- Appointed commissioner on two Monticello economic development boards, served ten years on the Wright County Economic Development Partnership board, and two years on the Sherburne County Economic Development Alliance.

Senior Sales Representative 1988 - 1994
Northern States Power Company, Minneapolis MN

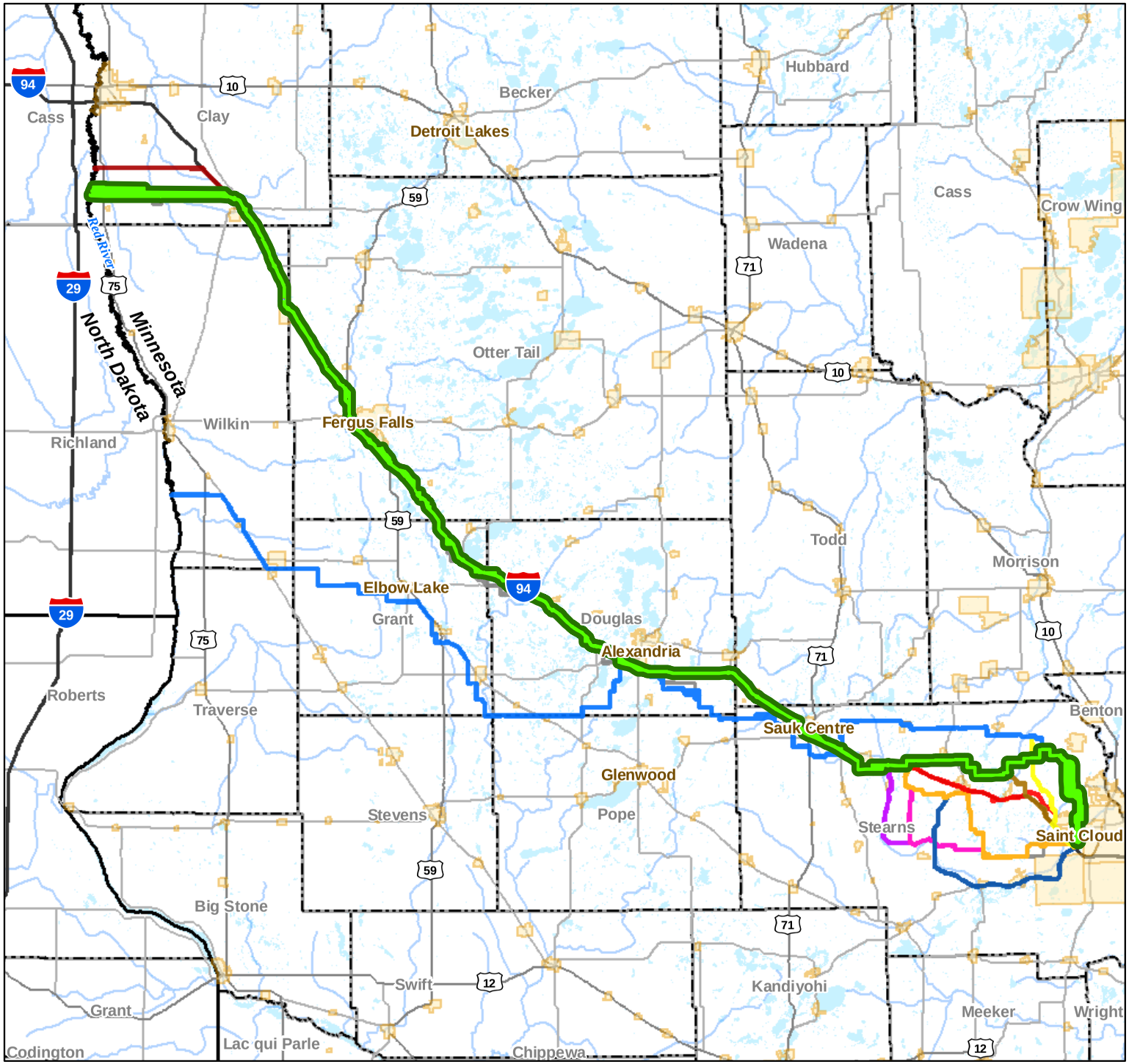
- Consistently surpassed all sales goals.
- Awarded C&I salesperson of the year. 1994.
- Achieved over 10 megawatts of system load reduction through interruptible rate programs.
- Consistently received excellent survey results from annual customer surveys.

Schedule 1

EDUCATION

St. Cloud State University, St. Cloud, Minnesota
Bachelor of Science, Industrial Studies, emphasis Energy and Transportation, 1988

University of Minnesota, Carlson School of Management, Minneapolis, Minnesota
Minnesota Management Institute, 2000



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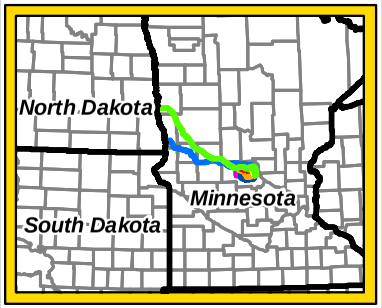


Legend

- Modified Preferred Route
- RPA Preferred Route
- Route A
- Route B
- Route C
- Route D
- Route E
- Route F
- Route G
- Route H
- Option Segments
- Municipal Boundary
- River
- Lake

N W E S

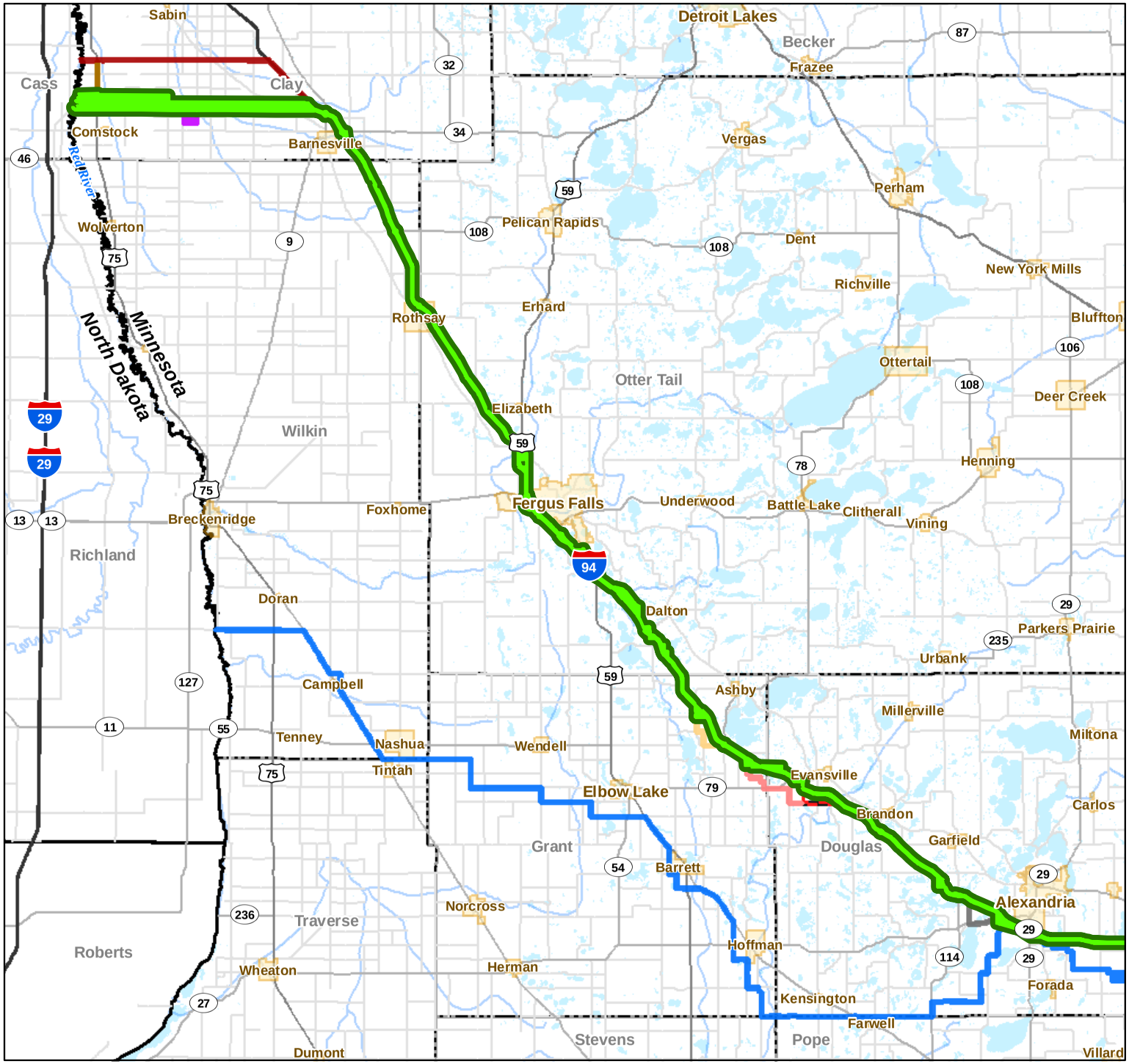
1:1,100,000

0 5 10 20 Miles

Project Overview
Fargo to St. Cloud
345 kV Transmission Line Project

Date: 10/09/2010	Revisied: 10/09/2010
Xcel\0122295 CapX Monticello to Fargo GIS\Fargo\MXD\2010\10\Lisa_Maps\CapxF_MPR_OV.mxd	Drawn By: MTeichert

Lahr Direct Testimony Schedule 2A
MPUC Docket No. E-002,ET-2/TL-09-1056
OAH Docket No. 15-2500-20995-2



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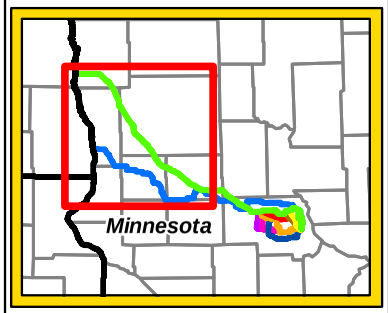


Legend

- Modified Preferred Route
- RPA Preferred Route
- Route A
- Option 1
- Option 2a
- Option 2b
- Option 3
- AS - 1
- AS - 2
- Option 13
- Municipal Boundary
- River
- Lake

N W E S

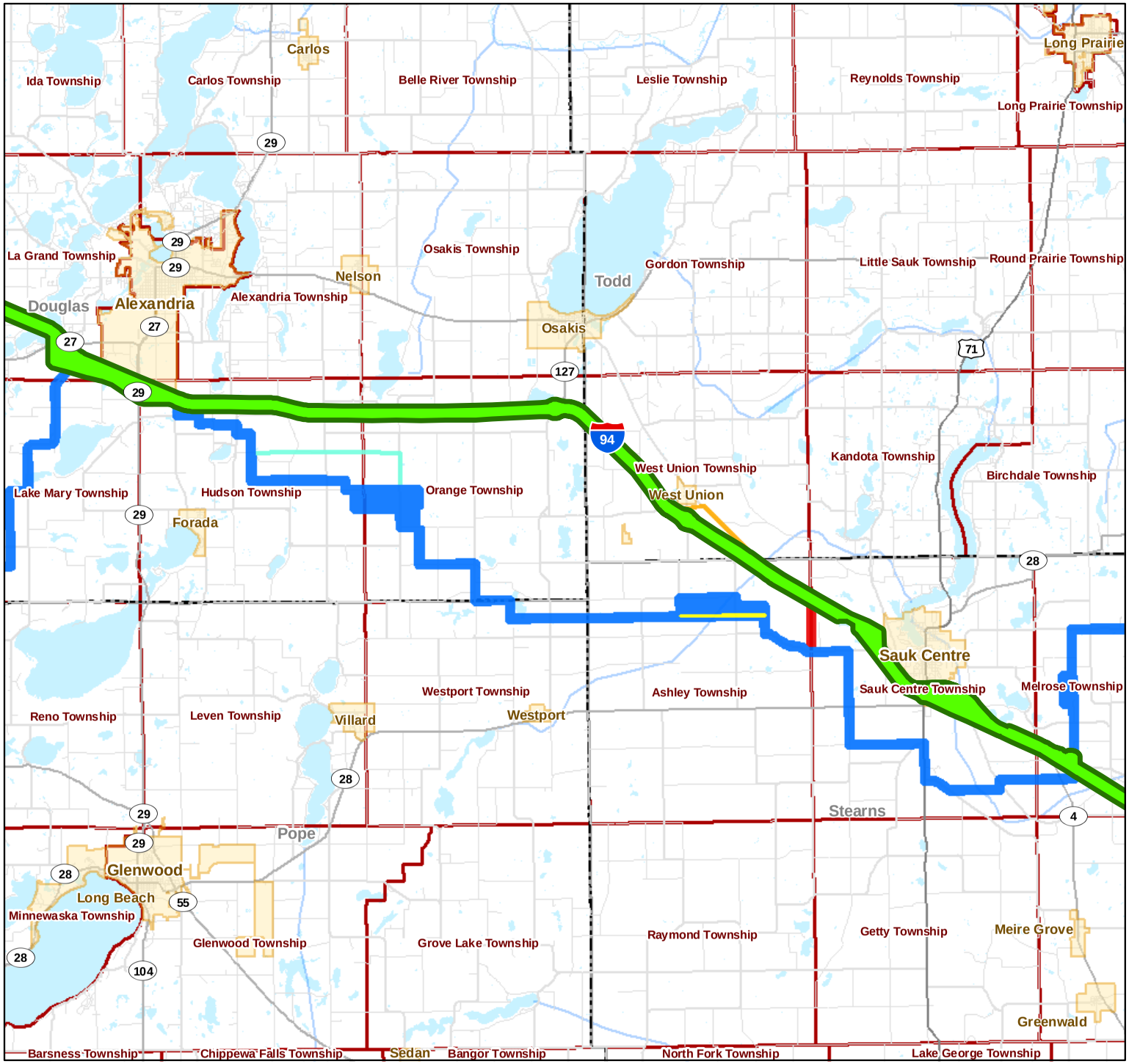
1:630,000

0 2.5 5 10 15 Miles

North Dakota to Alexandria Fargo to St. Cloud 345 kV Transmission Line Project

Date: 10/09/2010	Revisied: 10/09/2010
Xcel\0122295 CapX Monticello to Fargo\GIS\Fargo\MXD\2010\10\Lisa_Maps\CapxF_MPR_ND_Alex.mxd	Drawn By: MTeichert

Lahr Direct Testimony Schedule 2B
MPUC Docket No. E-002,ET-2/TL-09-1056
OAH Docket No. 15-2500-20995-2



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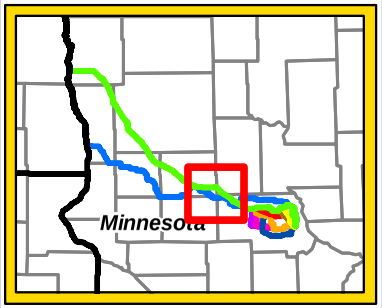

Legend

- Modified Preferred Route
- RPA Preferred Route
- Route A
- Option 4
- Option 5
- Option 6
- Option 7
- Municipal Boundary
- Township Boundary
- River
- Lake

N W E S

1:240,000

0 1 2 4 6 Miles

Alexandria to Sauk Centre
Fargo to St. Cloud
345 kV Transmission Line Project

Date: 10/09/2010	Revisied: 10/09/2010
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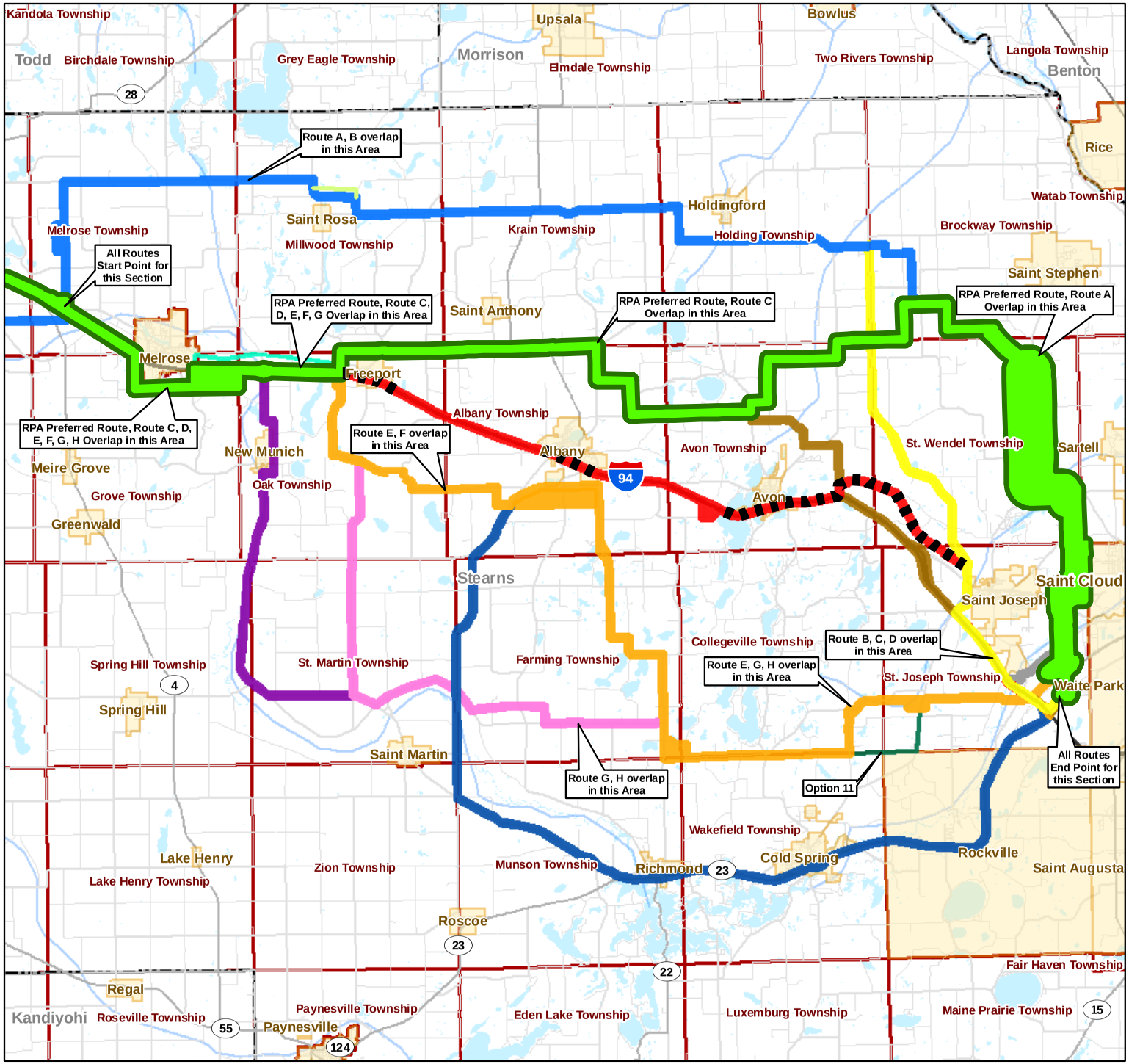
Lahr Direct Testimony Schedule 2C
MPUC Docket No. E-002,ET-2/TL-09-1056
OAH Docket No. 15-2500-20995-2



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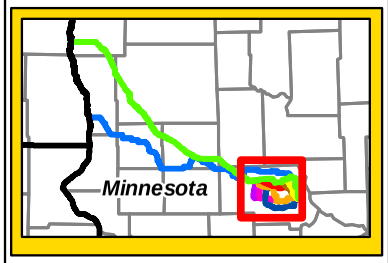

Legend

- Modified Preferred Route
- RPA Preferred Route
- Route A
- Route B
- Route C
- Route D
- Route D Underground
- Route E
- Route F
- Route G
- Route H
- Option 8
- Option 9
- Option 10
- Option 11
- Option 12
- AS - 5
- Municipal Boundary
- Township Boundary
- River
- Lake

1:260,000

0 1 2 4 6 Miles

Sauk Centre to St. Cloud
Fargo to St. Cloud
345 kV Transmission Line Project

Date: 10/09/2010	Revisied: 10/09/2010
Xcel\0122295 CapX Monticello to Fargo GIS\Fargo\MXD\2010\10\Lisa_Maps\CapxF_MPR_SC_SC.mxd	Drawn By: MTeichert

Lahr Direct Testimony Schedule 2D
MPUC Docket No. E-002,ET-2/TL-09-1056
OAH Docket No. 15-2500-20995-2

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June 28, 2010

Dave Birkholz
Project Manager
Minnesota Office of Energy Security
85 7th Place East, Suite 500
St. Paul, MN 55101-2198

Re: ***In the Matter of the Route Permit Application for a Route Permit for the Fargo to St. Cloud 345 kV Transmission Line Project***
MPUC Docket No. ET-2, E002/TL-09-1056

Dear Mr. Birkholz:

I write on behalf of the Applicants, Northern States Power Company, a Minnesota corporation, and Great River Energy, a Minnesota cooperative corporation, regarding potential additional alternatives for consideration in the Draft Environmental Impact Statement ("DEIS"). Since the filing of the Application, we have identified a new Red River crossing area, three additional route segments, a substation expansion area and a route width adjustment that we believe would be appropriate to include in the environmental review conducted by the Minnesota Department of Commerce Office of Energy Security Staff ("OES").

Applicants request that the DEIS include a review of these additional alternatives as shown on the enclosed maps and described below.

New Segments for Additional Red River Crossing, Maps 1 and 2

In February, May and June of 2010, Applicants met with city, county and township officials from the Fargo area to discuss the Project. These LGUs emphasized that the growth area for Fargo is to the south and that this area is likely to become particularly targeted for development as a result of the anticipated United States Army Corps of Engineers ("USACE") flood-control diversion channel project that would create a "dry side" of the Red River in North Dakota south of Fargo. Local representatives urged Applicants to consider an alternative Red River crossing south of the Preferred Route crossing at Clay County Highway 8 and to co-locate the transmission lines with the diversion project to the extent possible.

Applicants met with USACE on June 8, 2010 to discuss the diversion project and the potential for co-location. USACE advised that the Locally Preferred Plan ("LPP"), which is a North Diversion channel, and the Federally Comparable Plan, which is a Minnesota diversion channel, were the two plans under consideration and that the LPP is the tentatively selected plan. The LPP calls for construction of a 36-mile long diversion channel that would start approximately 4 miles south of the confluence of the Red and Wild Rice rivers, head in a westerly and northerly direction around Fargo, and would re-enter the Red River north of the confluence of the Red and Sheyenne Rivers. The channel bottom width would vary from 100 to 300 feet, the overall right-of-way width required would be approximately 2,400 feet, and the channel would have a maximum depth of 29 feet. The total estimated cost of the LPP is $1.27 billion. The USACE indicated that the final plan would be chosen by the end of the year with design commencing thereafter. Land rights acquisition is expected to start in 2012, with construction completion in 2020, and would be a phased construction effort from north to south.

In response to concerns raised by North Dakota stakeholders, Applicants propose that a new Red River Crossing for the Preferred Route be analyzed in the EIS. This additional crossing area would provide the flexibility to place the line on the south side of the LPP if appropriate. This crossing area is located in between 130th Avenue South and 140th Avenue South where there is an existing 69 kV transmission line and where three additional potential river crossings have been identified. To reach this crossing area, Applicants propose two new segments. The first segment is a north/south connector between the Preferred Route along U.S. Highway 75 in Clay County. The second segment is an east/west segment alternative from Interstate 94 at 140th Avenue South. In general the segment follows 140th Avenue South west to U.S. Highway 75 to the river crossing area. The segment is approximately 0.50-miles wide from I-94 west to 70th Street South and is approximately 1.25-mile wide from 70th Street South to U.S. Highway 75. Applicants request these route widths to allow the optionality of paralleling either the existing 69 kV transmission line, roads, property boundaries, or field lines in this area. This optionality will allow for flexibility in determining the best route to a Red River crossing that will help the address concerns raised by North Dakota local officials..

The Preferred Route in the Application is 169-miles long. If the north/south connector were incorporated into the Preferred Route, the route would be 172-miles long. If the east/west segment were incorporated into the Preferred Route, the route would be 168-miles long.

Applicants believe that inclusion of these alternatives will enable the record to be fully developed on an alternative crossing area that would help address the concerns raised by North Dakota local officials.

Alexandria Switching Station Expansion, Map 3

In our Application, we stated that the Alexandria Switching Station may need to be expanded to accommodate the new equipment required to accommodate the 345 kV transmission line connection. (*See* Application, p. 2-4) Preliminary design work indicates that the switching station will likely need to be expanded to the east to provide adequate space for the new equipment. Applicants request that an L-shaped area to the east and south of the switching station be evaluated in the DEIS as shown on Map 3.

Route E Route Width Expansion, Map 4

Wells Concrete recently completed the construction of a new plant on the S side of Albany. Future expansion plans include expansion to the south and west of an existing 69 kV line that parallels the current southern boundary of Wells Concrete's property. Route E is located along the southern boundary of the Wells Concrete property. To provide flexibility in this area to address development concerns, Applicants propose that the width of Route E be expanded to .7 mile between Sand Lake Road west to Stearns County Highway 10.

Quarry Substation—Route D Connector, Map 5

The current Route D that follows Interstate 94 from the Quarry Substation, Site 4 would require the Fargo—St. Cloud 345 kV transmission line to enter and exit the Quarry Substation from the south generally along Highway 23 to Interstate 94. The Preferred Route, which the Administrative Law Judge recommended for the St. Cloud—Monticello 345 kV transmission line, also heads south along Highway 23 to Interstate 94.

The proposed Quarry Substation—Route D Connector heads west from the substation to Interstate 94. This alternative shortens the length of this segment by approximately 2 miles and keeps the Fargo—St. Cloud and St. Cloud—Monticello 345 kV lines separated, avoiding a potential "in and out" along the same north/south route south of the Quarry Substation.

Conclusion

The proposed route segment alternatives, expansion areas and Red River crossing area address important issues and concerns relating to the Project. Applicants respectfully request that the EIS include an evaluation of these alternatives in the DEIS. Please contact me at (763) 493-1808 or darrin.f.lahr@xcelenergy.com if you have any questions.

Sincerely,

s/Darrin Lahr
Darrin Lahr
Supervisor, Siting and Land Rights
Xcel Energy
Minneapolis, MN 55402

Enclosures: Overview Map
Maps 1-5

cc: Karen Finstad Hammel, MN Office of Attorney General

2574005v1

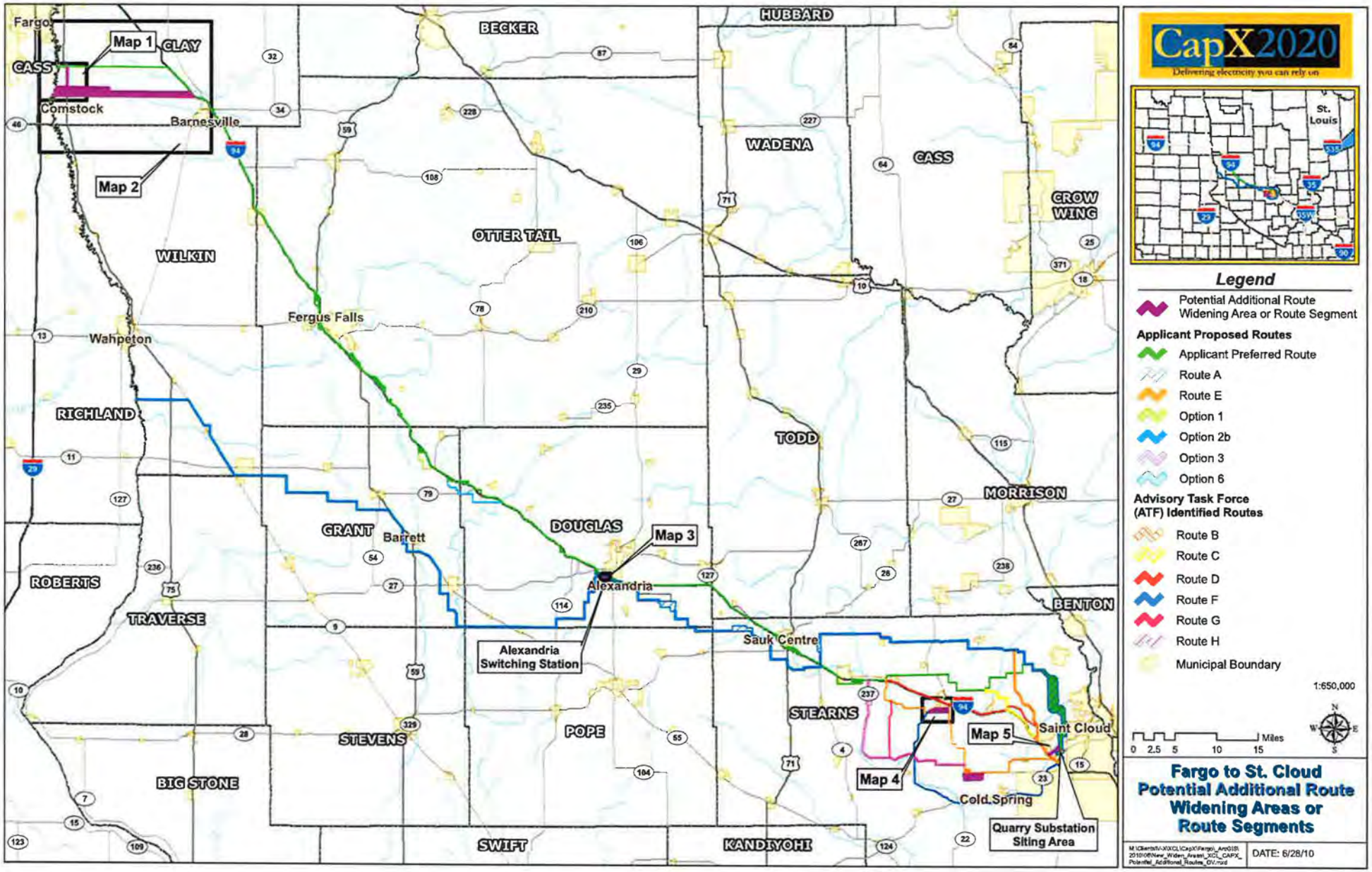
In the Matter of the Application for a Route Permit for Fargo to St. Cloud 345-Kilovolt Transmission Line Project

CERTIFICATE OF SERVICE
PUC Docket No: E-002, ET-2/TL-09-1056
OAH Docket No. _____

Diane Bailey-Andersen certifies that on the 28th day of June 2010, she filed a true and correct copy of a **Letter to Daviod Birkholz with Minnesota Office of Energy Security** by posting it on www.edockets.state.mn.us. Said document(s) were also served via U.S. Mail and e-mail as designated on the Official Service List on file with the Minnesota Public Utilities Commission

/s/ Diane Bailey-Andersen
Diane Bailey-Andersen

Lahr Direct Testimony Schedule 3
MPUC Docket No. E-002, ET-2/TL-09-1056, OAH Docket No. 15-2500-20995-2



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Legend

- Potential Additional Route Widening Area or Route Segment

Applicant Proposed Routes

- Applicant Preferred Route
- Route A
- Route E
- Option 1
- Option 2b
- Option 3
- Option 6

Advisory Task Force (ATF) Identified Routes

- Route B
- Route C
- Route D
- Route F
- Route G
- Route H
- Municipal Boundary

1:650,000

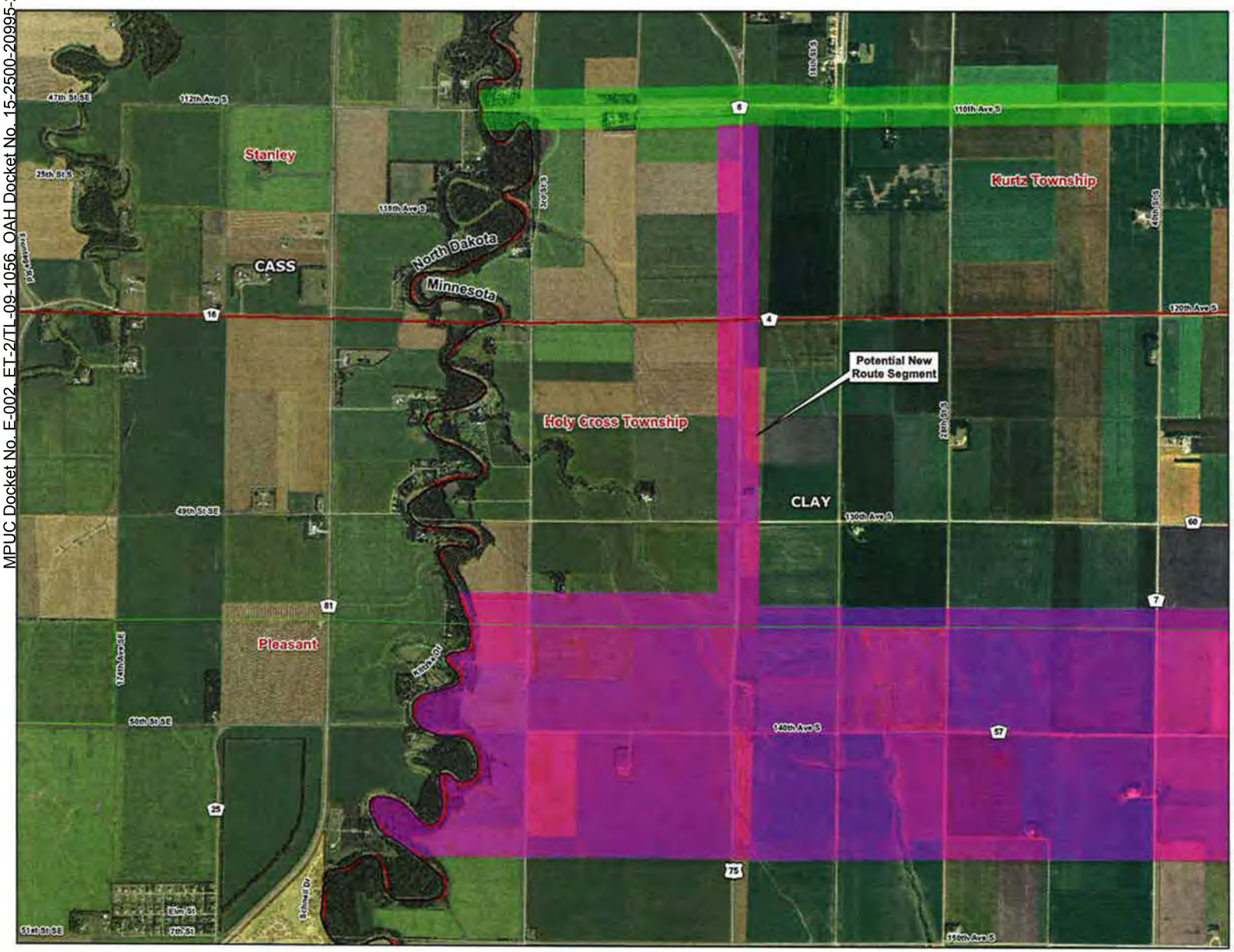
0 2.5 5 10 15 Miles

N W E S

Fargo to St. Cloud Potential Additional Route Widening Areas or Route Segments

M:\Clients\MN\XCEL\CapX\Fargo_ArcGIS\2010\06\New_Widen_Areas_XCEL_CAPX_Potential_Additional_Routes_DV.mxd

DATE: 6/28/10



CapX2020
Delivering electricity you can rely on

Legend

- Potential Additional Route Segment
- Potential Additional Route Widening Area
- Quarry Site 1
- Quarry Site 2
- Quarry Site 4

Applicant Proposed Routes

- Applicant Preferred Route
- Route A
- Route E

Advisory Task Force (ATF) Identified Routes

- Route B
- Route C
- Route D
- Municipal Boundary
- Township Boundary
- Section Line
- Existing Substation

Existing Transmission Line (kV)

- 115
- 69

N W E S

1:28,000

0 1,400 2,800 5,600 Feet

Fargo to St. Cloud
Potential Additional Route Widening Areas or Route Segments

DRAWN BY: MLTEICHERT	DATE: 6/28/10
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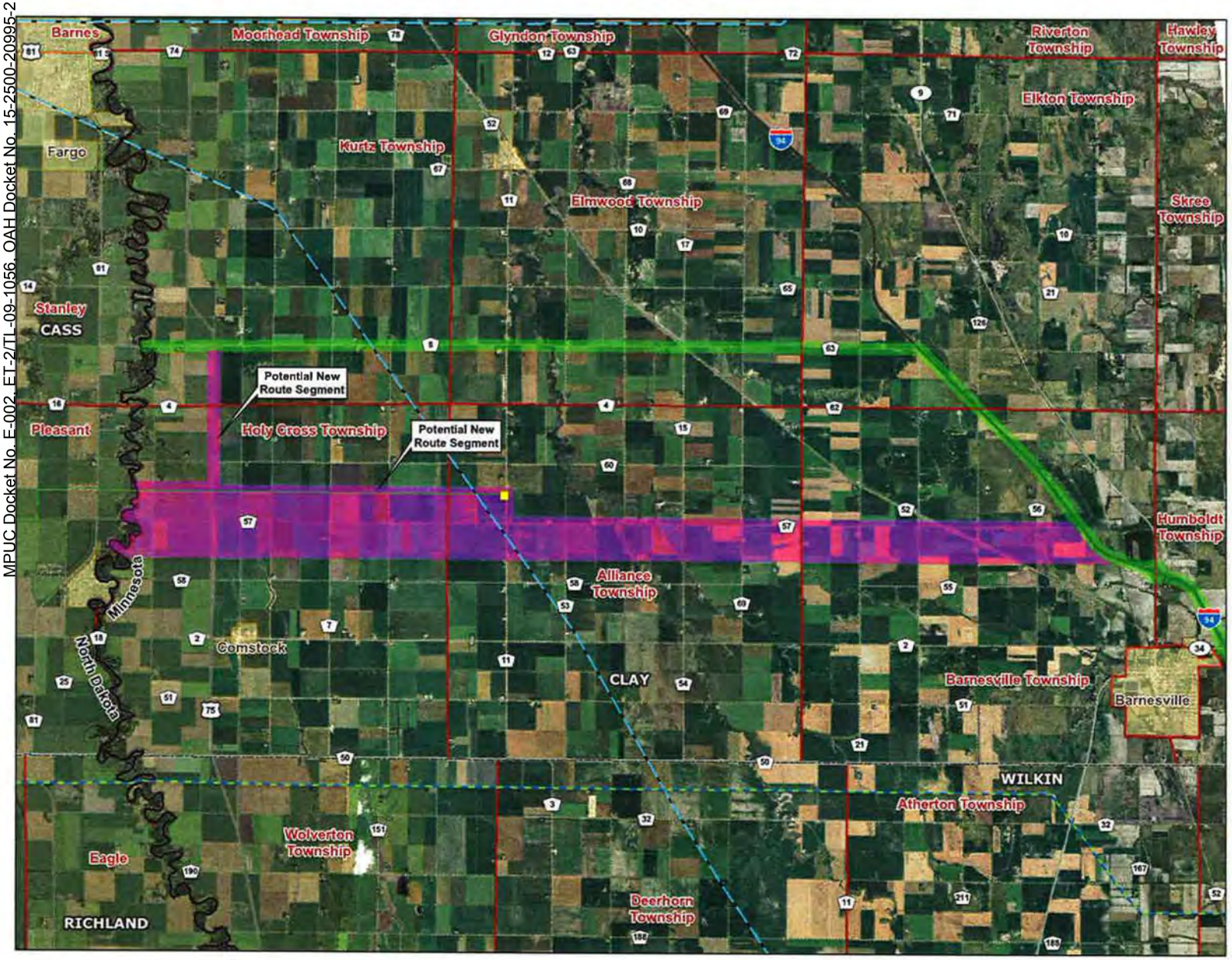

CapX2020
Delivering electricity you can rely on

Legend

- Potential Additional Route Segment
- Potential Additional Route Widening Area
- Quarry Site 1
- Quarry Site 2
- Quarry Site 4

Applicant Proposed Routes

- Applicant Preferred Route
- Route A
- Route E

Advisory Task Force (ATF) Identified Routes

- Route B
- Route C
- Route D
- Municipal Boundary
- Township Boundary
- Section Line
- Existing Substation

Existing Transmission Line (kV)

- 115
- 69

N W E S

1:100,000

0 4,600 9,200 18,400 Feet

Fargo to St. Cloud Potential Additional Route Widening Areas or Route Segments

DRAWN BY: MLTEICHERT	DATE: 6/28/10
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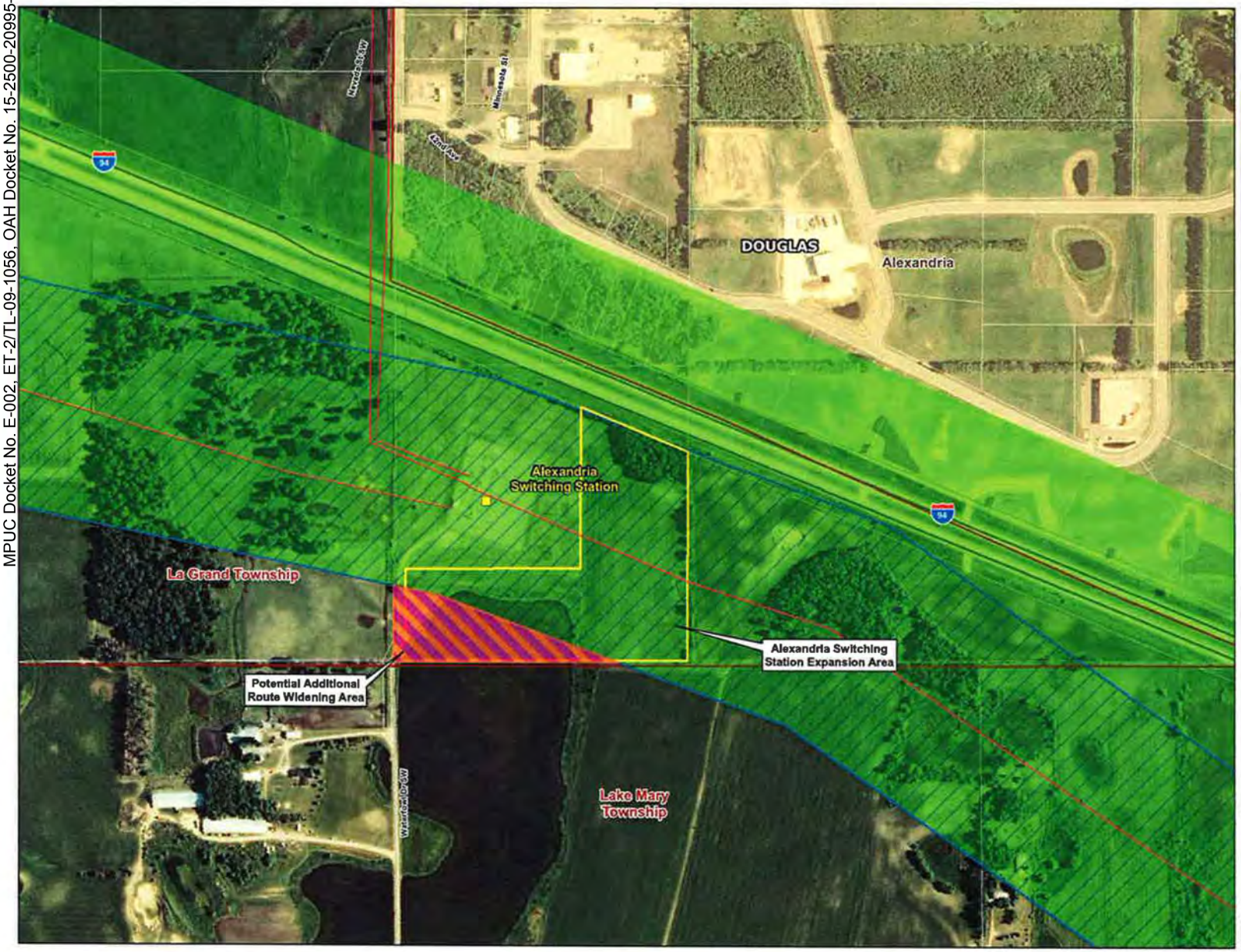
Lahr Direct Testimony Schedule 3
MPUC Docket No. E-002, ET-2/TL-09-1056, OAH Docket No. 15-2500-20995-2



CapX2020
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Legend

- Potential Additional Route Segment
- Potential Additional Route Widening Area
- Alexandria Switching Station Expansion Area
- Quarry Site 1
- Quarry Site 2
- Quarry Site 4

Applicant Proposed Routes

- Applicant Preferred Route
- Route A
- Route E

Advisory Task Force (ATF) Identified Routes

- Route B
- Route C
- Route D
- Municipal Boundary
- Township Boundary
- Section Line
- Existing Substation

Existing Transmission Line (kV)

- 115
- 69

1:5,000

0 220 440 880 Feet

Fargo to St. Cloud Potential Additional Route Widening Areas or Route Segments

DRAWN BY: MLTEICHERT	DATE: 6/28/10
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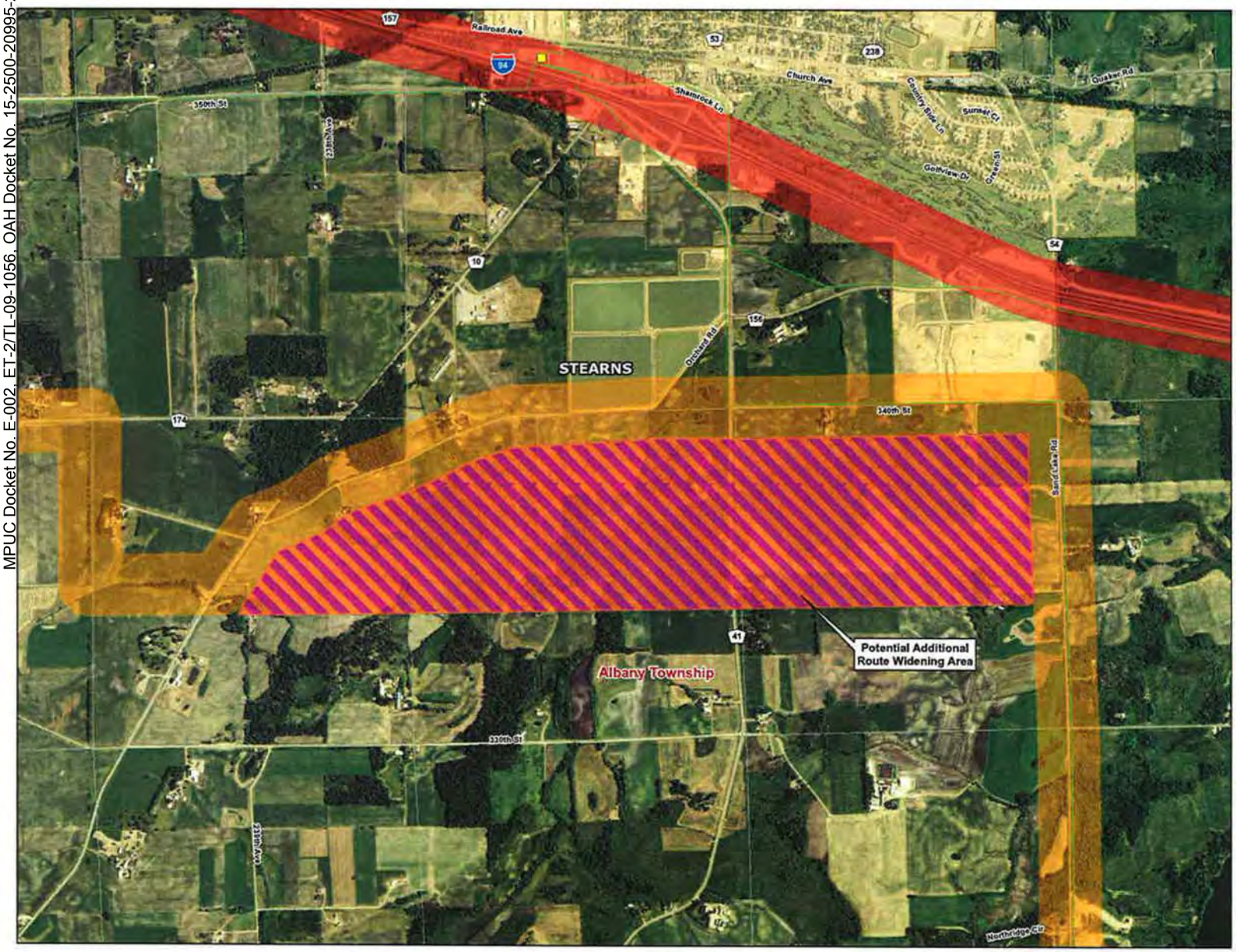

CapX2020
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Legend

- Potential Additional Route Segment
- Potential Additional Route Widening Area
- Quarry Site 1
- Quarry Site 2
- Quarry Site 4

Applicant Proposed Routes

- Applicant Preferred Route
- Route A
- Route E

Advisory Task Force (ATF) Identified Routes

- Route B
- Route C
- Route D
- Municipal Boundary
- Township Boundary
- Section Line
- Existing Substation

Existing Transmission Line (kV)

- 115
- 69

N W E S

1:18,000

0 850 1,700 3,400 Feet

Fargo to St. Cloud Potential Additional Route Widening Areas or Route Segments

DRAWN BY: MLTEICHERT	DATE: 6/28/10
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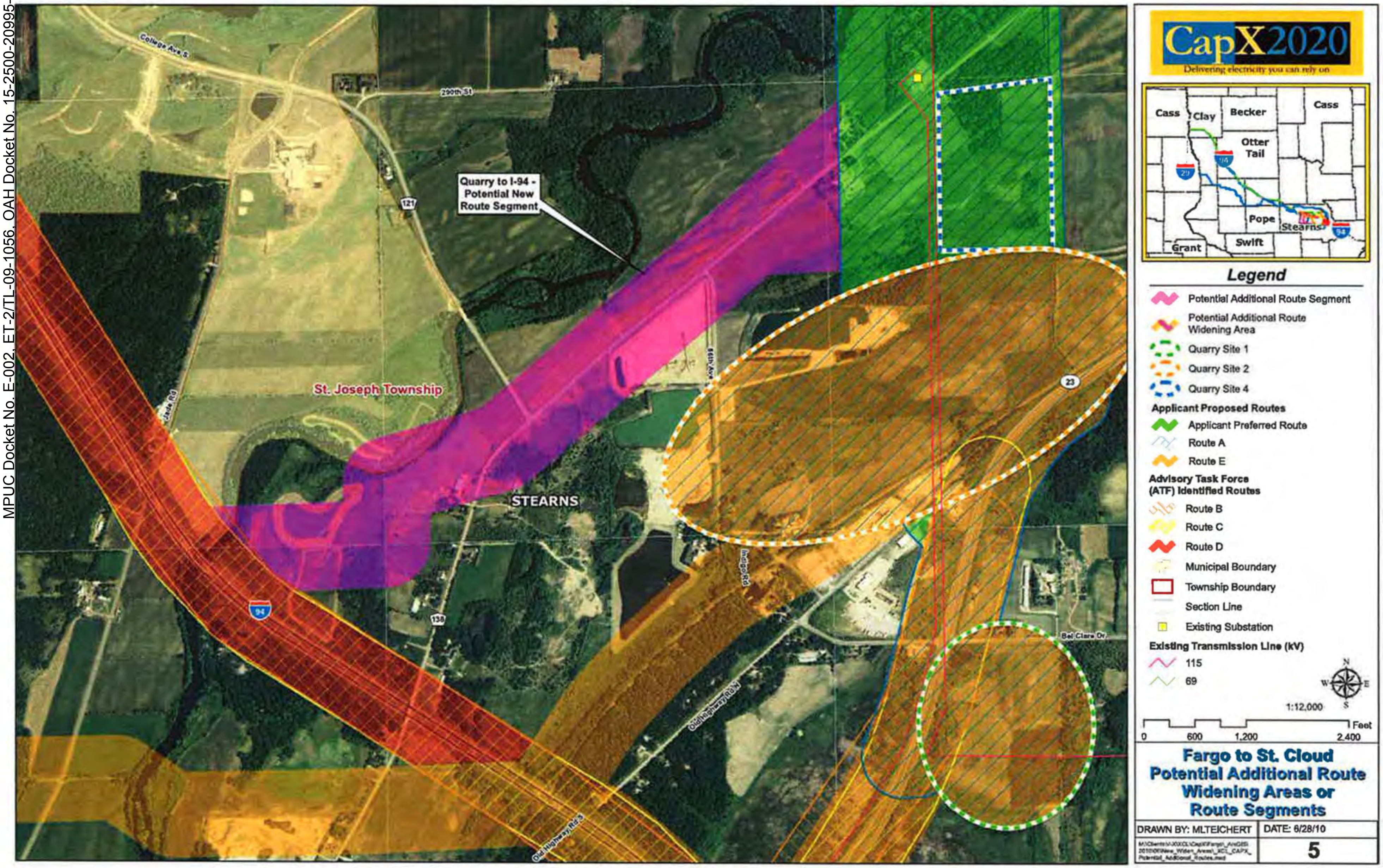
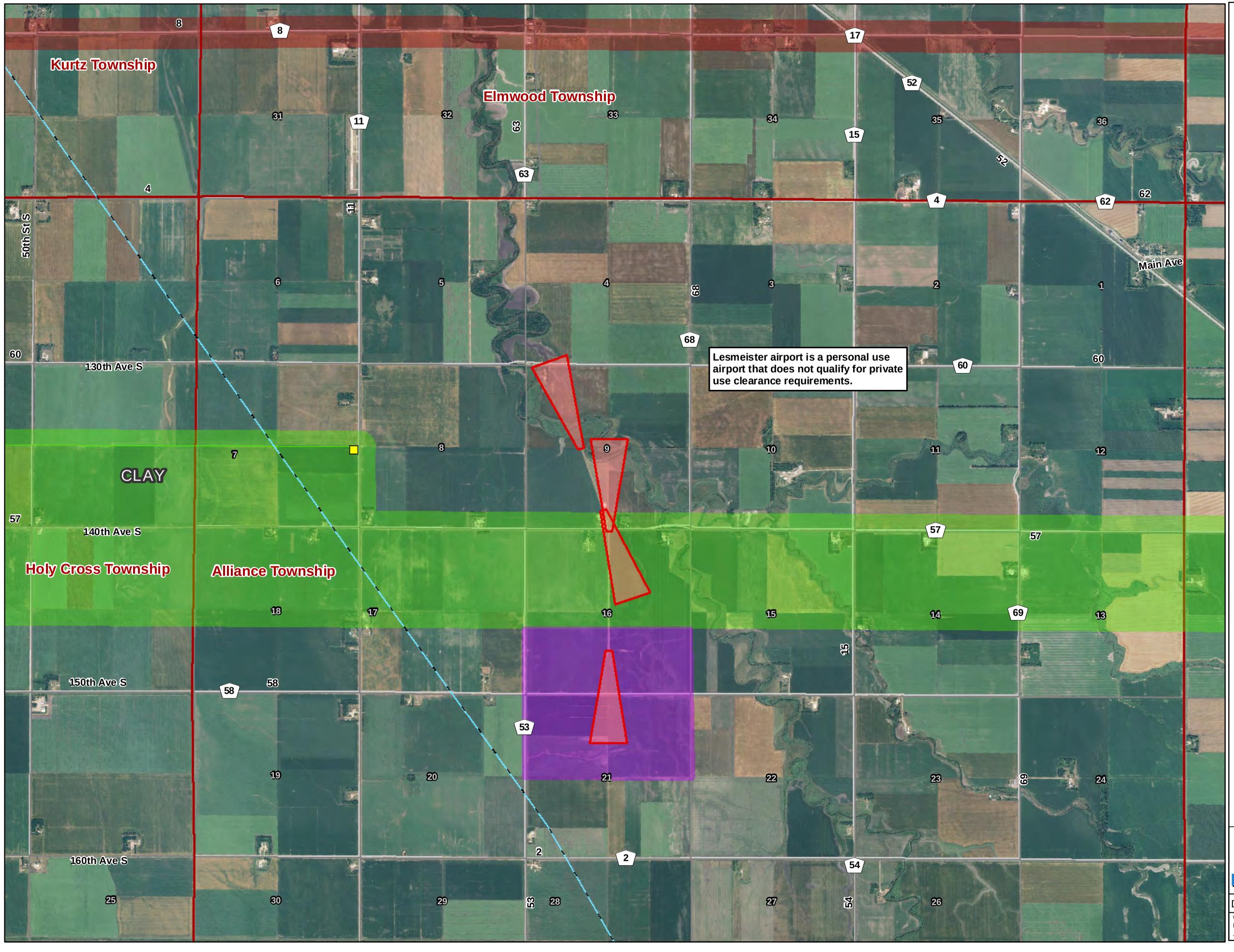

College Ave S
290th St
121
Quarry to I-94 - Potential New Route Segment
St. Joseph Township
STEARNS
Jade Rd
94
138
Indigo Rd
23
Bel Clare Dr
Old Highway Rd 3
CapX2020
Delivering electricity you can rely on
Cass
Clay
Becker
Cass
Otter Tail
Pope
Stearns
Swift
Grant
29
94
94
Legend
Potential Additional Route Segment
Potential Additional Route Widening Area
Quarry Site 1
Quarry Site 2
Quarry Site 4
Applicant Proposed Routes
Applicant Preferred Route
Route A
Route E
Advisory Task Force (ATF) Identified Routes
Route B
Route C
Route D
Municipal Boundary
Township Boundary
Section Line
Existing Substation
Existing Transmission Line (kV)
115
69
1:12,000
0
600
1,200
2,400
Feet
Fargo to St. Cloud
Potential Additional Route Widening Areas or Route Segments
DRAWN BY: MLTEICHERT
DATE: 6/28/10
5



CapX2020

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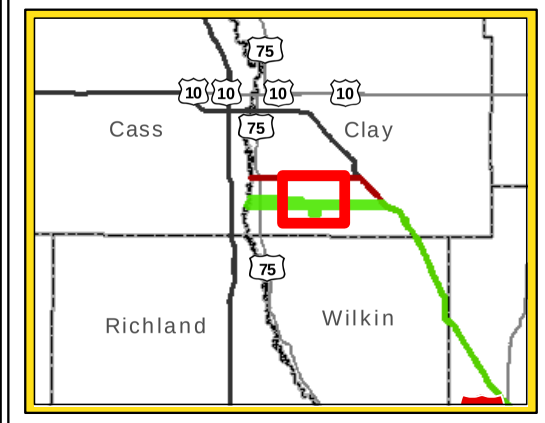

Legend

- Lesmeister Airport Private Airport Clearance Zone
- Modified Preferred Route
- RPA Preferred Route
- Route A
- AS - 1
- Option 13
- Municipal Boundary
- Township Boundary
- Existing Substation

Existing Transmission Line

- 345
- 230
- 115
- 69

1:36,000

0 0.25 0.5 1 Miles

Fargo to St. Cloud
Lesmeister Airport
Hypothetical Clearance Zones

DRAWN BY: MLTEICHERT	DATE: 10/12/10
\\Xcel\0122295 CapX Monticello to Fargo\GIS\Fargo\MXD\2010\10\Lesmeister_Airport_CapxF_Lesmeister_Airport.mxd	

Lahr Direct Testimony Schedule 4
MPUC Docket No. E-002,ET-2/TL-09-1056
OAH Docket No. 15-2500-20995-2

NORTH DAKOTA TO ALEXANDRIA ENVIRONMENTAL ROUTE COMPARISON

LAND USE AND OTHER ENVIRONMENTAL RESOURCES WITHIN THE RIGHT-OF-WAY

		MODIFIED PREFERRED ROUTE	ROUTE A	AS-1	AS-2	OPTION 1	OPTION 2a	OPTION 2b	OPTION 3	Comparable portion of Modified Preferred Route to AS-1	Comparable portion of Modified Preferred Route to AS-1, using AS-2	Comparable portion of Modified Preferred Route to AS-2	Comparable portion of Modified Preferred Route to Option 1	Comparable portion of Option 2b to Option 2a	Comparable portion of Modified Preferred Route to Option 2b	Comparable portion of Modified Preferred Route to Option 3
General	Length of Route (miles)	102	84	17	5	4	7	9	4	18	22	1	3	6	8	2
	Length Paralleling Existing ROWs (miles)	94	66	0	4	3	3	8	2	16	0	1	3	5	8	2
	Percent of Route Paralleling Existing ROWs	92	79	0	80	75	43	89	50	89	0	100	100	83	100	100
	Length Paralleling Existing Linear Features (miles)	100	84	14	5	3	7	9	4	18	0	1	3	6	8	2
	Number of Acres in Representative 150-Foot ROW	1,851	1,524	307	90	70	120	164	71	329	395	23	57	108	144	43
Agricultural Land Use	Acres of Agricultural Land Use within ROW	1,034	1,129	307	90	70	110	131	0	329	395	23	57	75	99	0
	Percent of ROW - Agricultural Land	56	74	100	100	100	92	80	0	100	100	100	100	69	69	0
	Acres of Special Protection Agricultural Land Use within ROW	0	82	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percent of ROW - Special Protection Agricultural Land	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
	Estimated Number of Poles in Agricultural Land	347	278	76	4	17	26	26	16	65	63	6	12	14	16	6
	Acres of Temporary Agricultural Land Impacts (1-Acre/Pole)	347	278	76	4	17	26	26	16	65	63	6	12	14	16	6
	Sq. Feet of Permanent Agricultural Land Impacts (1,000-Sq. Feet/Pole)	347,000	278,000	76,000	4,000	17,000	26,000	26,000	16,000	65,000	63,000	6,000	12,000	14,000	16,000	6,000
	Acres of Permanent Agricultural Land Impacts within ROW	8	6	2	0	0	1	1	0	1	1	0	0	0	0	0
	Acres of CRP Lands within ROW	135	43	9	2	4	4	9	1	27	30	0	11	6	5	3
	Percent of ROW - CRP Lands	7	3	3	3	5	4	6	1	8	7	0	19	6	4	8
Land Use	Acres of Residential Land Use within ROW	88	106	0	0	0	0	0	32	0	0	0	0	0	0	26
	Percent of ROW - Residential Land Use	5	7	0	0	0	0	0	45	0	0	0	0	0	0	60
	Acres of Recreational/Open Space/Park Land Use within ROW	117	87	0	0	0	10	33	40	0	0	0	0	33	44	17
	Percent of ROW - Recreational/Open Space/Park Land Use	6	6	0	0	0	8	20	56	0	0	0	0	31	31	40
	Acres of Commercial/Business/Institutional/ Public Land Use within ROW	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percent of ROW - Commercial/Business/Institutional/Public Land Use	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Industrial Land Use within ROW	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percent of ROW - Industrial Land Use	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Transitional/Growth Area Land Use within ROW	0	111	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percent of ROW - Transitional/Growth Area Land Use	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of County-Identified Municipal Land Use within ROW	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percent of ROW - County-Identified Municipal Land Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Estimated Number of Poles in Non-Agricultural Land	302	236	9	25	7	17	28	13	38	58	4	9	25	36	11
	Acres of Temporary Non-Agricultural Land Impacts (1-Acre/Pole)	302	236	9	25	7	17	28	13	38	58	4	9	25	36	11
	Sq. Feet of Permanent Non-Agricultural Land Impacts (55-Sq. Feet/Pole)	16,610	12,980	495	1,375	385	935	1,540	715	2,090	3,190	220	495	1,375	1,980	605
	Acres of Permanent Non-Agricultural Land Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Center Pivot Irrigation Systems within ROW	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Wooded Lands within ROW	25	8	1	0	2	0	2	4	5	3	2	0	1	1	1
	Percent of ROW - Wooded Lands	1	1	0	0	3	0	1	6	2	1	9	0	1	1	2
	Number of Daycare Facilities within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Pipeline Crossings within ROW	3	2	2	3	1	2	2	3	2	2	0	0	2	2	0
	Number of FCC Antenna Structures within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trails and Scenic Byways	Number of State Trail Crossings within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Parallel Miles to State Trails	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of County Trail Crossings within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Parallel Miles to County Trails	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0
	Number of Scenic Byway Crossings within ROW	2	1	1	1	0	0	0	5	1	1	0	0	0	0	1
	Parallel Miles to Scenic Byways	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Airports/ Landing Strips	Number of Airports/Landing Strips within 5-Miles	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Located within Instrument Approach to Airport	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Miles to Nearest Airport/Landing Strip	1	3	3	3	2	3	3	3	1	1	2	3	1	1	2
	Number of VOR Sites within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mining/ Aggregate Resources	Total Number of Aggregate Source Pits within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Prospective Aggregate Source Pits within ROW	1	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	Number of Commercial Aggregate Source Pits within ROW	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
Cultural and Historic Resources	Number of NRHP Sites within ROW	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
	Number of Known Historic Structures within ROW	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Known Archaeological Sites within ROW	6	1	0	0	0	0	0	2	3	3	0	0	0	0	0

NOTE: No hospitals, schools, landfill or dump sites, cemeteries, or churches are located within the ROW.

NORTH DAKOTA TO ALEXANDRIA ENVIRONMENTAL ROUTE COMPARISON

WETLAND AND WATER RESOURCES WITHIN THE RIGHT-OF-WAY

	MODIFIED PREFERRED ROUTE	ROUTE A	AS-1	AS-2	OPTION 1	OPTION 2a	OPTION 2b	OPTION 3	Comparable portion of RPA Preferred Route to AS-1	Comparable portion of Modified Preferred Route to AS-1, using AS-2	Comparable portion of Modified Preferred Route to AS-2	Comparable portion of Modified Preferred Route to Option 1	Comparable portion of Option 2b to Option 2a	Comparable portion of Modified Preferred Route to Option 2b	Comparable portion of Modified Preferred Route to Option 3
Length of Route (miles)	102	84	17	5	4	7	9	4	18	22	1	3	6	8	2
Number of Acres in Representative 150-Foot ROW	1,851	1,524	307	90	70	120	164	71	329	395	23	57	108	144	43
Acres of NWI Wetlands within ROW	64	54	6	2	1	4	8	7	5	5	2	2	7	6	5
Percent of ROW - NWI Wetlands	3	4	2	2	1	3	5	10	2	1	9	4	6	4	12
Number of NWI Wetlands within ROW	146	139	9	2	2	11	21	22	10	9	3	5	17	17	6
Acres of NWI Freshwater Emergent Wetlands within ROW	180	189	6	1	1	3	7	6	0	2	0	1	7	6	1
Percent of ROW - NWI Freshwater Emergent Wetlands	10	12	2	1	1	3	4	8	0	1	0	2	6	4	2
Acres of NWI Freshwater Forested/Shrub Wetlands within ROW	44	55	0	0	0	0	0	1	2	1	2	0	0	0	1
Percent of ROW - NWI Freshwater Forested/Shrub Wetlands	2	4	0	0	0	0	0	1	1	0	9	0	0	0	2
Acres of NWI Freshwater Pond Wetlands within ROW	11	4	0	0	0	0	0	0	2	2	0	0	0	0	1
Percent of ROW - Freshwater Pond Wetlands	1	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Acres of NWI Lake within ROW	9	1	0	0	0	0	0	0	0	0	0	2	0	0	3
Percent of ROW - NWI Lakes	0	0	0	0	0	0	0	0	0	0	0	4	0	0	7
Acres of NWI Riverine within ROW	3	1	0	0	0	0	0	0	1	1	0	0	0	0	0
Percent of ROW - NWI Riverine Wetlands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Estimated Number of Poles in NWI Wetlands	9	4	5	2	0	0	0	1	0	2	0	0	0	0	1
Acres of Temporary NWI Wetland Impacts (1-Acre/Pole)	9	4	5	2	0	0	0	1	0	2	0	0	0	0	1
Sq. Feet of Permanent NWI Wetland Impacts (55-Sq. Feet/Pole)	495	220	275	110	0	0	0	55	0	110	0	0	0	0	55
Acres of Permanent NWI Wetland Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Intermittent Stream, Drainage, or Waterway Crossings within ROW	30	46	11	6	0	2	2	0	2	8	1	0	2	2	0
Number of PWI Intermittent Stream, Drainage, or Waterway Crossings within ROW	4	5	3	0	0	0	0	0	1	1	0	0	0	0	0
Number of Perennial Stream, Drainage, or Waterway Crossings within ROW	10	5	3	1	0	0	2	0	3	4	0	0	0	2	0
Number of PWI Perennial Stream, Drainage, or Waterway Crossings within ROW	11	4	3	1	0	0	2	0	3	3	0	0	0	2	0
Number of Other Stream, Drainage, or Waterway Crossings within ROW	3	3	0	0	0	0	1	0	2	2	0	0	1	0	0
Number of Other PWI Stream, Waterway, or Drainage Crossings within ROW	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Number of PWI Lake and Wetland Crossings within ROW	11	8	0	0	0	1	3	1	0	0	0	1	3	3	1
Acres of PWI Lakes and Wetlands within ROW	14	10	0	0	0	0	4	1	0	0	0	2	4	2	3
Percent of ROW - PWI Wetlands	1	1	0	0	0	0	2	1	0	0	0	4	4	1	7
Estimated Number of Poles in PWI Wetlands	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1
Acres of Temporary PWI Wetland Impacts (1-Acre/Pole)	2	2	0	0	0	0	0	0	0	0	0	0	0	0	1
Sq. Feet of Permanent PWI Wetland Impacts (55-Sq. Feet/Pole)	110	110	0	0	0	0	0	0	0	0	0	0	0	0	55
Acres of Permanent PWI Wetland Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of (100-year) Floodplain within ROW	35	39	43	19	0	0	1	0	33	49	3	0	0	0	0
Percent of ROW - 100-Year Floodplain	2	3	14	21	0	0	1	0	10	12	13	0	0	0	0
Estimated Number of Poles in 100-Year Floodplain	11	10	14	7	0	0	0	0	11	17	1	0	0	0	0
Acres of Temporary 100-Year Floodplain Impacts (1-Acre/Pole)	11	10	14	7	0	0	0	0	11	17	1	0	0	0	0
Sq. Feet of Permanent 100-Year Floodplain Impacts (55-Sq. Feet/Pole)	605	550	770	385	0	0	0	0	605	935	55	0	0	0	0
Acres of Permanent 100-Year Floodplain Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of Restorable Wetlands within ROW	75	83	1	0	2	5	7	3	2	2	0	5	2	5	1
Percent of ROW - Restorable Wetlands	4	5	0	0	3	4	4	4	1	1	0	9	2	3	2
Number of Water Wells within ROW	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NORTH DAKOTA TO ALEXANDRIA ENVIRONMENTAL ROUTE COMPARISON

RESIDENTIAL AND NON-RESIDENTIAL STRUCTURES/BUILDINGS, SENSITIVE MANAGEMENT AREAS AND CONSERVATION EASEMENTS, OTHER

		MODIFIED PREFERRED ROUTE	ROUTE A	AS-1	AS-2	OPTION 1	OPTION 2a	OPTION 2b	OPTION 3	Comparable portion of Modified Preferred Route to AS-1	Comparable portion of Modified Preferred Route to AS-1, using AS-2	Comparable portion of Modified Preferred Route to AS-2	Comparable portion of Modified Preferred Route to Option 1	Comparable portion of Option 2b to Option 2a	Comparable portion of Modified Preferred Route to Option 2b	Comparable portion of Modified Preferred Route to Option 3
Number of Residences / Non-Residences within Proximity to ROW	Number of Residential Structures within 0-75 Feet of Alignment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Residential Structures within 75-150 Feet of Alignment	11	7	0	0	0	2	0	3	3	3	0	0	0	1	0
	Total Number of Residential Structures within 150 Feet of Alignment	11	7	0	0	0	2	0	3	3	3	0	0	0	1	0
	Number of Residential Structures within 150-300 Feet of Alignment	31	33	1	0	1	0	2	33	11	11	0	1	2	7	1
	Number of Residential Structures within 300-500 Feet of Alignment	29	36	2	3	2	0	3	33	4	5	2	0	2	5	5
	Total Number of Residential Structures within 500 Feet of Alignment	71	76	3	3	3	2	5	69	18	19	2	1	4	13	6
	Number of Non-Residential Structures within 150 Feet of Alignment	53	13	3	0	0	13	2	2	4	4	0	5	2	16	3
USFWS Easements	Number of USFWS Easements within ROW	13	7	0	0	1	1	3	0	0	0	0	1	1	2	0
	Acres of USFWS Easements within ROW	56	11	0	0	0	1	10	0	0	0	0	11	9	14	0
	Acres of USFWS Wetland Easements within ROW	56	11	0	0	0	1	10	0	0	0	0	11	9	14	0
	Acres of USFWS Grassland Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of USFWS Farmers Home Administration Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of USFWS Other Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MN County Biological Survey (MCBS) Sites of Biodiversity Significance	Acres of MCBS Sites of Biodiversity Significance within ROW	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0
	Number of MCBS Sites of Biodiversity Significance within ROW	1	2	1	0	0	0	0	0	1	1	0	0	0	0	0
	Acres of Moderate MCBS Sites of Biodiversity Significance within ROW	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of High MCBS Sites of Biodiversity Significance within ROW	20	20	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Outstanding MCBS Sites of Biodiversity Significance within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MCBS Native Plant Communities	Number of MCBS Native Plant Communities within ROW	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of MCBS Native Plant Communities within ROW	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
MCBS Railroad ROW Prairies	Number of MCBS Railroad ROW Prairies	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0
	Linear Feet of Fair MCBS Railroad ROW Prairies within ROW	0	4,309	0	0	0	0	0	0	0	0	0	0	0	0	0
	Linear Feet of Good MCBS Railroad ROW Prairies within ROW	1	183	0	0	0	0	0	0	0	0	0	0	0	0	0
	Linear Feet of Very Good MCBS Railroad ROW Prairies within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MN Land Trust Conservation Easements	Number of MN Land Trust Conservation Easement Crossings within ROW	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Acres of MN Land Trust Conservation Easements within ROW	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
BWSR RIM Easements	Number of BWSR RIM Easement Crossings within ROW	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of BWSR RIM Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calcareous Fens	Number of Calcareous Fens within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Calcareous Fens within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sensitive Management Areas and Resources	Number of Waterfowl Production Areas within ROW	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Acres of Waterfowl Production Areas within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Wildlife Management Areas within ROW	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Acres of Wildlife Management Areas within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Scientific Natural Areas within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Scientific Natural Areas within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Known Occurrences of Threatened and Endangered Species within ROW	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Trout Stream Crossings within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Prairie Bank Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: No Nature Conservancy lands are located within the ROW.

ALEXANDRIA TO SAUK CENTRE ENVIRONMENTAL ROUTE COMPARISON

LAND USE AND OTHER ENVIRONMENTAL RESOURCES WITHIN THE RIGHT-OF-WAY

		RPA PREFERRED ROUTE	ROUTE A	OPTION 4	OPTION 5	OPTION 6	OPTION 7	Comparable portion of Route A to Option 4	Comparable portion of RPA Preferred Route to Option 5
General	Length of Route (miles)	30	37	5	3	2	2	5	3
	Length Paralleling Existing ROWs (miles)	28	14	2	3	0	0	1	3
	Percent of Route Paralleling Existing ROWs	30	35	5	3	2	2	5	3
	Length Paralleling Existing Linear Features (miles)	94	36	38	77	0	0	12	100
	Number of Acres in Representative 150-Foot ROW	551	681	91	60	28	41	91	55
Agricultural Land Use	Acres of Agricultural Land Use within ROW	322	482	67	55	28	41	59	52
	Percent of ROW - Agricultural Land	58	71	73	91	99	101	65	95
	Land Use within ROW	0	40	0	0	0	0	0	0
	Percent of ROW - Special Protection Agricultural Land	0	6	0	0	0	0	0	0
	Estimated Number of Poles in Agricultural Land	107	164	22	15	9	13	20	16
	(1-Acre/Pole)	107	164	22	15	9	13	20	16
	Sq. Feet of Permanent Agricultural Land Impacts (1,000-Sq. Feet/Pole)	107,000	164,000	22,000	15,000	9,000	13,000	20,000	16,000
	Acres of Permanent Agricultural Land Impacts within ROW	2	4	1	0	0	0	0	0
	Acres of CRP Lands within ROW	34	58	11	0	0	11	21	0
	Percent of ROW - CRP Lands	6	9	12	0	0	27	23	0
Land Use	Acres of Residential Land Use within ROW	117	104	10	0	0	0	32	0
	Percent of ROW - Residential Land Use	21	15	11	0	0	0	35	0
	Acres of Recreational/Open Space/Park Land Use within ROW	66	41	14	5	0	0	0	3
	Percent of ROW - Recreational/Open Space/Park Land Use	12	6	16	9	0	0	0	5
	Acres of Commercial/Business/Institutional/ Public Land Use within ROW	33	14	0	0	0	0	0	0
	Percent of ROW - Commercial/Business/Institutional/Public Land Use	6	2	0	0	0	0	0	0
	Acres of Industrial Land Use within ROW	13	1	0	0	0	0	0	0
	Percent of ROW - Industrial Land Use	2	0	0	0	0	0	0	0
	Acres of Transitional/Growth Area Land Use within ROW	0	0	0	0	0	0	0	0
	Percent of ROW - Transitional/Growth Area Land Use	0	0	0	0	0	0	0	0
	Acres of County-Identified Municipal Land Use within ROW	0	0	0	0	0	0	0	0
	Percent of ROW - County-Identified Municipal Land Use	0	0	0	0	0	0	0	0
	Estimated Number of Poles in Non-Agricultural Land	138	420	306	95	0	84	451	84
	Acres of Temporary Non-Agricultural Land Impacts (1-Acre/Pole)	138	420	306	95	0	84	451	84
	Sq. Feet of Permanent Non-Agricultural Land Impacts (55-Sq. Feet/Pole)	7,590	23,100	16,830	5,225	0	4,620	24,805	4,620
	Acres of Permanent Non-Agricultural Land Impacts	0	1	0	0	0	0	1	0
	Number of Center Pivot Irrigation Systems within ROW	1	7	0	0	0	1	2	0
	Acres of Wooded Lands within ROW	24	41	7	0	0	3	13	1
	Percent of ROW - Wooded Lands	4	6	8	0	0	7	14	2
	Number of Daycare Facilities within ROW	0	0	0	0	0	0	0	0
	Number of Pipeline Crossings within ROW	4	4	0	0	1	0	0	0
	Number of FCC Antenna Structures within ROW	0	0	0	0	0	0	0	0
Trails and Scenic Byways	Number of State Trail Crossings within ROW	0	0	0	0	0	0	0	0
	Parallel Miles to State Trails	0	0	0	0	0	0	0	0
	Number of County Trail Crossings within ROW	4	0	0	1	1	0	0	1
	Parallel Miles to County Trails	5	0	0	3	0	0	0	0
	Number of Scenic Byway Crossings within ROW	2	2	0	0	0	0	0	0
	Parallel Miles to Scenic Byways	0	0	0	0	0	0	0	0
Airports/Landing Strips	Number of Airports/Landing Strips within 5-Miles	2	2	1	0	1	0	1	0
	Located within Instrument Approach to Airport	N	N	N	N	N	N	N	N
	Miles to Nearest Airport/Landing Strip	1	1	5	6	4	6	5	6
	Number of VOR Sites within ROW		0	0	0	0	0	0	0
Mining/ Aggregate	Total Number of Aggregate Source Pits within ROW	0	0	0	0	0	0	0	0
	Number of Prospective Aggregate Source Pits within ROW	0	0	0	0	0	0	0	0
	Number of Commercial Aggregate Source Pits within ROW	0	0	0	0	0	0	0	0
Cultural and Historic	Number of NRHP Sites within ROW	0	0	0	0	0	0	0	0
	Number of Known Historic Structures within ROW	1	0	0	0	0	0	0	0
	Number of Known Archaeological Sites within ROW	0	0	0	0	0	0	0	0

NOTE: No hospitals, schools, landfill or dump sites, cemeteries, or churches are located within the ROW.

ALEXANDRIA TO SAUK CENTRE ENVIRONMENTAL ROUTE COMPARISON

WETLAND AND WATER RESOURCES WITHIN THE RIGHT-OF-WAY

	RPA PREFERRED ROUTE	ROUTE A	OPTION 4	OPTION 5	OPTION 6	OPTION 7	Comparable portion of Route A to Option 4	Comparable portion of RPA Preferred Route to Option 5	Comparable portion of Route A to Option 7
Length of Route (miles)	30	37	5	3	2	2	5	3	3
Number of Acres in Representative 150-Foot ROW	551	681	91	60	28	41	91	55	59
Acres of NWI Wetlands within ROW	50	86	15	5	1	6	22	4	2
Percent of ROW - NWI Wetlands	9	13	16	8	5	15	24	6	4
Number of NWI Wetlands within ROW	91	119	19	8	2	7	17	6	4
Acres of NWI Freshwater Emergent Wetlands within ROW	41	71	14	5	1	3	12	2	1
Percent of ROW - NWI Freshwater Emergent Wetlands	7	10	16	8	5	8	13	3	1
Acres of NWI Freshwater Forested/Shrub Wetlands within ROW	7	14	0	0	0	3	9	2	2
Percent of ROW - NWI Freshwater Forested/Shrub Wetlands	1	2	1	0	0	7	10	3	3
Acres of NWI Freshwater Pond Wetlands within ROW	0	0	0	0	0	0	0	0	0
Percent of ROW - Freshwater Pond Wetlands	0	0	0	0	0	0	0	0	0
Acres of NWI Lake within ROW	2	1	0	0	0	0	0	0	0
Percent of ROW - NWI Lakes	0	0	0	0	0	0	0	0	0
Acres of NWI Riverine within ROW	0	0	0	0	0	0	0	0	0
Percent of ROW - NWI Riverine Wetlands	0	0	0	0	0	0	0	0	0
Estimated Number of Poles in NWI Wetlands	3	9	5	1	0	3	4	0	0
Acres of Temporary NWI Wetland Impacts (1-Acre/Pole)	3	9	5	1	0	3	4	0	0
Sq. Feet of Permanent NWI Wetland Impacts (55-Sq. Feet/Pole)	165	495	275	55	0	165	220	0	0
Acres of Permanent NWI Wetland Impacts	0	0	0	0	0	0	0	0	0
Number of Intermittent Stream, Drainage, or Waterway Crossings within ROW	9	26	2	1	1	2	5	1	3
Number of PWI Intermittent Stream, Drainage, or Waterway Crossings within ROW	2	1	1	0	0	0	1	0	0
Number of Perennial Stream, Drainage, or Waterway Crossings within ROW	5	6	1	2	0	1	1	2	1
Number of PWI Perennial Stream, Drainage, or Waterway Crossings within ROW	4	6	1	1	0	1	1	1	1
Number of Other Stream, Drainage, or Waterway Crossings within ROW	2	0	0	0	0	0	0	0	0
Number of Other PWI Stream, Waterway, or Drainage Crossings within ROW	1	0	0	0	0	0	0	0	0
Number of PWI Lake and Wetland Crossings within ROW	11	8	1	0	0	0	0	0	0
Acres of PWI Lakes and Wetlands within ROW	10	18	7	0	0	0	0	0	0
Percent of ROW - PWI Wetlands	2	3	7	0	0	0	0	0	0
Estimated Number of Poles in PWI Wetlands	1	1	2	0	0	0	0	0	0
Acres of Temporary PWI Wetland Impacts (1-Acre/Pole)	1	1	2	0	0	0	0	0	0
Sq. Feet of Permanent PWI Wetland Impacts (55-Sq. Feet/Pole)	55	55	110	0	0	0	0	0	0
Acres of Permanent PWI Wetland Impacts	0	0	0	0	0	0	0	0	0
Acres of (100-year) Floodplain within ROW	5	19	0	4	0	0	0	4	0
Percent of ROW - 100-Year Floodplain	1	3	0	6	0	0	0	7	0
Estimated Number of Poles in 100-Year Floodplain	3	6	0	1	0	0	0	2	0
Acres of Temporary 100-Year Floodplain Impacts (1-Acre/Pole)	3	6	0	1	0	0	0	2	0
Sq. Feet of Permanent 100-Year Floodplain Impacts (55-Sq. Feet/Pole)	165	330	0	55	0	0	0	110	0
Acres of Permanent 100-Year Floodplain Impacts	0	0	0	0	0	0	0	0	0
Acres of Restorable Wetlands within ROW	24	68	3	0	2	4	13	0	2
Percent of ROW - Restorable Wetlands	4	10	3	0	7	10	14	0	3
Number of Water Wells within ROW	1	1	0	0	0	0	0	0	0

ALEXANDRIA TO SAUK CENTRE ENVIRONMENTAL ROUTE COMPARISON

RESIDENTIAL AND NON-RESIDENTIAL STRUCTURES/BUILDINGS, SENSITIVE MANAGEMENT AREAS AND CONSERVATION EASEMENTS, OTHER

		RPA PREFERRED ROUTE	ROUTE A	OPTION 4	OPTION 5	OPTION 6	OPTION 7	Comparable portion of Route A to Option 4	Comparable portion of RPA Preferred Route to Option 5	Comparable portion of Route A to Option 7
Number of Residences / Non-Residences within Proximity to ROW	Number of Residential Structures within 0-75 Feet of Alignment	0	0	1	0	0	0	0	0	0
	Number of Residential Structures within 75-150 Feet of Alignment	12	8	1	0	0	0	0	0	2
	Total Number of Residential Structures within 150 Feet of Alignment	12	8	2	0	0	0	0	0	2
	Number of Residential Structures within 150-300 Feet of Alignment	13	13	0	0	0	0	2	2	2
	Number of Residential Structures within 300-500 Feet of Alignment	16	13	0	3	1	0	3	1	0
	Total Number of Residential Structures within 500 Feet of Alignment	41	34	2	3	1	0	5	3	4
	Number of Non-Residential Structures within 150 Feet of Alignment	32	9	1	0	0	0	1	0	1
USFWS Easements	Number of USFWS Easements within ROW	1	2	1	0	0	0	0	0	0
	Acres of USFWS Easements within ROW	7	3	5	0	0	0	0	0	0
	Acres of USFWS Wetland Easements within ROW	7	3	5	0	0	0	0	0	0
	Acres of USFWS Grassland Easements within ROW	0	0	0	0	0	0	0	0	0
	Acres of USFWS Farmers Home Administration Easements within ROW	0	0	0	0	0	0	0	0	0
	Acres of USFWS Other Easements within ROW	0	0	0	0	0	0	0	0	0
MN County Biological Survey (MCBS) Sites of Biodiversity Significance	Acres of MCBS Sites of Biodiversity Significance within ROW	0	10	0	0	0	0	0	0	0
	Number of MCBS Sites of Biodiversity Significance within ROW	0	2	0	0	0	0	0	0	0
	Acres of Moderate MCBS Sites of Biodiversity Significance within ROW	0	10	0	0	0	0	0	0	0
	Acres of High MCBS Sites of Biodiversity Significance within ROW	0	0	0	0	0	0	0	0	0
	Acres of Outstanding MCBS Sites of Biodiversity Significance within ROW	0	0	0	0	0	0	0	0	0
MCBS Native Plant Communities	Number of MCBS Native Plant Communities within ROW	0	2	0	0	0	0	0	0	0
	Acres of MCBS Native Plant Communities within ROW	0	5	0	0	0	0	0	0	0
MCBS Railroad ROW Prairies	Number of MCBS Railroad ROW Prairies	0	0	0	0	0	0	0	0	0
	Linear Feet of Fair MCBS Railroad ROW Prairies within ROW	0	0	0	0	0	0	0	0	0
	Linear Feet of Good MCBS Railroad ROW Prairies within ROW	0	0	0	0	0	0	0	0	0
	Linear Feet of Very Good MCBS Railroad ROW Prairies within ROW	0	0	0	0	0	0	0	0	0
MN Land Trust Conservation Easements	Number of MN Land Trust Conservation Easement Crossings within ROW	0	0	0	0	0	0	0	0	0
	Acres of MN Land Trust Conservation Easements within ROW	0	0	0	0	0	0	0	0	0
BWSR RIM Easements	Number of BWSR RIM Easement Crossings within ROW	0	0	0	0	0	0	0	0	0
	Acres of BWSR RIM Easements within ROW	0	0	0	0	0	0	0	0	0
Calcareous Fens	Number of Calcareous Fens within ROW	0	0	0	0	0	0	0	0	0
	Acres of Calcareous Fens within ROW	0	0	0	0	0	0	0	0	0
Sensitive Management Areas and Resources	Number of Waterfowl Production Areas within ROW	0	0	0	0	0	0	0	0	0
	Acres of Waterfowl Production Areas within ROW	0	0	0	0	0	0	0	0	0
	Number of Wildlife Management Areas within ROW	0	1	0	0	0	1	0	0	0
	Acres of Wildlife Management Areas within ROW	0	12	0	0	0	5	0	0	0
	Number of Scientific Natural Areas within ROW	0	0	0	0	0	0	0	0	0
	Acres of Scientific Natural Areas within ROW	0	0	0	0	0	0	0	0	0
	Number of Known Occurrences of Threatened and Endangered Species within ROW	0	0	0	0	0	0	0	0	0
	Number of Trout Stream Crossings within ROW	0	0	0	0	0	0	0	0	0
	Acres of Prairie Bank Easements within ROW	0	0	0	0	0	0	0	0	0

NOTE: No Nature Conservancy lands are located within the ROW.

SAUK CENTRE TO ST. CLOUD ENVIRONMENTAL ROUTE COMPARISON

LAND USE AND OTHER ENVIRONMENTAL RESOURCES WITHIN THE RIGHT-OF-WAY

		RPA Preferred Route	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Option 8	Comparable portion of RPA Preferred Route to Option 8	Option 9	Comparable portion of RPA Preferred Route to Option 9	Option 10	Comparable portion of Route A to Option 10	Option 11	Comparable portion of Route E to Option 11	Option 12 (North)	Option 12 (South)	AS-5	Comparable portion of RPA Preferred Route to AS-5
General	Length of Route (miles)	48	48	46	39	37	44	49	44	45	1	1	5	5	1	1	3	4	1	1	2	4
	Length Paralleling Existing ROWs (miles)	29	33	41	32	30	33	45	33	32	0	0	5	5	0	0	2	3	1	0	1	4
	Percent of Route Paralleling Existing ROWs	46	45	45	39	36	42	49	42	42	0	1	5	5	0	1	3	3	1	0	2	4
	Length Paralleling Existing Linear Features (miles)	61	69	89	82	80	75	91	74	71	0	0	100	100	0	0	57	85	77	0	45	100
	Number of Acres in Representative 150-Foot ROW	866	865	834	710	678	797	899	807	817	11	15	87	83	27	26	64	65	23	26	41	65
Agricultural Land Use	Acres of Agricultural Land Use within ROW	813	836	810	642	521	763	689	776	777	9	15	78	79	27	25	53	57	23	16	29	54
	Percent of ROW - Agricultural Land	94	97	97	90	77	96	77	96	95	76	95	89	95	100	100	83	88	100	62	72	82
	Acres of Special Protection Agricultura Land Use within ROW	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0	11	0	0	0	0	0
	Percent of ROW - Special Protection Agricultural Land	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	17	0	0	0	0	0
	Estimated Number of Poles in Agricultural Land	163	158	116	129	99	136	149	139	167	4	5	13	8	7	8	10	11	2	2	15	14
	Acres of Temporary Agricultural Land Impacts (1-Acre/Pole)	163	158	116	129	99	136	149	139	167	4	5	13	8	7	8	10	11	2	2	15	14
	Sq. Feet of Permanent Agricultural Land Impacts (1,000-Sq. Feet/Pole)	163,000	158,000	116,000	129,000	99,000	136,000	149,000	139,000	167,000	4,000	5,000	13,000	8,000	7,000	8,000	10,000	11,000	2,000	2,000	15,000	14,000
	Acres of Permanent Agricultural Land Impacts within ROW	4	4	3	3	2	3	3	3	4	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of CRP Lands within ROW	16	24	15	1	6	16	3	5	5	0	0	9	0	0	0	0	2	0	0	5	0
	Percent of ROW - CRP Lands	2	3	2	0	1	2	0	1	1	0	0	11	0	0	0	0	3	0	0	13	0
Land Use	Acres of Residential Land Use within ROW	9	3	14	19	56	10	41	9	9	3	1	2	0	0	0	0	0	0	10	11	10
	Percent of ROW - Residential Land Use	1	0	2	3	8	1	5	1	1	24	5	3	0	0	0	0	0	0	38	27	15
	Acres of Recreational/Open Space/Park	7	0	0	5	6	1	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percent of ROW - Recreational/Open Space/Park Land Use	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Commercial/Business/Institutional	10	10	3	27	42	1	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Percent of ROW - Commercial/Business/Institutional/Public Land Use	1	1	0	4	6	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Acres of Industrial Land Use within ROW	23	15	0	8	22	8	87	8	8	0	0	7	0	0	0	0	0	0	0	0	2
	Percent of ROW - Industrial Land Use	3	2	0	1	3	1	10	1	1	0	0	8	0	0	0	0	0	0	0	0	3
	Acres of Transitional/Growth Area Land Use within ROW	0	0	0	0	0	10	0	10	10	0	0	0	0	0	0	0	8	0	0	0	0
	Percent of ROW - Transitional/Growth Area Land Use	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	12	0	0	0	0
	Acres of County-Identified Municipal Land Use within ROW	4	1	6	10	30	4	5	4	13	0	0	0	4	0	0	0	0	0	0	1	0
	Percent of ROW - County-Identified Municipal Land Use	1	0	1	1	4	1	1	1	2	0	0	0	5	0	0	0	0	0	0	2	0
	Estimated Number of Poles in Non-Agricultural Land	124	129	182	137	172	133	167	146	124	0	0	15	20	2	1	8	12	7	7	3	12
	Acres of Temporary Non-Agricultural Land Impacts (1-Acre/Pole)	124	129	182	137	172	133	167	146	124	0	0	15	20	2	1	8	12	7	7	3	12
	Sq. Feet of Permanent Non-Agricultural Land Impacts (55-Sq. Feet/Pole)	6,820	7,095	10,010	7,535	9,460	7,315	9,185	8,030	6,820	0	0	825	1,100	110	55	440	660	385	385	165	660
	Acres of Permanent Non-Agricultural Land Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Center Pivot Irrigation Systems within ROW	3	3	0	0	0	2	3	2	10	0	0	0	0	0	0	0	2	0	0	0	0
	Acres of Wooded Lands within ROW	71	59	43	57	37	40	48	35	41	1	0	3	1	3	0	9	3	9	6	1	7
	Percent of ROW - Wooded Lands	8	7	5	8	6	5	5	4	5	7	0	4	1	9	0	14	5	39	23	2	11
	Number of Daycare Facilities within ROW	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Pipeline Crossings within ROW	3	2	2	3	1	2	2	3	3	0	0	0	0	0	0	0	0	0	0	0	0
	Number of FCC Antenna Structures within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trails and Scenic Byways	Number of State Trail Crossings within ROW	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Parallel Miles to State Trails	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of County Trail Crossings within ROW	2	2	3	3	2	1	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0
	Parallel Miles to County Trails	0	0	0	0	8	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
	Number of Scenic Byway Crossings within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Parallel Miles to Scenic Byways	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Airports/ Landing Strips	Number of Airports/Landing Strips within 5-Miles	3	3	2	2	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Located within Instrument Approach to Airport	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	Miles to Nearest Airport/Landing Strip	1	3	3	3	2	3	3	3	3	6	6	6	6	8	8	9	9	6	6	5	5
	Number of VOR Sites within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mining/ Aggregate Resources	Total Number of Aggregate Source Pits within ROW	1	0	0	1	1	2	1	2	2	0	0	0	0	0	0	0	0	1	0	0	0
	Number of Prospective Aggregate Source Pits within ROW	1	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Commercial Aggregate Source Pits within ROW	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0
Cultural and Historic Resources	Number of NRHP Sites within ROW	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Known Historic Structures within ROW	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Number of Known Archaeological Sites within ROW	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: No hospitals, schools, landfill or dump sites, cemeteries, or churches are located within the ROW.

SAUK CENTRE TO ST. CLOUD ENVIRONMENTAL ROUTE COMPARISON

WETLAND AND WATER RESOURCES WITHIN THE RIGHT-OF-WAY

	RPA Preferred Route	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Option 8	Comparable portion of RPA Preferred Route to Option 8	Option 9	Comparable portion of RPA Preferred Route to Option 9	Option 10	Comparable portion of Route A to Option 10	Option 11	Comparable portion of Route E to Option 11	Option 12 (North)	Option 12 (South)	AS-5	Comparable portion of RPA Preferred Route to AS-5
Length of Route (miles)	48	48	46	39	37	44	49	44	45	1	1	5	5	1	1	3	4	1	1	2	4
Number of Acres in Representative 150-Foot ROW	866	865	834	710	678	797	899	808	817	11	15	87	83	27	26	64	65	23	26	41	65
Acres of NWI Wetlands within ROW	134	110	77	97	85	97	97	84	82	11	4	13	6	3	1	1	3	5	17	2	22
Percent of ROW - NWI Wetlands	16	13	9	14	12	12	11	10	10	97	27	15	7	12	5	2	5	22	65	5	34
Number of NWI Wetlands within ROW	146	139	89	120	87	128	107	103	90	2	2	16	11	5	2	8	10	2	4	3	14
Acres of NWI Freshwater Emergent Wetlands within ROW	96	71	61	83	75	88	81	75	74	11	4	12	2	3	1	1	3	5	15	0	18
Percent of ROW - NWI Freshwater Emergent Wetlands	11	8	7	12	11	11	9	9	9	97	27	13	3	10	5	2	4	22	58	1	27
Acres of NWI Freshwater Forested/Shrub Wetlands within ROW	32	35	15	10	7	7	13	7	6	0	0	1	2	1	0	0	0	0	2	1	3
Percent of ROW - NWI Freshwater Forested/Shrub Wetlands	4	4	2	1	1	1	1	1	1	0	0	1	1	2	0	0	0	0	3	3	5
Acres of NWI Freshwater Pond Wetlands within ROW	5	3	0	2	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Percent of ROW - Freshwater Pond Wetlands	1	0	0	0	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Acres of NWI Lake within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent of ROW - NWI Lakes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of NWI Riverine within ROW	1	1	1	1	1	1	1	1	1	0	0	0	1	0	0	0	0	0	0	1	1
Percent of ROW - NWI Riverine Wetlands	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Estimated Number of Poles in NWI Wetlands	27	22	18	26	29	18	28	19	19	3	1	4	2	0	0	0	1	1	5	0	7
Acres of Temporary NWI Wetland Impacts (1-Acre/Pole)	27	22	18	26	29	18	28	19	19	3	1	4	2	0	0	0	1	1	5	0	7
Sq. Feet of Temporary NWI Wetland Impacts (55-Sq. Feet/Pole)	1,485	1,210	990	1,430	1,595	990	1,540	1,045	1,045	165	55	220	110	0	0	0	55	55	275	0	385
Acres of Permanent NWI Wetland Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Intermittent Stream, Drainage, or Waterway Crossings within ROW	13	17	19	13	17	19	21	25	34	1	1	3	3	1	0	0	1	1	0	0	3
Number of PWI Intermittent Stream, Drainage, or Waterway Crossings within ROW	2	1	1	2	1	4	5	5	6	0	0	2	0	0	0	0	0	0	0	0	0
Number of Perennial Stream, Drainage, or Waterway Crossings within ROW	16	15	14	12	13	13	9	12	12	0	0	2	1	0	0	0	2	0	0	0	1
Number of PWI Perennial Stream, Drainage, or Waterway Crossings within ROW	11	14	11	9	6	6	6	8	8	0	0	1	1	0	0	0	0	0	0	0	0
Number of Other Stream, Drainage, or Waterway Crossings within ROW	1	1	2	1	2	1	2	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Number of Other PWI Stream, Waterway, or Drainage Crossings within ROW	1	1	1	1	2	1	2	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Number of PWI Lake and Wetland Crossings within ROW	11	8	2	6	3	5	3	2	1	0	0	0	0	0	0	0	0	0	1	0	1
Acres of PWI Wetlands within ROW	4	0	13	17	13	2	13	1	1	0	0	0	0	0	0	0	0	0	13	0	13
Percent of ROW - PWI Wetlands	0	0	2	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	50	0	20
Estimated Number of Poles in PWI Wetlands	0	0	5	5	5	1	5	1	1	0	0	0	0	0	0	0	0	0	4	0	5
Acres of Temporary PWI Wetland Impacts (1-Acre/Pole)	0	0	5	5	5	1	5	1	1	0	0	0	0	0	0	0	0	0	4	0	5
Sq. Feet of Permanent PWI Wetland Impacts (55-Sq. Feet/Pole)	0	0	275	275	275	55	275	55	55	0	0	0	0	0	0	0	0	0	220	0	275
Acres of Permanent PWI Wetland Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of (100-year) Floodplain within ROW	24	26	16	14	14	13	25	14	19	0	0	7	1	0	0	0	0	0	1	0	6
Percent of ROW - 100-Year Floodplain	3	3	2	2	2	2	3	2	2	0	0	1	1	0	0	0	0	0	0	0	1
Estimated Number of Poles in 100-Year Floodplain	8	8	6	6	6	5	9	5	6	0	0	1	0	0	0	0	0	0	0	0	3
Acres of Temporary 100-Year Floodplain Impacts (1-Acre/Pole)	8	6	6	6	6	5	9	5	6	0	0	1	0	0	0	0	0	0	0	0	3
Sq. Feet of Permanent 100-Year Floodplain Impacts (55-Sq. Feet/Pole)	440	440	330	330	330	275	495	275	330	0	0	55	0	0	0	0	0	0	0	165	165
Acres of Permanent 100-Year Floodplain Impacts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of Restorable Wetlands within ROW	104	104	43	58	33	78	69	75	69	0	0	3	9	0	1	1	1	0	1	1	18
Percent of ROW - Restorable Wetlands	12	12	5	8	5	10	8	9	8	0	0	3	11	0	4	2	2	0	4	2	28
Number of Water Wells within ROW	1	1	3	1	3	4	8	4	4	0	0	0	1	0	0	0	0	0	0	0	0

SAUK CENTRE TO ST. CLOUD ENVIRONMENTAL ROUTE COMPARISON

RESIDENTIAL AND NON-RESIDENTIAL STRUCTURES / BUILDINGS, SENSITIVE MANAGEMENT AREAS AND CONSERVATION EASEMENTS, OTHER

	RPA Preferred Route	Route A	Route B	Route C	Route D	Route E	Route F	Route G	Route H	Option 8	Comparable portion of RPA Preferred Route to Option 8	Option 9	Comparable portion of RPA Preferred Route to Option 9	Option 10	Comparable portion of Route A to Option 10	Option 11	Comparable portion of Route E to Option 11	Option 12 (North)	Option 12 (South)	AS-5	Comparable portion of RPA Preferred Route to AS-5
Number of Residential Structures within 0-75 Feet of Alignment	0	0	0	1	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Residential Structures within 75-150 Feet of Alignment	8	21	32	8	22	12	12	9	9	0	0	1	0	0	0	1	1	0	0	0	0
Total Number of Residential Structures within 150 Feet of Alignment	8	21	32	9	33	12	12	9	9	0	0	1	0	0	0	1	1	0	0	0	0
Number of Residential Structures within 150-300 Feet of Alignment	46	57	102	42	83	37	94	50	61	0	0	7	2	1	1	2	7	0	2	1	2
Number of Residential Structures within 300-500 Feet of Alignment	29	38	57	26	77	28	105	31	30	0	0	6	2	1	0	1	3	0	1	2	1
Total Number of Residential Structures within 500 Feet of Alignment	83	116	191	77	193	77	211	90	100	0	2	14	3	1	1	4	11	0	3	3	3
Number of Non-Residential Structures within 150 Feet of Alignment	28	29	26	29	52	25	43	23	32	0	0	3	0	0	0	0	0	2	0	2	0
Number of USFWS Easements within ROW	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Acres of USFWS Easements within ROW	0	0	6	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
Acres of USFWS Wetland Easements within ROW	0	0	6	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0
Acres of USFWS Grassland Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of USFWS Farmers Home Administration Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of USFWS Other Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of MCBS Sites of Biodiversity Significance within ROW	20	20	4	0	3	8	12	14	14	0	0	0	0	0	0	0	2	0	0	0	0
Number of MCBS Sites of Biodiversity Significance within ROW	2	2	3	0	2	3	4	5	5	0	0	0	0	0	0	0	2	0	0	0	0
Acres of Moderate MCBS Sites of Biodiversity Significance within ROW	0	0	1	0	3	6	10	6	6	0	0	0	0	0	0	0	0	0	0	0	0
Acres of High MCBS Sites of Biodiversity Significance within ROW	20	20	0	0	0	2	3	8	8	0	0	0	0	0	0	0	2	0	0	0	0
Acres of Outstanding MCBS Sites of Biodiversity Significance within ROW	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of MCBS Native Plant Communities within ROW	2	2	4	0	2	1	3	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Acres of MCBS Native Plant Communities within ROW	7	7	2	0	3	3	1	7	7	0	0	0	0	0	0	0	0	0	0	0	0
Number of MCBS Railroad ROW Prairies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Linear Feet of Fair MCBS Railroad ROW Prairies within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Linear Feet of Good MCBS Railroad ROW Prairies within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Linear Feet of Very Good MCBS Railroad ROW Prairies within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of MN Land Trust Conservation Easement Crossings within ROW	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of MN Land Trust Conservation Easements within ROW	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of BWSR RIM Easement Crossings within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of BWSR RIM Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Calcareous Fens within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of Calcareous Fens within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Waterfowl Production Areas within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of Waterfowl Production Areas within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Wildlife Management Areas within ROW	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of Wildlife Management Areas within ROW	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Number of Scientific Natural Areas within ROW	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of Scientific Natural Areas within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Known Occurrences of Threatened and Endangered Species within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Trout Stream Crossings within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acres of Prairie Bank Easements within ROW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NOTE: No Nature Conservancy lands are located within the ROW.

CALCULATED ELECTRIC FIELDS (KV/M) FOR PROPOSED 345 KV TRANSMISSION LINE DESIGN(S) (3.28 FEET ABOVE GROUND) (2015)

Structure Type	Nominal Voltage (kV)	Distance to Proposed Centerline												
		-300'	-200'	-100'	-75'	-50'	-25'	0'	25'	50'	75'	100'	200'	300'
Single Pole Davit Arm 345kV Single Circuit Delta Config	362	0.05	0.12	0.65	1.15	2.02	2.56	2.32	4.34	2.28	0.99	0.52	0.11	0.04
Single Pole Davit Arm 345kV Single Circuit Vertical Config	362	0.08	0.16	0.21	0.31	1.50	4.27	3.81	1.22	0.19	0.14	0.19	0.12	0.06
Single Pole Davit Arm 345kV/345kV Double Circuit with One Circuit In Service	362	0.04	0.08	0.11	0.05	0.22	1.16	3.76	4.30	1.58	0.40	0.18	0.12	0.06
Single Pole Davit Arm 345kV/345kV Double Circuit with Both Circuits In Service	362	0.02	0.05	0.15	0.42	1.41	3.46	2.48	3.46	1.41	0.42	0.15	0.05	0.02

CALCULATED MAGNETIC FLUX DENSITY (MILLIGAUSS) FOR PROPOSED 345 KV TRANSMISSION LINE DESIGNS (3.28 FEET ABOVE GROUND) (2015)

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline												
			-300'	-200'	-100'	-75'	-50'	-25'	0'	25'	50'	75'	100'	200'	300'
Single Pole Davit Arm 345kV Single Circuit Delta Config	Peak	264	0.79	1.67	5.62	8.70	14.36	23.45	31.89	29.76	17.92	10.19	6.26	1.65	0.72
	Average	158	0.47	1.00	3.36	5.21	8.60	14.03	19.08	17.81	10.73	6.10	3.75	0.99	0.43
Single Pole Davit Arm 345kV Single Circuit Vertical Config	Peak	264	0.86	1.97	7.12	11.10	18.17	27.45	25.55	16.04	9.86	6.41	4.42	1.48	0.71
	Average	158	0.52	1.18	4.26	6.65	10.87	16.43	15.29	9.60	5.90	3.84	2.64	0.88	0.42
Single Pole Davit Arm 345kV/345kV Double Circuit with One Circuit In Service	Peak	264	0.71	1.48	4.43	6.43	9.89	16.09	25.62	27.50	18.18	11.10	7.11	1.97	0.86
	Average	158	0.43	0.89	2.65	3.85	5.92	9.63	15.33	16.46	10.88	6.64	4.25	1.18	0.52
Single Pole Davit Arm 345kV/345kV Double Circuit with Both Circuits In Service	Peak	264	0.19	0.58	3.32	6.08	11.96	22.90	30.03	23.06	12.10	6.17	3.39	0.59	0.19
	Average	158	0.11	0.35	1.99	3.64	7.16	13.71	17.97	13.80	7.24	3.70	2.03	0.35	0.12

CALCULATED MAGNETIC FLUX DENSITY (MILLIGAUSS) FOR PROPOSED 345 KV TRANSMISSION LINE DESIGNS (3.28 FEET ABOVE GROUND) (ASSUMED 600 & 1,000 MVA LOADING)

Structure Type	System Condition	Current (Amps)	Distance to Proposed Centerline												
			-300'	-200'	-100'	-75'	-50'	-25'	0'	25'	50'	75'	100'	200'	300'
Single Pole Davit Arm 345kV Single Circuit Delta Config	System Max	1000	2.98	6.33	21.28	32.97	54.40	88.83	120.79	112.71	67.90	38.59	23.71	6.27	2.73
	With Added Generation	2500	7.44	15.84	53.20	82.42	136.01	222.07	301.96	281.77	169.74	96.49	59.28	15.67	6.83
Single Pole Davit Arm 345kV Single Circuit Vertical Config	System Max	1000	3.26	7.46	26.96	42.06	68.82	103.97	96.76	60.77	37.34	24.29	16.73	5.60	2.67
	With Added Generation	2500	8.15	18.65	67.39	105.14	172.05	259.93	241.91	151.92	93.34	60.72	41.82	13.99	6.68
Single Pole Davit Arm 345kV/345kV Double Circuit with One Circuit In Service	System Max	1000	2.70	5.62	16.79	24.37	37.45	60.95	97.03	104.17	68.86	42.03	26.92	7.45	3.26
	With Added Generation	2500	6.74	14.06	41.96	60.92	93.64	152.38	242.57	260.42	172.14	105.07	67.29	18.62	8.15
Single Pole Davit Arm 345kV/345kV Double Circuit with Both Circuits In Service	System Max	1000	.73	2.19	12.58	23.01	45.30	86.76	113.75	87.37	45.85	23.39	12.8	2.25	.74
	With Added Generation	2500	1.81	5.47	31.44	57.53	113.26	216.89	284.37	218.42	114.62	58.47	32.08	5.61	1.84