

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

In the Matter of the Route Permit
Application for the CapX 2020
Hampton – Rochester – La Crosse 345
kV Transmission Line

**FINDINGS OF FACT,
CONCLUSIONS OF LAW
AND RECOMMENDATION**

A public hearing was held before Kathleen D. Sheehy, Administrative Law Judge (ALJ), commencing on June 14, 2011, at the American Legion in Plainview, Minnesota, and continued at dates and places more specifically set forth below. The evidentiary hearing was held from June 20-21 and June 24, 2011, at the Minnesota Public Utilities Commission offices in St. Paul, Minnesota.

Lisa M. Agrimonti and Valerie T. Herring, Briggs and Morgan, P.A., 80 South Eighth Street, 2200 IDS Center, Minneapolis, MN 55402, appeared for Northern States Power Company, a Minnesota corporation (Xcel Energy or Applicant).

Karen Finstad Hammel, Assistant Attorney General, and David Birkholz, State Permit Manager, 445 Minnesota Street, Suite 1500, St. Paul, MN 55101, appeared on behalf of the Department of Commerce, Energy Facility Permitting Staff (EFP).

Phillip R. Krass, Rachel R. Myers, and Timothy J. Keane, Malkerson Gunn Martin LLP, 1900 U.S. Bank Plaza South Tower, 220 South Sixth Street, Minneapolis, MN 55402, appeared for Oronoco Township.

Brian M. Meloy, Leonard Street and Deinard, 150 South Fifth Street, Suite 2300, Minneapolis, MN 55402, appeared for ATC Management, Inc.

Carol A. Overland, Overland Law Office, P.O. Box 176, Red Wing, MN 55066, appeared on behalf of NoCapX 2020, United Citizens Action Network (U-CAN), and North Route Group (collectively North Route Group).

Michael Kaluzniak and Bob Cupit, Energy Facilities Permitting Unit, 121 Seventh Place East, Suite 350, Saint Paul, MN 55101, participated as Commission staff.

STATEMENT OF ISSUE

Has the Applicant satisfied the criteria set forth in Minn. Stat. § 216E.031 (2010) and Minnesota Rules Chapter 7850 (2011) for a route permit for the Hampton to Rochester to La Crosse 345 kilovolt (kV) transmission project, and, if so, which routes and substations under consideration best comply with applicable statutes and rules?¹

Based on the evidence in the hearing record, the Administrative Law Judge makes the following:

FINDINGS OF FACT

I. FACTUAL AND PROCEDURAL BACKGROUND.

1. Xcel Energy is a wholly owned subsidiary of Xcel Energy Inc., a utility holding company with its headquarters in Minneapolis. Xcel Energy provides electricity services to approximately 1.2 million customers and natural gas services to 425,000 residential, commercial and industrial customers in the State.² Xcel Energy and its CapX 2020 utility partners (11 transmission-owning utilities in Minnesota, Wisconsin, and the surrounding region) have proposed to upgrade Minnesota's high-voltage transmission line system by constructing and operating the CapX 2020 Project.

2. The CapX 2020 Project involves the construction of three new 345 kV transmission lines: from Brookings, South Dakota, to Hampton, Minnesota; from Hampton through Rochester to La Crosse, Wisconsin (the subject of this docket); and from Fargo, North Dakota, to Alexandria, St. Cloud, and Monticello, Minnesota. The Commission has already approved the route applications for the Brookings to Hampton,³ Fargo to St. Cloud,⁴ and St. Cloud to Monticello segments.⁵

3. In this docket, the Applicant seeks a route permit for the Hampton-Rochester-La Crosse segment of CapX 2020, which consists of 345 kV transmission line facilities and substation connections between the Hampton Substation and a new substation in the La Crosse, Wisconsin area, as well as a 161 kV transmission line between the proposed North Rochester Substation and the existing Northern Hills Substation.⁶ The Wisconsin portion of the Project between Alma and La Crosse will be

¹ Unless otherwise noted, all citations to Minnesota Statutes are to the 2010 edition; citations to Minnesota Rules are to the 2011 edition.

² Ex. 1 at ES-1 and 1-1 (Application).

³ *In the Matter of the Application for a Route Permit by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No. ET-2/TL-08-1474, Order Granting Route Permit (Sept. 14, 2010); Order Granting Route Permit for Remanded Segment of Route (Mar. 1, 2011).

⁴ *In the Matter of the Application for a Route Permit for the Fargo to St. Cloud 345 kV Transmission Line Project*, Docket No. E-002, ET-2/TL-09-1056, Findings of Fact, Conclusions of Law, and Order Issuing an HVTL Route Permit to Xcel Energy and Great River Energy (June 24, 2011).

⁵ *In the Matter of the Application for a Route Permit for the Monticello to St. Cloud 345 kV Transmission Line Project*, Docket No. ET-2/TL-09-246, Findings of Fact, Conclusions of Law, and Order Issuing an HVTL Route Permit to Xcel Energy and Great River Energy (July 12, 2010).

⁶ Ex. 1 at ES-1.

7. On March 9, 2010, the Commission accepted the Application as complete and authorized the EFP staff to process the Application under the full permitting process in Minnesota Rules 7850.1700 to 7850.2700.¹³ On the same date the Commission issued a Notice and Order for Hearing referring this matter to the OAH. The Commission also requested that EFP recommend necessary advisory task forces (ATF), as well as a proposed structure and charge for them.¹⁴

8. In general, a final decision on a request for a route permit must be made within one year of the Commission's determination that an application is complete.¹⁵ In this case, the Applicant agreed to a hearing schedule extending the time for completion of this matter beyond the one-year period established by statute. The Applicant also agreed to further extend the timeframe for a reasonable period of time following the closure of the OAH record, to allow for the Report of the Administrative Law Judge to be filed and the final decision of the Commission to be made.¹⁶

A. The Parties and Their Positions.

9. The Applicant advocates in favor of its preferred route in Segments 1 and 2 and its modified preferred route in Segment 3 of the Project. The Applicant has referred to these routes collectively as the Modified Preferred Route. The Applicant does not oppose the use of route option 3B-003 along Highway 42 in Segment 3.

10. In the Draft and Final Environmental Impact Statements (DEIS and FEIS, respectively), the Applicant's preferred routes are generally referred to by segment as 1P, 2P, and 3P, and the Applicant's alternate routes are generally referred to as 1A, 2A, and 3A. Variants of these route options that were proposed in the scoping process use the segment numbers with another number reflecting the order in which the variant was proposed (such as 1P-001); options that combine the preferred and alternate routes are lettered "B"; and options that are composed of a parallel alignment of the 345 kV and 161 kV lines in Segments 2 and 3 are given a "2C3" designation.¹⁷ The 3B-003 option referred to above is a route in Segment 3 that combines the preferred and alternate routes in the third segment near the Mississippi River crossing.

11. NoCapX 2020 and United Citizens Action Network (U-CAN) are organizations of affected landowners and residents within and in the immediate vicinity of the preferred and alternate routing options. They filed a petition to intervene with the Commission before the contested case was initiated, contending their participation was necessary to "prevent abuse of siting process, allow the fullest public participation under current law, and increase awareness regarding eminent domain and the 'Buy the Farm'

¹³ Ex. 44 (Order Accepting Application as Complete and Requesting Proposal for Task Forces).

¹⁴ *Id.*

¹⁵ See Minn. Stat. § 216E.03, subp. 9.

¹⁶ See Tr. Prehearing Conference at 8-9 (Aug. 9, 2010); First Prehearing Order at 5 (Sept. 1, 2010).

¹⁷ Ex. 113 at 6.

option.”¹⁸ No party objected to their petition, and it was deemed granted pursuant to Minn. R. 7829.0800, subp. 5.¹⁹

12. The North Route Group is generally composed of landowners, farmers, and residents living in the vicinity of the northern alternate route of Segment 3 (3A), running from the northern location of the proposed North Rochester substation to the Mississippi River. No party objected to its petition for intervention, which was granted.²⁰

13. In Segment 1, the North Route Group supports a route option that deviates from the preferred route and crosses the Cannon River at the eastern edge of Lake Byllesby, to avoid impacts to human settlement in the area of Highway 52 and County Road 19 in Cannon Falls. This could be one of several route options, and the Group has not identified its preference by route option number. In Segment 2, the Group advocated against route options 2C3-003-2 and 2C3-004-2. The North Route Group filed testimony advocating against the northern alternative route (3A) in Segment 3, and it supports the 3P route up to the point where it intersects with County Road 42. From there, the Group recommends use of the County Road 42 route option (3B-003).²¹

14. Oronoco Township is impacted by both the 161 kV line in Segment 2 and the 345 kV line in Segment 3 of the Project. No party objected to Oronoco Township’s intervention petition, which was granted.²²

15. Oronoco Township sponsored the testimony of two experts, who advocated in support of the northern alternative route (3A) for the 345 kV line in Segment 3.²³ In the alternative, the Township supports the use of a combination route proposed during the hearing, which follows the 3A route across the Zumbro River and then runs south to rejoin the Modified Preferred Route (3P).²⁴ Oronoco contended that the White Bridge Road crossing would impact a greater number of current and future residents and would hamper future development in this area.²⁵ The Township took no position in testimony with regard to the route for the 161 kV line in Segment 2.

16. ATC is a Wisconsin limited liability company that intervened to protect its interest in the regional development of transmission facilities terminating in Wisconsin, because it plans to develop a transmission line from the La Crosse area to Madison,

¹⁸ See No CapX 2020 and U-CAN Petition for Intervention (Feb. 23, 2010). The “Buy the Farm” option is a reference to Minn. Stat. § 216E.12, subd. 4, which permits a landowner whose property is being taken for construction of a high-voltage transmission line with a capacity of 200 kV or more the option to require a utility to condemn a fee interest in contiguous land.

¹⁹ Notice of Prehearing Conference (July 12, 2010).

²⁰ Second Prehearing Order (May 23, 2011).

²¹ See Exs. 39-40.

²² See Second Prehearing Order.

²³ See Exs. 66-69.

²⁴ Exs. 89 & 90. Exhibit 89 (Oronoco’s preferred route) includes a segment where the line would run south that was not contained in the scoping decision for the EIS and was consequently not studied in the DEIS or the FEIS. This route alternative cannot be considered in this proceeding. Tr. 2:162-63. Oronoco Township also supports the route depicted in Ex. 90, as well as the 3A Crossover route. Tr. 2:172-73.

²⁵ Ex. 68 at 7-9 (Broberg Direct).

Wisconsin (the Badger Coulee transmission line). ATC's petition to intervene was granted over the objection of NoCapX 2020 and U-CAN.²⁶ ATC did not file testimony or advocate in support of or opposition to any particular route.

B. State Agencies.

17. The Minnesota Department of Transportation (MnDOT) is not a party to this proceeding, but it participated in the public and evidentiary hearings and offered testimony and exhibits regarding the route options in all three segments. MnDOT's primary concern is the width of the route and the final alignment in certain areas along US 52, where MnDOT has planned some interchanges and will plan others in the future. MnDOT suggests that a decision to narrow the route width in these areas could restrict the ability to find an alignment that avoids future highway construction zones. If the 1P route is selected, MnDOT recommends "maximum flexibility on selection of alignments" until more information is available regarding these road construction projects.²⁷

18. The Minnesota Department of Natural Resources (DNR) also participated in the public and evidentiary hearings and offered testimony and comments concerning all segments of the project. In Segment 1, the DNR generally supports the 1P route and recommends that routes crossing the Cannon River should be limited to existing disturbed corridors (a highway or transmission line). In Segment 2, the DNR has concerns about the crossing of Shady Lake where there is no existing infrastructure, use of the Douglas State Trail, and an area in which the 2A Route dissects an undeveloped deposit of sand and gravel. In Segment 3, the DNR supports the crossing of the Zumbro River at White Bridge Road (the 3P route) on the basis that it would involve the least amount of tree clearing and would use an existing river crossing. The northern crossing (3A Route) is a greenfield crossing that has no existing infrastructure, and the middle crossing near the Lake Zumbro dam (3P-Zumbro-N and 3P-Zumbro-S Routes) is near a site of high biodiversity significance. The DNR also supports the use of the Highway 42 route option (3B-003) where the transmission line turns north to cross the Mississippi River.²⁸

C. Applicant's Required Notice.

19. Minnesota statutes and rules require Applicant to provide certain notice to public and local governments before and during the Application for a Route Permit process.²⁹

20. Before filing the Application for a route permit, on September 17, 2008, the Applicant notified local governments within the Project area, in accordance with Minn. Stat. § 216E.03, subd. 3a.³⁰

²⁶ Second Prehearing Order.

²⁷ MnDOT letter to ALJ (Oct. 7, 2011).

²⁸ DNR letter to ALJ (June 29, 2011); DNR letter to Matthew Langan (Apr. 29, 2011); Tr. 3:76-103.

²⁹ Minn. Stat. § 216E.03, subd. 3a; Minn. Stat. § 216E.03, subd. 4; Minn. R. 7850.2100, subp. 2; Minn. R. 7850.2100, subp. 4.

21. On the date of filing the Application, January 19, 2010, the Applicant mailed a notice to landowners shown on the county record whose property was within or adjacent to the preferred and alternate routes and substation sites, the list of persons on the Project service list, and the list of persons requesting notice of submitted High Voltage Transmission Line Applications for Route Permits maintained by the Commission, in accordance with Minn. Stat. § 216E.03, subd. 4; Minn. R. 7850.2100, subp. 2(A); and Minn. R. 7850.2100, subp. 2(C).³¹

22. The Applicant mailed a notice and copy of the Application to all officials of Local Government Units within the proposed and alternative routes, in accordance with Minn. Stat. § 216E.03, subd. 4, and Minn. R. 7850.2100, subp. 2(B).³²

23. On January 19, 2010, the Applicant mailed a copy of the Application to public libraries within the Project area, in accordance with Minn. Stat. § 216E.03, subd. 4.³³

24. Between January 19 and 22, 2010, the Applicant published notice that the application had been filed in newspapers of general circulation in the Project area, in accordance with Minn. Stat. § 216E.03, subd. 4.³⁴

25. When the Minnesota Department of Transportation made clear its intention to apply freeway standards that require placement of transmission poles 25 feet from the highway right-of-way along Highway 52, it became apparent that absent an exception to those standards, there is insufficient room to build the 1P route at the intersection of Highway 52 and County Road 19 in Cannon Falls without displacing at least one home. The Applicant promptly proposed an alignment using an expanded route width in this area, and it gave notice to the newly affected landowners by telephone and by mail.³⁵

26. The Applicant provided notice to the public and local governments in satisfaction of Minnesota statutory and rule requirements.

³⁰ Ex. 1 at Appendix C2.

³¹ Ex. 29 (Affidavit of Mailing and Notice Dated 01/19/2010).

³² Ex. 31 (Affidavit of Mailing and Notice to LGUs dated 01/19/2010); Ex. 32 (Affidavit of Mailing and Notice to LGUs dated 01/22/2010).

³³ Ex. 30 (Affidavit of Mailing and Notice to Libraries Dated 01/19/2010).

³⁴ See Ex. 115 (accepted into the record as a late-filed exhibit on November 30, 2011).

³⁵ Ex. 37 (Affidavit of Mailing and Notice to Landowners Along Expanded Route); Ex. 72; Tr. 1:34 (Hillstrom).

D. Preparation of the Environmental Impact Statement.

27. Minnesota statutes and rules require preparation of an Environmental Statement (EIS) for the proposed project.³⁶

28. On March 16, 2010, the Commission authorized the establishment of two ATFs, Hampton to Northern Hills and North Rochester to Mississippi River, including the adoption of the EFP charge and structure recommendations.³⁷

29. On March 24, 2010, EFP issued the Director's Hampton to Northern Hills Task Force and North Rochester to Mississippi River Task Force Decision and Charge.³⁸

30. On April 19, 2010, EFP issued a Notice of Public Information and Environmental Impact Statement (EIS) Scoping Meetings in accordance with Minn. R. 7850.2300, subp. 2, and Minn. R. 7850.2500, subp. 2.³⁹

31. Between April 22, 2010, and April 28, 2010, EFP published the Notice of Public Information and Scoping Meetings in newspapers throughout the Project area, in accordance with Minn. R. 7850.2300, subp. 2, and Minn. R. 7850.2500, subp. 2.⁴⁰

32. On April 23, 2010, EFP appointed eleven persons to the Hampton to Northern Hills ATF.⁴¹ On that same date, EFP appointed seven persons to the North Rochester to Mississippi River ATF.⁴²

33. On April 27, 2010, May 11, 2010, and June 2, 2010, the Hampton to Northern Hills ATF met to review the Application, identify specific impacts and issues of local concern to be addressed in the EIS, and identify potential alternative transmission line routes between Hampton and the existing Northern Hills Substation to be considered in the EIS.⁴³

34. On April 28, 2010, May 12, 2010, and June 3, 2010, the North Rochester to Mississippi River ATF met to review the Application, identify specific impacts and issues of local concern to be addressed in the EIS, and identify potential alternative transmission line routes between the new North Rochester Substation and the Mississippi River to be assessed in the EIS.⁴⁴

³⁶ Minn. Stat. § 216E.03, subd. 5; Minn. R. 7850.2500, subp. 1.

³⁷ Ex. 45 (Order Authorizing the Establishment of Two Advisory Task Forces).

³⁸ Ex. 47 at Appendix B (North Rochester to Mississippi River ATF Report); Ex. 48 at Appendix B (Hampton to Northern Hills ATF Report).

³⁹ Ex. 46B (Affidavit of Mailing of EFP Notice of Public Information and EIS Scoping Meetings).

⁴⁰ Ex. 46C (Affidavit of Publication of Public Information and Scoping Meetings in Newspapers).

⁴¹ Ex. 48 at Appendix C (Hampton to Northern Hills ATF Report).

⁴² Ex. 47 at Appendix C (North Rochester to Mississippi River ATF Report).

⁴³ Ex. 48 (Hampton to Northern Hills ATF Report).

⁴⁴ Ex. 47 (North Rochester to Mississippi River ATF Report).

35. Between May 4, 2010, and May 6, 2010, EFP held a total of six Public Information and EIS Scoping Meetings: two meetings at 1:30 p.m. and 6:30 p.m. in each of three different locations in the Project area, including Plainview, Pine Island, and Cannon Falls.⁴⁵

36. EFP accepted public comments on the scope of the EIS until May 20, 2010.⁴⁶

37. On August 4, 2010, EFP filed the two ATF Reports.⁴⁷ The Hampton to Northern Hills ATF recommended seven additional routes between Hampton and the Northern Hills Substation to be considered in the EIS.⁴⁸ The North Rochester to Mississippi River ATF recommended eight additional routes between the North Rochester Substation and the Mississippi River to be considered in the EIS.⁴⁹

38. On August 6, 2010, EFP issued its EIS Scoping Decision that set forth the alternatives and issues to be addressed in the EIS.⁵⁰ The EIS Scoping Decision included alternatives recommended in the ATF Report and suggested in the public meetings.⁵¹

39. On August 13, 2010, EFP mailed Notice of EIS Scoping Decision in accordance with Minn. R. 7850.2500, subp. 2.⁵²

40. On September 17, 2010, EFP issued a letter to landowners along the new routes included in the EIS Scoping Decision.⁵³

41. On September 22, 2010, and September 23, 2010, EFP provided mailed notice to landowners and local government units of new alternative routes included in the EFP Scoping Decision.⁵⁴

42. On March 21, 2011, EFP issued the Draft EIS (DEIS).⁵⁵

43. On March 21, 2011, EFP mailed Notice of Availability of the DEIS and Public Information Meetings, in accordance with Minn. R. 7850.2500, subp. 7, and Minn. R. 7850.2500, subp. 8.⁵⁶

⁴⁵ Ex. 49 (Public Comments on the Scope of the Draft EIS); Ex. 50 (EFP EIS Scoping Decision).

⁴⁶ Ex. 46 (Notice of Public Information and EIS Scoping Meetings).

⁴⁷ Ex. 47 (North Rochester to Mississippi River ATF Report); Ex. 48 (Hampton to Northern Hills ATF Report).

⁴⁸ Ex. 48 at 4-6 (Hampton to Northern Hills ATF Report).

⁴⁹ Ex. 47 at 5-7 (North Rochester to Mississippi River ATF Report).

⁵⁰ Ex. 50A (EIS Scoping Decision).

⁵¹ *Id.*

⁵² Ex. 50B (Certificate of Service of Director's EIS Scoping Decision).

⁵³ Ex. 51 (Letter to Landowners Along New Scoping Routes).

⁵⁴ Ex. 51 (Notice of New Scoping Routes Dated 09/22/2010); Ex. 52 (Notice of New Scoping Routes Dated 09/22/2010 to LGUs).

⁵⁵ Ex. 53A through 53P (DEIS). Exhibit 65 is the version of the DEIS that incorporates map revisions and corrections made later.

44. EFP provided paper copies of the DEIS to public libraries in each county where the proposed project may be located in accordance with Minnesota Rule 7850.2500, subpart 7.⁵⁷

45. On March 29, 2011, EFP issued revised maps for the DEIS.⁵⁸

46. On March 29, 2011, EFP issued a Notification of Revised Maps.⁵⁹

47. On April 8, 2011, EFP mailed a letter to landowners along 161 kV routes added during the DEIS scoping process notifying them of the routes and the availability of the DEIS.⁶⁰

48. On April 14, 2011, EFP mailed notice of DEIS availability and public information meetings to landowners along routes not on the EFP project list.⁶¹

49. EFP published Notice of Availability of the DEIS and Public Information Meetings in newspapers throughout the Project area.⁶²

50. EFP held Public Information Meetings to obtain comments on the DEIS as follows: April 12, 2011 at 1:30 p.m. and 6:30 p.m. at the American Legion in Plainview; April 13, 2011 at 1:30 p.m. and 6:30 p.m. at the American Legion in Pine Island; and April 14, 2011 at 1:30 p.m. and 6:30 p.m. at the High School Auditorium in Cannon Falls.⁶³

51. On May 24, 2011, the EFP issued its Notice of Public Hearing.⁶⁴

52. On May 24, 2011 and May 26, 2011, EFP mailed notice of public hearings to the Project list, in accordance with Minn. Stat. § 216E.03, subd. 6, and Minn. R. 7850.2500, subp. 8.⁶⁵

53. On May 30, 2011, EFP published Notice of the Availability of the DEIS in the EQB Monitor, in accordance with Minn. R. 7850.2500, subp. 7.⁶⁶

⁵⁶ Ex. 54 (Notice of Availability of DEIS and Public Information Meetings).

⁵⁷ Ex. 54.

⁵⁸ Ex. 56 (DEIS Revised Sections and Appendices).

⁵⁹ Ex. 55 (Notification of Revised Maps).

⁶⁰ Ex. 57 (Letter to Landowners on 161 kV Routes Added to DEIS).

⁶¹ Ex. 59 (Affidavit of Mailing of Notice of DEIS Availability to Landowners not on EFP Project List).

⁶² Ex. 58A and 58B (Affidavit of Publication of Notice of DEIS Availability and Public Information Meetings).

⁶³ Ex. 58 (Affidavit of Publication of Notice of DEIS Availability and Public Information Meetings); Ex. 59 (Affidavit of Mailing of Notice of DEIS Availability and Public Information Meetings to Landowners Not Signed up for Project Mailing List).

⁶⁴ Exs. 62A and 62B (EFP Notice of Public Hearing).

⁶⁵ *Id.*

⁶⁶ Exs. 62A and 62B (EQB Monitor Notice of Public Hearings and Availability of DEIS).

54. Public hearings commenced at 1:30 p.m. at the American Legion in Plainview on June 14, 2011, and continued as follows: June 14, 2011 at 6:30 p.m. at the American Legion in Plainview; June 15, 2011, at 1:30 p.m. and 6:30 p.m. at the American Legion in Pine Island; and June 16, 2011, at 1:30 p.m. and 6:30 p.m. at the High School Auditorium in Cannon Falls.⁶⁷

55. The evidentiary hearing was held on June 20, 2011, through June 22, 2011, and June 24, 2011, at the Commission offices in Saint Paul, Minnesota.

56. On June 30, 2011, the public comment period closed.⁶⁸

57. On August 31, 2011, EFP issued the Final EIS (FEIS).⁶⁹ On September 1, 2011, EFP mailed Notice of FEIS availability.⁷⁰ On September 5, 2011, EFP published Notice of Availability of the FEIS in accordance with Minn. R. 7850.2500, subp. 9.⁷¹

58. EFP provided notice in satisfaction of Minnesota statutes and rules.

II. OVERVIEW OF THE PROJECT.

59. The two segments of 345 kV transmission line are 81 to 89 miles in length total and would traverse parts of Dakota, Goodhue, Olmsted, and Wabasha counties. The 161 kV line is approximately 15 to 18 miles long in Goodhue and Olmsted counties; it would connect the new North Rochester substation with an existing Northern Hills substation north of Rochester.⁷²

60. The 345 kV line would be constructed primarily with single-pole, self-weathering, rust-colored steel structures, ranging in height from 130 to 175 feet, with an average span of 1,000 feet between poles. The structures would be “double circuit capable,” meaning that a second 345 kV circuit could be placed on the structures in the future if warranted. The typical right-of-way for a 345-kV line would be 150 feet (75 feet on each side of the centerline).⁷³

61. The 161 kV line would be constructed primarily with steel, single-pole structures, ranging in height from 70 to 105 feet, with an average span of 400 to 700 feet between poles. The typical right-of-way for the 161 kV line would be 80 feet.⁷⁴

⁶⁷ Ex. 62; Public Hearing Sign-in Sheets, eDocket Document No. 20116-64069-02 (eFiled June 27, 2011).

⁶⁸ First Prehearing Order (Sept. 1, 2010).

⁶⁹ The FEIS was completed and received in evidence after the evidentiary hearing. It has been labeled Ex. 113 and was eFiled on August 31, 2011, as eDocket Document Nos. 20118-65847-1 to 05, 20118-65849-01 to 06, 20118-65874-01 to 10, 20118-65880-01 to 10, 20118-65885-01 to 10, and 20118-65886-01 to 09.

⁷⁰ Affidavit of Mailing of Notice of FEIS Availability, eDocket Document No. 20119-65905-01 (eFiled Sept. 1, 2011).

⁷¹ 35 EQB Monitor 18 at p. 9 (Sept. 5, 2011).

⁷² Ex. 113 at 1.

⁷³ *Id.*

⁷⁴ *Id.*

A. Segment 1 Routes.

62. In Segment 1, the Hampton to North Rochester section, the 1P Route follows US 52, a high-volume highway that MnDOT plans to convert to a freeway in the future.⁷⁵ An existing 69 kV transmission line is located next to US 52 between Cannon Falls and Zumbrota, and much of the new 345 kV line would be co-located with this existing 69 kV line.⁷⁶ The 1A Route follows field divisions and property boundaries through agricultural land west of US 52.⁷⁷ The length of this segment is 36 to 47 miles, depending on the specific route selected, and it passes through Dakota and Goodhue Counties.⁷⁸

63. The 1P routes follow a major highway and take a relatively direct path from Hampton to the proposed substation site. These alternatives have the potential to impact homes, businesses, and schools near US 52 as well as the cities of Cannon Falls and Pine Island. The 1A alternatives impact fewer homes, but they are longer, more expensive, and do not follow the largest infrastructure corridor in the area (US 52).⁷⁹

64. There are 17 route alternatives in Segment 1, including the Applicant's preferred and alternate routes.⁸⁰ There was significant public comment regarding most options that are variants of the 1P route, and there was near-universal public disapproval of options 1B-005 and 1P-009, routes along Minnesota Highway 56 and County Road 9 that would impact the Sogn Valley, the Nansen Agricultural Historic District, and the Stanton Airport, the last two of which are on the National Register of Historic Places.

65. A new North Rochester Substation is proposed between Zumbrota and Pine Island. Within the 3.5-square mile siting area, Xcel Energy has identified a preferred siting area to the south, and an alternative siting area to the north.⁸¹ The preferred southern siting area is incorporated into the 1P, 2P, and 3P routes, and some of the 2C3 routes; the northern siting area is incorporated into the 2A, 3A, and some of the 2C3 routes. The northern siting area would be used, however, only if the northern crossing of the Zumbro River were selected in Segment 3 (route option 3A).⁸²

B. Segment 2 Routes.

66. In Segment 2, both the 2P and 2A 161 kV routes start at the new North Rochester Substation between Zumbrota and Pine Island and end at the existing

⁷⁵ Ex. 2 at 9 (Hillstrom Direct).

⁷⁶ Ex. 1 at 5-15.

⁷⁷ *Id.* at 6-5; Ex. 2 at 9 (Hillstrom Direct).

⁷⁸ Ex. 113 at 5.

⁷⁹ *Id.* at 3.

⁸⁰ *Id.* at 9.

⁸¹ Ex. 2 at 32 (Hillstrom Direct).

⁸² Tr. 1:21 (Hillstrom).

Northern Hills Substation in Rochester.⁸³ The 2P Route begins at the southern siting area, and the 2A Route begins at the northern siting area.⁸⁴ The length of this segment would be 15 to 18 miles, depending on the specific route selected, and it would pass through Goodhue and Olmsted Counties.⁸⁵ The 2P route runs between the cities of Pine Island and Oronoco; the 2A route runs around the west side of Pine Island and then southeast to the Northern Hills substation.⁸⁶

67. All route alternatives in this segment propose to parallel some portion of the Douglas State Trail.⁸⁷

68. In this segment there are 14 route alternatives, including the preferred and alternate routes. The public comment here was focused for the most part on the preferred and alternate routes. There was relatively little comment regarding the combined routes for Segments 2 and 3.

C. Segment 3 Routes.

69. In Segment 3, the 345 kV transmission line would continue from the proposed North Rochester substation, cross the Zumbro River, and terminate at a substation near LaCrosse, Wisconsin. The transmission line would cross the Mississippi River at a location near Kellogg, Minnesota, and Alma, Wisconsin. The length of this segment is 42 to 45 miles, and it would pass through Goodhue, Olmsted, and Wabasha Counties.⁸⁸

70. After filing the application, and based on input from the scoping process, the Applicant modified its original preferred route in Segment 3 to develop the Modified Preferred Route.⁸⁹ The modification shifts the preferred route approximately ½ mile to the north through a two-mile segment east of US 52 near the North Rochester Substation siting area.⁹⁰ In general, this alternative consolidates the preferred routes for the 345 kV and 161 kV lines in one corridor heading east from US 52 for two miles along the south side of 500th Street.⁹¹ At County Road 11, the 345 kV route turns south for one half mile.⁹² This consolidation would place the 345 kV and 161 kV structures adjacent to each other along 500th Street and one-half mile south on County Road 11.⁹³ Although the preferred route was modified only in Segment 3, the Applicant now refers to its preferred route generally as the “Modified Preferred Route.”

⁸³ Ex. 2 at 17 (Hillstrom Direct).

⁸⁴ *Id.*

⁸⁵ Ex. 113 at 5.

⁸⁶ *See id.* at 10.

⁸⁷ *Id.* at 3.

⁸⁸ *Id.* at 5.

⁸⁹ Ex. 2 at 11 (Hillstrom Direct).

⁹⁰ *Id.*

⁹¹ *Id.* This modification incorporates a portion of the 3P-002 route that is 1.75 miles in length.

⁹² *Id.*

⁹³ *Id.*

71. From the North Rochester Substation, both the 3P and 3A routes head east and branch off into three potential Zumbro River crossings.⁹⁴ The northern alternative for the Zumbro River crossing along the 3A route (northern crossing) does not cross the river at an existing infrastructure corridor.⁹⁵ The middle crossing is at the Zumbro Dam (Zumbro Dam Crossing), and the southern alternative along the 3P route crosses the Zumbro River at the County Road 12 bridge over the Zumbro River (White Bridge Road Crossing).⁹⁶

72. East of the Zumbro River, the three river crossing options merge into two potential routes through relatively flat agricultural land.⁹⁷

73. Northeast of Plainview, the 3P and 3A Routes share a common segment following an existing transmission line, Dairyland's Q-3 161 kV line, through the rugged wooded terrain of blufflands west of the Mississippi River and several state and federal lands including the Snake Creek Management Unit, McCarthy Lake Wildlife Management Area (McCarthy Lake WMA), and the Richard J. Dorer Memorial Hardwood State Forest (RJD State Forest).⁹⁸ The 3P and 3A Routes follow the Q-3 line for 11 miles and 9 miles, respectively.⁹⁹

74. Both the 3P and 3A Routes follow the Q-3 line corridor to the proposed Mississippi River crossing at Kellogg, Minnesota/Alma, Wisconsin (Alma Crossing).¹⁰⁰ The Applicant selected the Alma Crossing of the Mississippi River because it utilizes an existing transmission corridor, and the Alma Crossing and the associated routes minimize the length of transmission line traversing Mississippi River floodplain, Upper Mississippi River Wildlife and Fish Refuge property, and open water/wetlands.¹⁰¹

75. At the east end of the segment, there are three route options that deviate from the existing Q-3 transmission line to avoid impacts to the McCarthy Lake WMA: the McCarthy Lake route options (3P-Kellogg and 3A-Kellogg) and the Highway 42 route option (3B-003).

76. The McCarthy Lake route options are located between US 61 (the Great River Road) and the Mississippi River around the McCarthy Lake WMA.¹⁰²

77. The Highway 42 route option also avoids further impacts to the McCarthy Lake WMA and the Snake Creek Management Unit by following Highway 42 for approximately 11 miles instead of the existing Q-3 line.¹⁰³

⁹⁴ Ex. 2 at 9.

⁹⁵ *Id.* While the northern crossing is part of the 3A route east of the Zumbro River, it could be combined at a common point east of the Zumbro River with the 3P route through the 3A Crossover.

⁹⁶ *Id.*

⁹⁷ *Id.* at 10.

⁹⁸ Ex. 1 at 5-4 and 5-20.

⁹⁹ *Id.* at 5-20.

¹⁰⁰ *Id.* at 5-4.

¹⁰¹ *Id.* at 5-1.

¹⁰² *Id.* at 8-60.

78. There are 31 route alternatives within Segment 3.¹⁰⁴ Most of the extensive public comment focused on the preferred and alternate routes and some variants thereof.

D. Associated Facilities.

79. The Project includes connections at the proposed Hampton Substation, which was approved by the Commission as part of the Brookings to Hampton 345 kV Transmission Project (Docket No. E002/TL-08-1474).¹⁰⁵ At the Hampton Substation, equipment additions to accommodate the connection associated with this project will include one circuit breaker, two switches and associated bus and additional relaying in the control building.¹⁰⁶

80. The North Rochester Substation would have to accommodate interconnections with the 345 kV line and the 161 kV line that are part of this Project.¹⁰⁷ The North Rochester Substation must also accommodate interconnections with the existing Prairie Island to Byron 345 kV transmission line.¹⁰⁸ To accommodate these interconnections, the new substation will include six 345 kV circuit breakers, a 345 kV/161 kV transformer, three 161 kV circuit breakers, a control house and associated line termination structures, switches, buswork, controls, and associated equipment.¹⁰⁹

81. The minimum size parcel necessary for the initial build-out of the North Rochester Substation is approximately 20 acres. A 20-acre site would be required to accommodate a fenced area of 490 feet by 700 feet and area for setbacks, drainage, ponding, and other uses necessary for safe operation of the substation.¹¹⁰

82. The Applicant proposes to acquire 40 acres for the North Rochester Substation to provide room for the initial build out of the substation as well as possible future expansion to accommodate additional line terminations.¹¹¹

83. The Northern Hills Substation would require an expansion of approximately 0.5 acres of the graded and fenced area to accommodate the new 161 kV transmission line and related equipment.¹¹² No additional property would be required for this expansion.¹¹³ Improvements to the Northern Hills substation would include expanding the existing graded area by approximately 30 feet and adding 161 kV

¹⁰³ Ex. 2 at 14-15 (Hillstrom Direct); Ex. 113 at 151.

¹⁰⁴ See Ex. 113 at 11.

¹⁰⁵ Ex. 2 at 31 (Hillstrom Direct).

¹⁰⁶ *Id.*; Ex. 12 (Schedule 10 to Hillstrom Direct).

¹⁰⁷ Ex. 2 at 32 (Hillstrom Direct); Ex. 14 (Schedule 12 to Hillstrom Direct).

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ Tr. 3:10 (Stevenson); Ex. 91 (North Rochester Substation Concept Design).

¹¹¹ Ex. 1 at ES-7.

¹¹² Ex. 2 at 33 (Hillstrom Direct).

¹¹³ *Id.*

equipment (one circuit breaker and the associated line termination switches and controls).¹¹⁴ Construction would include the associated line switches, foundations, steel structures, and control panels.¹¹⁵

E. Proposed Route Width.

84. The Power Plant Siting Act authorizes the Commission to designate a route having a variable width of up to 1.25 miles, within which the right-of-way for the facilities can be located.¹¹⁶ The route permitting process does not establish an exact centerline but rather establishes a general alignment that best balances competing land uses and minimizes human and environmental impacts. Once the Commission establishes a route, the utility then does more detailed engineering and gathers additional information from landowners to establish an exact centerline and pole placement. A route designation should be wide enough to permit flexibility for the utility to work with landowners to adjust the final design, but should not be so wide as to make it unclear where the transmission line is meant to be constructed.¹¹⁷

85. The route is the area in which the utility is allowed to complete the final design, while the right-of-way is the specific area that is actually required for the final easement within the route. The right-of-way actually needed for 345 kV facilities is 150 feet and for 161 kV facilities is 80 feet, and less would be required when the transmission line can share right-of-way with other infrastructure such as roads or highways.¹¹⁸ In the areas where the 345 kV and 161 kV lines would run parallel to each other on separate structures (the 2C3 options), the two lines could share 30 feet of right-of-way, for a total right-of-way width of 200 feet. A 180-foot right-of-way may be necessary in some limited circumstances where specialty structures are required for long spans or in environmentally sensitive areas.¹¹⁹ When the right-of-way is shared, the Applicant must acquire the necessary approvals from the right-of-way owner or the agency with authority over it (MnDOT).

86. If MnDOT applies freeway standards to US 52, the opportunities to share highway right-of-way along the 27-mile stretch within Segment 1 will be limited.

87. The Applicant requested a route width of up to 1,000 feet for the majority of the length of the Project.¹²⁰ The Applicant has committed to working with EFP Staff to further narrow this route width after issuance of this Report.¹²¹

88. The Applicant requested a route width of up to 1.25 miles in certain locations along US 52 on the 1P Route.¹²² These locations include portions of US 52

¹¹⁴ Ex. 2 at 33.

¹¹⁵ *Id.*

¹¹⁶ Minn. Stat. § 216E.01, subd. 8.

¹¹⁷ Ex. 113 at 7.

¹¹⁸ *Id.*

¹¹⁹ Ex. 1 at 3-6 to 3-7.

¹²⁰ Ex. 1 at 2-5.

¹²¹ Tr. 1:147-48 (Hillstrom).

where MnDOT is considering building new highway infrastructure such as interchanges. The Applicant also requested a wider route width north of Cannon Falls and east of US 52 for approximately one mile where Farmland Natural Areas Program (FNAP) easements exist adjacent to the highway.¹²³

89. The Applicant also requested additional route width at the proposed North Rochester Substation siting area, to accommodate the selection of either the 3A or 3P routes heading east.¹²⁴ Here, the Applicant requested a routing area of approximately 3,600 feet wide east to west and approximately 3.75 miles long north to south.¹²⁵ The western boundary is 500 feet west of the existing Prairie Island–Byron 345 kV line and the eastern boundary is 500 feet east of the centerline of US 52.¹²⁶

90. If the Highway 42 route is selected, the Applicant also requested additional route width at the north end of the route near Kellogg.¹²⁷ Additional route width would be required here to accommodate steep wooded slopes.

F. Structure Types.

91. For the 345 kV line, Xcel Energy proposes to primarily use single pole, self-weathering steel double-circuit structures;¹²⁸ for the North Rochester to Northern Hills 161 kV line, Xcel Energy proposes to use single-pole, self-weathering steel, single circuit structures.¹²⁹

92. Single steel pole structures are typically placed on large pier foundations of cast-in place, reinforced concrete.¹³⁰

93. Specialty structures, including H-frame structures and other multiple poles, may be required in certain limited circumstances near environmentally sensitive areas when longer spans are required.¹³¹ H-frame structures consist of two steel poles with cross bracing.¹³² If soil conditions are poor, a deeper foundation, piling or other type of foundation may be required.¹³³ Two-pole structures may also be required to reduce foundation size and aid constructability when the alignment turns at a 45- to 90-degree angle.¹³⁴

¹²² Ex. 2 at 15 (Hillstrom Direct).

¹²³ *Id.*

¹²⁴ *Id.* at 16.

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ *Id.*

¹²⁸ Ex. 1 at 3-3.

¹²⁹ *Id.* at 3-8.

¹³⁰ *Id.* at 3-3.

¹³¹ *Id.* at 3-5.

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *Id.*

94. The crossing of the Mississippi River presents unique considerations that will require the use of triple circuit specialty structures. An existing 161/69 kV double-circuit transmission line crosses the Mississippi River and Refuge at the proposed crossing location.¹³⁵ The proposed triple-circuit specialty structures will be constructed to carry two 345 kV circuits and a 161 kV circuit but will be operated at 345/161/69 kV.¹³⁶

95. A portion of this crossing is on Refuge property managed by the U.S. Fish and Wildlife Service (USFWS), and a Special Use Permit from the USFWS will be required to cross the Refuge.¹³⁷

96. The Applicant and USFWS have evaluated five possible design options for the proposed river crossing that will offer trade-offs between structure height, easement width, and the number of planes of conductors while maintaining only three structures on Refuge land.¹³⁸ The Applicant and agencies have arrived at an informal and general consensus that the preferable configuration is one that minimizes structure height and consolidates crossing wires in the fewest number of horizontal planes.¹³⁹ The Applicant has committed to working closely with these agencies and EFP staff to identify the most appropriate structure design for the Alma Crossing.

97. Xcel Energy is proposing triple-circuit structures in two other areas where there are existing transmission lines: (1) on portions of the 1P Route along US 52 between Cannon Falls and Zumbrota, where there is an existing 69 kV line; and (2) on the 3P Route near Plainview where there is an existing 69 kV line.¹⁴⁰ The proposed triple-circuit structures would hold one 345 kV circuit, provide a location for a future 345 kV circuit and carry an existing 69 kV circuit underbuild.¹⁴¹ These structures would range in height from 135 to 185 feet. The triple-circuit structures would require an additional pole mid-span to support the 69 kV circuit.¹⁴²

G. Span Lengths.

98. Typical span length between structures would be 600 to 1,000 feet for the majority of the 345 kV line project.¹⁴³

99. The 161 kV structures would be spaced approximately 400 to 700 feet apart.¹⁴⁴

¹³⁵ Ex. 2 at 21 (Hillstrom Direct).

¹³⁶ Ex. 26 at 7 (Stevenson Direct).

¹³⁷ Ex. 1 at 3-3.

¹³⁸ Ex. 2 at 21-22 (Hillstrom Direct); Ex. 26 at 7-8 (Stevenson Direct).

¹³⁹ Ex. 2 at 22 (Hillstrom Direct).

¹⁴⁰ Ex. 26 at 8-9 (Stevenson Direct).

¹⁴¹ *Id.*

¹⁴² *Id.*

¹⁴³ *Id.* at 11.

¹⁴⁴ *Id.*

H. Fiber Optics.

100. The shield wires on the 345 kV and 161 kV transmission line facilities would include fiber optic cable that allows a path for substation protection equipment to communicate with equipment at other terminals on the transmission line.¹⁴⁵

I. Installation and Construction Techniques.

101. At crossings of US 52, the Applicant proposes to install conductors and insulators on both sides of the poles during initial construction to facilitate the addition of a second 345 kV circuit in the future, after approval by the Commission.¹⁴⁶ Installation of both sets of conductors will avoid future construction-related conflicts and disruptions to highway operations when the second circuit is warranted.¹⁴⁷ At crossings of US 52, the two sets of wires would be tied together and would operate as a single circuit.¹⁴⁸

102. The Applicant also requests flexibility to install both sets of conductors at the crossings of the Zumbro River in areas of difficult access.¹⁴⁹ The second set of conductors and insulators would be installed but not energized.¹⁵⁰

103. As noted above, the 3P and 3A Routes follow the Dairyland Power Cooperative's Q-3 Rochester to Alma 161 kV line for 9 to 11 miles to the Mississippi River. For these routes, the Applicant proposes installing 345 kV conductors and insulators on both circuits.¹⁵¹ The segment would be energized at 345/161 kV to carry the new line and the existing Q-3 line.¹⁵²

104. If the Highway 42 segment were selected, the route would not follow the existing Q-3 line and there would be no co-location of facilities.¹⁵³

105. To reduce the time of construction and minimize ground-disturbing impacts, Xcel Energy may use helicopters for conductor installation and some hardware installation.¹⁵⁴

106. The Applicant may use implosive connectors rather than hydraulic splices to join conductors and to dead-end hardware.¹⁵⁵ Implosive connectors use a specific controlled detonation to fuse the conductors and hardware together.¹⁵⁶ The process

¹⁴⁵ Ex. 26 at 11.

¹⁴⁶ *Id.* at 9.

¹⁴⁷ *Id.*

¹⁴⁸ *Id.* at 10.

¹⁴⁹ *Id.* at 9.

¹⁵⁰ *Id.* at 10.

¹⁵¹ *Id.* at 9.

¹⁵² *Id.*

¹⁵³ Ex. 26 at 9 (Stevenson Direct).

¹⁵⁴ *Id.* at 12.

¹⁵⁵ *Id.*

¹⁵⁶ *Id.*

creates noise equivalent to a clap of thunder or commercial fireworks, which lasts only an instant.¹⁵⁷ The implosive process provides for a specific engineered connection, which improves the strength and quality of the connections that can be a potential failure point in the transmission system.¹⁵⁸ In addition, it takes less time than installing hydraulically-compressed connectors and reduces the number of set up areas required on the ground.¹⁵⁹ This further reduces ground-disturbing activities.¹⁶⁰

107. Both of these construction techniques are currently being used to construct the CapX2020 St. Cloud to Monticello 345 kV project.¹⁶¹ The Applicant plans to coordinate with MnDOT to develop a traffic management plan to minimize interference with the operation of the highway.¹⁶²

J. Project Schedule.

108. The Applicant anticipates that it will obtain a Certificate of Public Convenience and Necessity in Wisconsin by the first quarter of 2012; that pre-construction activities will commence in the second to third quarter of 2012; that construction will take place between the third quarter of 2012 and the fourth quarter of 2015; and that the project will be completed in the fourth quarter of 2015.¹⁶³

K. Cost.

109. The Applicant initially estimated that the total cost of the project (preferred and alternate routes) would be between \$234 and \$243 million (2009 dollars). It estimated that the preferred 345 kV route in Segment 1 would be \$88 million and in Segment 3 would be \$106 million. It estimated the alternate route in Segment 1 would cost \$101 million, as would the alternate route in Segment 3. The 161 kV route in Segment 2 would cost \$16 million for the preferred route and \$17 million for the alternate route. The new North Rochester Substation is estimated to cost \$22 million, and improvements to the Northern Hills Substation would be \$2 million.¹⁶⁴

III. ROUTING CRITERIA AND FACTORS TO BE CONSIDERED.

110. State agencies are required to consider environmental factors before making decisions on the matters including the routing of high-voltage transmission lines, that potentially have significant environmental effect, and shall not make a decision that is likely to cause pollution, impairment, or destruction of a natural resource so long as there is a feasible and prudent alternative consistent with the public health, safety, and

¹⁵⁷ Ex. 26 at 12.

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ *Id.* at 13.

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ *Id.*; Ex. 113 at 8.

¹⁶⁴ Ex. 113 at 8. The cost of other route options is estimated at Finding No. 226.

welfare and the state's paramount concern for the protection of its air, water, land, and other natural resources from pollution, impairment, or destruction.¹⁶⁵

111. It is the state's policy to recognize the impact of human activity on the natural environment, and the need to balance development with restoring and maintaining environmental quality, and to attempt to make decisions that create and maintain conditions under which human beings and nature can exist in productive harmony while fulfilling the social, economic, and other requirements of present and future generations.¹⁶⁶

112. The Power Plant Siting Act (PPSA) requires the Commission to locate transmission lines "in an orderly manner with environmental preservation and the efficient use of resources" and in a way that minimizes "adverse human and environmental impact while insuring" reliability.¹⁶⁷

113. Minnesota Statute Section 216E.03, subdivision 7(b), identifies twelve factors to guide the Commission's route designations:

- (1) evaluation of research and investigations relating to the effects on land, water and air resources of large electric power generating plants and high-voltage transmission lines and the effects of water and air discharges and electric and magnetic fields resulting from such facilities on public health and welfare, vegetation, animals, materials and aesthetic values, including baseline studies, predictive modeling, and evaluation of new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment;
- (2) environmental evaluation of sites and routes proposed for future development and expansion and their relationship to the land, water, air and human resources of the state;
- (3) evaluation of the effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects;
- (4) evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants;

¹⁶⁵ Minn. Stat. § 116D.04, subd. 6; *People for Environmental Enlightenment and Responsibility (PEER), Inc., v. Minnesota Environmental Quality Council*, 266 N.W.2d 858 (Minn. 1978).

¹⁶⁶ Minn. Stat. § 116D.02, subds. 1 & 2.

¹⁶⁷ Minn. Stat. § 216E.02, subd. 1.

- (5) analysis of the direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired;
- (6) evaluation of adverse direct and indirect environmental effects that cannot be avoided should the proposed site and route be accepted;
- (7) evaluation of alternatives to the applicant's proposed site or route proposed pursuant to subdivision 1 and 2;
- (8) evaluation of potential routes that would use or parallel existing railroad and highway rights-of-way;
- (9) evaluation of governmental survey lines and other natural division lines of agricultural land so as to minimize interference with agricultural operations;
- (10) evaluation of future needs for additional high-voltage transmission lines in the same general area as any proposed route, and the advisability of ordering the construction of structures capable of expansion in transmission capacity through multiple circuiting or design modifications;
- (11) evaluation of irreversible and irretrievable commitments of resources should the proposed site or route be approved; and
- (12) when appropriate, consideration of problems raised by other state and federal agencies and local entities.

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

115. The Commission must also consider Minnesota Rules 7850.4000 and 7840.4100, which establish criteria and factors mirroring the criteria and factors established by Minnesota Statutes Section 216E.03, subdivision 7. The rule factors are as follows:

- A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;
- B. effects on public health and safety;
- C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;

- D. effects on archaeological and historic resources;
- E. effects on the natural environment, including effects on air and water quality resources and flora and fauna;
- F. effects on rare and unique natural resources;
- G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;
- H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;
- I. use of existing large electric power generating plant sites;¹⁶⁸
- J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way;
- K. electrical system reliability;
- L. costs of constructing, operating, and maintaining the facility which are dependent on design and route;
- M. adverse human and natural environmental effects which cannot be avoided; and
- N. irreversible and irretrievable commitments of resources.

IV. APPLICATION OF ROUTING CRITERIA TO THE PROJECT AS A WHOLE.

116. Analysis of some of the routing criteria does not vary by route segment or option. The criteria that do vary will be addressed in the Segment by Segment analysis that follows.

A. Effects on Human Settlement.

117. **Visual and Aesthetic Impacts.** The existing landscape across the project area varies from towns and suburban developed areas to farms and agricultural lands to forested lands and riparian and river environments. New transmission line structures, conductors, and new or expanded right-of-way would visually impact the landscape; the degree of impact depends upon the extent of corridor sharing, the

¹⁶⁸ This criterion is not applicable here because it applies only to power plant siting.

degree of shielding by terrain and vegetation, and the amount of existing human modification to the landscape.¹⁶⁹

118. In more developed urban and semi-rural areas, the transmission line structures would be visible along roads and through private lands. The lines could be constructed in ways that would lessen the potential visual impacts. These areas are already characterized by a relatively high proportion of visible human-made landscape elements. In agricultural areas, transmission line structures would likely be the tallest features of the landscape, and on clear days the poles would be visible for up to four miles. In forested areas and areas with more pronounced topography, the visibility of poles and conductors may be more limited.¹⁷⁰

119. Mitigation methods that would reduce visual impacts include selecting route alternatives that maximize right-of-way sharing with existing linear corridors (transmission lines, roads, and railroads) to minimize the proliferation of visual impacts; avoid routing through areas with high-quality, distinctive view sheds, including scenic highways, river crossings, and similar areas, where feasible; cross rivers and streams using the shortest distance possible; use uniform structure types to the extent practical, and reduce height to minimize impacts within scenic areas; and use care in construction to prevent unnecessary destruction, scarring, or defacing of natural surroundings in the vicinity of the work.¹⁷¹

120. **Noise.** Transmission lines can produce noise under certain conditions, and the level of noise depends on conductor conditions, voltage level, and weather conditions. In damp or rainy weather, transmission lines can create a crackling sound due to the small amount of electricity ionizing the moist air near the conductors. During light rain, dense fog, snow, and other times when there is moisture in the air, transmission lines would produce audible noise approximately equal to household background levels. During heavy rain, the background noise level of the rain itself is usually louder than the noise from the transmission line.¹⁷²

121. The Minnesota Pollution Control Agency (MPCA) has established standards for the regulation of daytime and nighttime noise levels for areas of residential, commercial, and industrial land use.¹⁷³

122. The primary noise-sensitive receptors in the project area are rural residences. Generally, activity-related noise levels during the operation and maintenance of transmission lines are minimal and do not exceed MPCA noise limits outside the right-of-way. The Applicant modeled worst-case scenario noise levels from the 345 kV transmission line using the Bonneville Power Administration CFI8X model.

¹⁶⁹ Ex. 113 at 41.

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

¹⁷² *Id.* at 42.

¹⁷³ *Id.*

Modeled noise levels for the 345 kV transmission line are below the applicable MPCA standards.¹⁷⁴

123. **Proximity to Structures.** The Applicant attempted to avoid residences and buildings in selecting its preferred and alternate routes. In addition, the Applicant proposed route centerlines that run along the side of the street without homes or buildings, when possible. In rural areas, there is often a trade-off between routing a transmission line down section lines in farm fields (which avoids homes and other structures) and routing down roadways (which reduces impacts to farm land but potentially increases impacts to homes). In more developed areas, impacts to residences and businesses are more difficult to avoid.¹⁷⁵

124. **Displacement.** The National Electric Safety Code (NESC) and the Applicant's standards require certain clearances between transmission line structures and buildings for safe operation of the transmission line.¹⁷⁶

125. The Applicant would require a right-of-way for the proposed transmission line sufficient to maintain those clearances.¹⁷⁷ The right-of-way requirement for a 345 kV transmission line is 150 feet, or 75 feet on either side of the route centerline.¹⁷⁸ The Applicant has defined a displacement as any occupied structure located within 75 feet of the route centerline.¹⁷⁹

126. If a potential displacement is identified in the detailed engineering phase, it would be the Applicant's policy to adjust the final alignment to avoid removing any homes. In the case of potential displacement, the Applicant has committed to use alternate alignments that would avoid the need to remove any home or business. Impacts to specific areas are analyzed for each route segment below.

127. For the 345 kV portions of the project, owners of certain types of property have the option of requiring the Applicant to purchase the entire parcel, not just the portion crossed by the transmission line (the "Buy the Farm" option).¹⁸⁰

128. In rural and agricultural areas, trees are important to protect privacy, provide shade, and provide wind protection around rural residences and farmsteads. In areas where tree cover is more abundant, trees may provide a source of economic activity, play a role in recreational activities and add to the visual and aesthetic qualities of the region. Trees also help protect wildlife corridors, particularly near water and wetland features. For the safe operation and maintenance of the transmission line,

¹⁷⁴ Ex. 113 at 42.

¹⁷⁵ *Id.* at 42-43.

¹⁷⁶ Ex. 1 at 7-7 and 8-8.

¹⁷⁷ *Id.*

¹⁷⁸ *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ Minn. Stat. § 216E.12, subd. 4.

trees of a certain size or species within the right-of-way would need to be removed. The Applicant selected its preferred and alternate routes to minimize the removal of trees.¹⁸¹

129. **Public Services.** Certain portions of the route may cross over existing transmission lines, follow existing transmission line corridors, and pass over or cross small power distribution lines. The Applicant has stated that it will work with landowners and rural utility providers to avoid these impacts and relocate facilities that may conflict with the location of the transmission line. Temporary disruptions to public services during construction may occur, but no permanent direct or indirect impacts are expected to public utilities. No direct long-term impacts are expected to any public buildings or other infrastructure.¹⁸²

B. Effects on Public Health and Safety.

130. **Electric and Magnetic Fields (EMF).** EMFs are invisible regions of force resulting from the presence of electricity. EMFs are characterized and distinguished by their frequencies, measured by the rate at which the fields change direction each second. Power lines in the United States have a frequency equivalent to 60 cycles per second (60 Hz). EMFs at this frequency level and within the range of 3 to 3,000 Hz are considered to be Extremely Low Frequency (ELF) EMFs.

131. There were several comments made during the public hearings regarding the potential impact of extremely low frequency electric and magnetic fields (ELFEMF) on public health.¹⁸³

132. *Electric Fields.* Electric fields are measured by kilovolts per meter (kV/m) and are solely dependent upon the voltage of a conductor, not the flow of electricity. The strength of an electric field decreases rapidly as the distance from the source increases. Electric fields are easily shielded or weakened by most objects and material, such as trees, buildings, and human skin.¹⁸⁴

133. The Commission has set a standard of 8 kV/m for the maximum electric field associated with a transmission line, measured at centerline and at 1 meter above ground.¹⁸⁵

134. The structure type and number of circuits carried would cause variation in the electric field in any given area. The maximum calculated electric field would be in areas where the transmission line would be configured as a single-pole 345/345 kV double-circuit with one 345 kV circuit in service. The electric field calculated for this configuration directly beneath the centerline is estimated at 3.76 kV/m, below all state

¹⁸¹ Ex. 113 at 43.

¹⁸² *Id.*

¹⁸³ Pine Island Public Hearing, June 15, 2011, 1:30 p.m. at 33-34 (Devick) and 88 (Tiedeman); Cannon Falls Public Hearing, June 16, 2011, 1:30 p.m. at 94-95 (Enedy); Cannon Falls Public Hearing, June 16, 2011, 6:30 p.m. at 68 (Reiswig).

¹⁸⁴ Ex. 113 at 31.

¹⁸⁵ *Id.*

and international electric field guidelines. This electric field strength is well within the range of electric fields generated by other common household and business sources. No adverse health effects from electric fields are anticipated for persons living or working at locations along or near the proposed project.¹⁸⁶

135. Research has established that certain electric fields can potentially interfere with implantable medical devices, such as cardiac pacemakers, implantable defibrillators, neurostimulators, and insulin pumps. Medtronic and Guidant, manufacturers of various implantable devices, have indicated that electric fields below 6 kV/m are unlikely to cause interactions. In the event that a cardiac device is impacted, the effect is typically a temporary asynchrononous pacing, and the device would return to normal operation when the person moves away. No adverse health impacts or permanent impacts on implantable medical devices are anticipated as a result of the project.¹⁸⁷

136. *Magnetic Fields.* Magnetic fields are created by the electrical current in a conductor. They are measured in milliGauss (mG). The strength of a magnetic field decreases rapidly as the distance from the source increases; however, magnetic fields are not easily shielded or weakened by objects or materials. The magnetic field varies based on the flow of electricity and experiences peaks and valleys throughout the day.¹⁸⁸

137. There are no state or federal regulations for the permitted strength of a magnetic field related to a transmission line.¹⁸⁹ Three states have established regulations or guidelines for magnetic field strength at the edge of the right-of-way; in Florida, the range is 150 mG to 250 mG, depending on the voltage of the transmission line; in Massachusetts, the maximum is 85 mG; and in New York, the maximum is 200 mG. Various industry organizations have also issued recommendations ranging from 830 to 9,040.¹⁹⁰

138. In the Application, Applicant provided estimated magnetic field levels for system intact, peak and average loading for the year 2015 when the Project would be in-service and for 10 years later, in 2025.¹⁹¹ The highest system intact flow reported in the Application was 248 MVA, along the North Rochester to Mississippi River segment.¹⁹²

139. The maximum calculated magnetic field at the centerline of the project for expected normal conditions would be in areas where the transmission line would be configured as a single-pole davit arm 345/345/69 kV triple-circuit with one 345 and one 69 kV circuit in service (2025, peak). The magnetic field for this configuration directly

¹⁸⁶ Ex. 113 at 32-33.

¹⁸⁷ *Id.* at 37.

¹⁸⁸ *Id.* at 33.

¹⁸⁹ *Id.*

¹⁹⁰ *Id.* at 35.

¹⁹¹ Ex. 1 at Table 3.6-2; Ex. 24 at 3 (King Direct).

¹⁹² Ex. 24 at 4 (King Direct).

beneath the transmission centerline is estimated at 71.85 mG. At the edge of the right-of-way, in a 345-345 kV double-circuit configuration with one 345 kV circuit in service for expected normal conditions, the magnetic field is estimated at 17.44 mG (2015 peak; 2025 peak).¹⁹³

140. The maximum calculated magnetic field at the centerline of the project, under the highest anticipated loading conditions at some point in the future (assuming 600 MVA loading) would be in areas where the transmission line would be configured as a single-pole davit arm 345/345 kV double-circuit with both circuits in service (peak). The magnetic field for this configuration directly below the centerline is estimated at 260.78 mG. At the edge of the right-of way, in a 345/345 kV double-circuit configuration with both circuits in service (peak), the magnetic field is estimated at 47.43 mG.¹⁹⁴

141. Epidemiological and toxicological studies have shown only weak associations between magnetic field exposure and health risks, and none has established a causal relationship.¹⁹⁵

142. The above magnetic field calculations fall below all international guidelines, and, within the limits of current research, no adverse public health effects from magnetic fields are anticipated for persons living or working at locations along or near the proposed project.

143. Strategies to mitigate EMF exposure include maximizing the distance between the transmission line and residences, structure design, and arrangement of phase conductors. The Applicant could consider these options during the detailed project design phase.¹⁹⁶

144. **Stray Voltage.** Stray voltage is an extraneous voltage that appears on grounded surfaces in buildings, barns, and other structures. It is normally an issue associated with electric distribution lines and is a condition that can exist between the neutral wire of a service entrance and grounded objects in buildings. Transmission lines do not, by themselves, create stray voltage because they do not connect to businesses or residences. They can, however, induce stray voltage when a distribution circuit is parallel and immediately under the transmission line. In such a case, the induced voltage would occur only in the immediate vicinity of the distribution circuit and does not travel along the transmission or distribution line.¹⁹⁷ Site-specific mitigation measures could include cancelling stray voltage through arrangement of phase conductors and bonding of distribution neutral and transmission shield wires, separating the distribution and transmission facilities, or providing enhanced grounding.¹⁹⁸

¹⁹³ Ex. 113 at 34-35.

¹⁹⁴ *Id.* at 35.

¹⁹⁵ Ex. 1 at 3-20 and 3-21. One member of the public submitted a calculation estimating that the magnetic field would be higher (Ex. 88); there is insufficient evidence, however, to support the loading assumptions used in the calculation. Tr. 1:185 (King); Ex. 113, App. O, p. O-151.

¹⁹⁶ Ex. 113 at 37.

¹⁹⁷ *Id.* at 37-38.

¹⁹⁸ *Id.*

145. **Electronic Devices.** Corona (the breakdown and ionization of air within a few centimeters of conductors and line hardware) generates electromagnetic “noise.” This noise can interfere with AM radio frequency directly under a line, but interference dissipates rapidly to either side. FM radio receivers usually do not pick up interference with transmission lines. The steel transmission poles could potentially block two-way mobile radio communications if the towers were directly between two mobile units. As a person moves away from the tower, however, the blocking would decrease.¹⁹⁹

146. Digital and satellite television broadcast and radio frequencies are high enough that they are relatively immune to corona-generated noise. Reception can be impacted, however, by tower placement. If a tower is close to a receiving antenna, it might be necessary to install an outdoor antenna to resolve the reception issue. With satellite systems, line of sight can be restored by moving the satellite dish to a slightly different location.²⁰⁰

147. Wireless internet and cell phones use frequencies in the 900 MHz ultra-high frequency range, which are high enough that corona noise impacts would be negligible. The towers themselves might block signal, but that effect could be reduced by moving so the tower is not in the direct line of sight.²⁰¹

148. Noise from transmission lines is not an issue for microwave communication corridors, but tower structures could obstruct the beam path. The Applicant will conduct a microwave beam path analysis after a route is selected and the design has been finalized.²⁰²

149. GPS-based navigation systems collect and coordinate data from at least four satellites at any one time. Positioning of the satellites and signal strength are the key factors that determine the accuracy of the GPS. Research in 2002 showed that GPS signals rarely experience interference from overhead transmission lines, but towers may block a view from a satellite if the GPS, tower, and satellite are aligned.²⁰³

150. Potential impacts from transmission line corona could be mitigated by design and construction directed at minimizing insulation gaps and sparking that cause corona discharges.²⁰⁴

151. **Construction Activities and Equipment.** The construction and operation of the transmission line are not anticipated to impact public health and safety because proper safeguards would be implemented for construction and operation of the line.²⁰⁵

¹⁹⁹ Ex. 113 at 55.

²⁰⁰ *Id.*

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ *Id.* at 55-56.

²⁰⁴ *Id.* at 56.

²⁰⁵ Ex. 1 at 7-26 and 8-20; Ex. 113 at 38.

152. The Project will be designed according to local, state, NESC, and CapX2020 standards regarding clearance to ground, clearance to crossing utilities, clearance to buildings, strength of materials, wind and ice loadings, and right-of-way widths.²⁰⁶

153. The proposed 345 kV transmission line would be equipped with protective devices to safeguard the public in the event of an accident, or if the structure or conductor falls to the ground. The protective devices are breakers and relays located where the transmission lines connect to the substation.²⁰⁷ The protective equipment would de-energize the transmission line should such an event occur. In addition, the substation facilities would be properly fenced and accessible only to authorized personnel.²⁰⁸

154. Applicant's transmission structures are designed to meet or exceed the requirements set by the NESC and to withstand extreme wind and weather conditions normally experienced in their area of installation.

155. **Environmental Contamination.** During construction, the project could potentially encounter existing soil and groundwater contamination that would be a potential safety and health concern. The MPCA database of leaking underground storage tanks and Master Entity System (MES) locations shows no contaminated sites within 75 feet of any of the route alternatives. There are some located within 500 feet of a route alternative, and health risks associated with these sites can be minimized by avoiding them.²⁰⁹

C. Effects on Property Values.

156. In public comments and public hearings, many persons expressed concern about the potential effect of high-voltage transmission lines on the value of their property. People expressed concern that, regardless of the scientific evidence, the public in general may be less likely to purchase property adjacent to a transmission line. They also expressed concern about potential aesthetic impacts affecting price, and the potential to interfere with the operation of farming equipment and foreclose the opportunity to consolidate farmlands or develop the land for another use.

157. Research has not identified a clear cause-and-effect relationship between property value and the proximity of an HVTL. Some researchers have concluded that proximity to transmission lines results in little (2% to 10%) to no effect on property value, and in some instances, increases in property value were found. It is difficult to predict how a specific transmission line would affect the value of specific properties. The best mitigation strategy is to avoid residences to the extent possible during route selection.

²⁰⁶ Ex. 1 at 7-26, 8-20 and 8-21.

²⁰⁷ *Id.*

²⁰⁸ *Id.*

²⁰⁹ Ex. 113 at App. H, I & J.

After a route is selected, the Applicant has committed to working with property owners to determine the maximum feasible distance between the transmission line and residences.²¹⁰

158. An additional potential adverse effect of transmission lines on adjacent properties is the ability to obtain Federal Housing Administration (FHA) and Housing and Urban Development (HUD) loans). The current HUD guidebook provides that for property located within an HVTL easement, the lender must obtain written verification that any improvements are not located within the engineered fall distance of a pole. If property improvements are located outside the easement, the property is eligible for HUD loans, but an appraiser must comment on the effect on marketability resulting from proximity to hazards and nuisances.²¹¹

159. No residences may be located within the easement area of this project; however, HUD appraisal value could affect loan values if the appraiser believes a residence is so close to the line that it could be considered a hazard or nuisance. This concern can be mitigated if the Applicant works with landowners to avoid placing pole structures near residences located within the “fall zone” of a pole.²¹²

D. Effects on Land Use.

160. The proposed routes cross through Dakota, Goodhue, Olmsted, Rice, and Wabasha Counties. The predominant land use is agricultural land (86.4%), primarily planted row crops such as corn and soybeans, with some substantial areas of open pasture and agricultural grassland. Other major land uses/land covers include woody vegetation areas (9.4%), developed lands (2.8%), and open water and wetland areas (1.4%).²¹³

161. Portions of the project are in areas of southeastern Minnesota that have karst topography, with features such as sinkholes, stream sinks, or springs. There is a “sinkhole plain” approximately five miles south of Cannon Falls and also east of Oronoco near the Zumbro River. Areas with active karst (less than 50 feet of sediment cover over bedrock) and mapped karst features will be evaluated during the design of the pole foundations.

162. Because the proposed project would result in minimal grading and the pole foundations are relatively small, the project will minimally change surface conditions and is not expected to impact surface or groundwater hydrology. Areas with greater topography or slope could increase the risk of erosion and runoff. Pole placement can be adjusted so that construction does not disrupt drainage patterns or potentially unstable soils.

²¹⁰ Ex. 113 at 38-41.

²¹¹ *Id.* at 40-41.

²¹² *Id.*

²¹³ *Id.* at 44.

163. Land use along the selected route is not expected to change as a result of construction and operation of the transmission line. Most of the land under or adjacent to the line could still be used for agricultural purposes. The use of custom-designed structures specific to the area could be considered to reduce the visual or other impacts. In addition, vegetation that would be removed could be restored after construction of the facilities, to the extent allowed by vegetation restrictions. Substations could also be designed to reduce visual impacts.²¹⁴

164. The transmission line would potentially impact and conflict with some local land-use plans. Those impacts will be described in the following sections.

165. The Applicant has made significant efforts to avoid crossing or impacting center-pivot irrigation systems and has committed to working with landowners to minimize impacts to farming operations. Temporary impacts to farmland include soil compaction and likely some crop damage within the right-of-way, for which landowners would be compensated.²¹⁵

166. The primary method to reduce land use impacts is to follow existing right-of-way as much as possible.²¹⁶

E. Effects on Land-Based Economies.

167. **Agriculture.** As noted above, approximately 86% of the project area consists of agricultural land, and the majority of land-based economic impacts would be to agriculture. Approximately 54.2% of the agricultural land within the project area is classified as prime farmland. Principal crops are corn, soybeans, alfalfa, oats, and spring wheat. Farms in the area also raise livestock, primarily dairy cattle, beef cattle, and hogs.²¹⁷

168. The project area includes several organic farms that could be crossed by a selected route alternative. Under current US Department of Agriculture (USDA) requirements, high-voltage transmission lines do not affect organic certification status. Special procedures must be followed during construction and maintenance activities, however, to avoid impacts to organic farms. The use of herbicides and pesticides could invalidate the certification of an organic farm.²¹⁸

169. The project would result in permanent and temporary impacts to farmland. Permanent impacts would occur as a result of structure placement along the route centerline. Permanent impacts are estimated to be 55 square feet per pole; temporary impacts due to soil compaction and crop damage within the right-of-way are estimated to be one acre per pole for construction activities, five acres for every 25 miles for

²¹⁴ Ex. 113 at 44.

²¹⁵ *Id.*

²¹⁶ *Id.*

²¹⁷ *Id.* at 45.

²¹⁸ *Id.*

equipment staging areas, and 1,600 square feet every two miles for spooling locations.²¹⁹

170. Livestock could be temporarily impacted during construction if there is reduced access to pasture lands and exposure to construction noise. Impacts due to stray voltage may occur if this voltage is not properly mitigated.

171. Center pivot irrigation systems are present within the right-of-way of several route alternatives. The Applicant would have to take measures to reduce impacts to irrigation systems and restore temporary roads to pre-construction conditions.

172. It is the policy of the state to preserve agricultural land and conserve its long-term use for the production of food and other agricultural products by guiding the orderly construction and development of energy generation and transmission systems and enhancing the development of alternative energy to meet the needs of rural and urban communities and preserve agricultural land to the greatest possible extent by reducing energy costs and minimizing the use of agricultural land for energy production facilities.²²⁰

173. Impacts to agricultural lands can be mitigated by sharing existing road and highway rights-of-way to the extent possible. Potential impacts would also be addressed by a permit condition requiring use of an agricultural impact mitigation plan (AIMP), a plan developed in collaboration with the Minnesota Department of Agriculture.²²¹ This plan describes how the project would address repair of damaged drain tiles, removal of construction debris, and restoration of topsoil to pre-construction conditions, among other things.

174. **Forestry.** The route alternatives are located primarily in cultivated land and grassland with some forested areas adjacent to farmsteads, waterways, and within lands managed by the DNR.²²² The DNR has several forest stands within Segment 3; however, timber harvest plans are not currently available. There are two known private, small-scale tree farms in Segment 3. Impacts to these farms could be minimized by avoiding them.²²³

175. **Mining.** The project area includes some commercial mining, primarily aggregate resources and some limestone quarries. There are no active mineral-based mining operations within the right-of-way of any route alternative studied, although there are areas not currently mined that may be used in the future. In most cases, impacts to

²¹⁹ Ex. 113 at 45.

²²⁰ Minn. Stat. § 17.80, subd. 1(h).

²²¹ The Applicant's proposed AIMP is in Ex. 113 at App. E.

²²² Ex. 113 at 46.

²²³ *Id.*

the existing or planned use of areas suitable for mining can be avoided by routing around mining operations and resources.²²⁴

F. Effects on Cultural Resources.

176. Cultural resources include archaeological and historic artifacts and features. Construction of transmission lines can potentially damage archaeological artifacts or alter the view or character of historic resources.

177. The State Historic Preservation Office (SHPO) maintains records of known cultural resources throughout the state. Review of those records reflects that there are 15 archaeological sites and more than 110 historical sites within one mile of the preferred route, and similar numbers are located within one mile of the various route alternatives considered. The impacts due to specific routes are addressed below.

178. Sites listed on the National Register of Historic Places must be avoided to the extent required by federal regulations. The USDA Rural Utilities Service (RUS) has begun work on areas within its jurisdiction in anticipation of a permit application for this project. The Applicant has committed to working with the SHPO to develop a work plan to address impacts to sites that have not been evaluated for significance or eligibility for inclusion on the National Register of Historic Places.

179. The Applicant intends to develop a survey methodology in consultation with the RUS, the U.S. Army Corps of Engineers, and the SHPO to document cultural resources within the project area. During the project engineering phase, the Applicant would seek to avoid the resources or minimize impacts as provided in the plan, and those best practices would be incorporated into construction bid documents.

180. In preparing the FEIS, the EFP unit also consulted the Minnesota Geological Survey to identify key fossil collection sites in the project area. Operation of the transmission line is not expected to impact fossils or fossil collection activities at these sites; during construction and maintenance, disturbances to these areas can be minimized through proper placement of towers. For the most part, the potentially affected sites could be spanned, or the alignment could be moved to the opposite side of the road to minimize impacts.²²⁵

G. Effects on the Natural Environment.

181. **Water Resources.** Numerous surface water resources including lakes, rivers, streams, wetlands and floodplains will be crossed by or located in the right-of-way of the proposed 345 kV routes. All lakes and watercourses could be spanned, and transmission structures would not be placed within them. Crossings of the Cannon,

²²⁴ Ex. 113 at 46.

²²⁵ *Id.* at 56-57.

Zumbro, and Mississippi Rivers may impact views, birds, and other ecological resources in those areas. Some wetlands would be directly impacted.²²⁶

182. In Segment 1, all route alternatives would cross the Cannon River. The 1P route alternatives would cross near Cannon Falls, while the 1A route alternatives would cross near Randolph.

183. In Segments 2 and 3, several of the route alternatives would require crossing DNR-designated trout streams, which have special restrictions designed to protect and enhance trout resources.

184. In Segment 3, each route alternative would cross the Zumbro River. There are three options for this crossing: the 3P crossing is at White Bridge Road, and the 3A crossing is at the Zumbro River, 2.2 miles north of the Zumbro River Dam. In addition, a crossing at the Zumbro River Dam (3P-Zumbro-N or 3P-Zumbro-S) was proposed in the scoping process.

185. In Segment 3, all route alternatives would cross the Mississippi River near Kellogg, Minnesota.²²⁷

186. A DNR permit would be required to cross any public waters of the state. In addition, portions of the Cannon River in the vicinity of the project area are designated as Recreational and Scenic; a transmission line crossing of these resources must follow existing corridors whenever possible, and a permit would be required for any crossing.²²⁸

187. A permit from the U.S. Army Corps of Engineers would be required for crossing the Mississippi River. Other permits may be required from the DNR, the MPCA, or local government units for impacts to impaired waters and wetlands. Both Lake Byllesby and Lake Zumbro are on the PCA list of impaired waters due to excess nutrients/eutrophication.²²⁹

188. No impacts to floodplains are expected from the project, although counties or municipalities along the Mississippi River might require the Applicant to obtain floodplain permits. The number of structures in floodplains can be minimized by using taller or stronger structures that can span longer distances.²³⁰

189. The project's temporary impacts could include some sedimentation reaching surface waters during construction due to ground disturbance by excavation, grading, construction traffic, and dewatering of holes drilled for transmission structures, which could temporarily degrade water quality due to turbidity. Impacts to water

²²⁶ Ex. 113 at 53.

²²⁷ *Id.* at 54.

²²⁸ *Id.*; see Minn. R. 6105.0180.

²²⁹ Ex. 113 at 53.

²³⁰ *Id.* at 54.

resources can be managed through the sediment control practices and best management practices typically required by a state stormwater permit and National Pollutant Discharge Elimination System (NPDES) construction permit.²³¹

190. Permanent impacts to wetlands and drainage systems can be avoided by spanning wetlands and drainage systems, where possible. When it is not possible to span a wetland, impacts can be avoided by scheduling construction when the ground is frozen or using other construction techniques such as swamp mats. Permitting authorities would require that any wetlands impacted either temporarily or permanently would have to be restored or replaced.²³²

191. **Air Quality.** Air emissions associated with the operation of transmission lines are limited to production of a small amount of ozone and oxides of nitrogen. In addition, sulfur hexafluoride is an inorganic, colorless, odorless, non-toxic, and non-flammable gas used in substation transformers and other electrical equipment. The operation of the transmission lines would not create any potential for the concentrations of these pollutants to exceed ambient air standards. In addition, the Applicant participates in a program to actively reduce emissions from substation equipment.²³³

192. Construction of the project would result in minor short-term air quality impacts from the operation of heavy-duty construction equipment and fugitive dust due to travel on unpaved roads and excavation of transmission structure foundations. Due to the short-term nature of the construction activities, local impacts on air quality are expected to be minor. Construction of the project is not expected to have any long-term or regionally significant impacts on air quality.²³⁴

193. **Flora.** The project is located in southeast Minnesota, where the North American eastern deciduous forest begins to transition into the North American central prairie. Most of the historic prairie has been converted or fragmented to support agriculture and development, and most of the vegetative cover in the project area currently is dominated by agricultural cropland. The dominant crop species in the project area include corn and soybeans. In grazed areas, dominant vegetation includes introduced grasses, such as smooth brome and sorghum. Many woodland trees were also removed during the conversion to agriculture. Grasslands, including pastures and prairie remnants, are also commonly present. Forested cover is more prevalent in the eastern half of Segment 3.²³⁵ These impacts are more specifically described for each route below.

194. The project would cause direct, indirect, temporary, and permanent impacts to vegetation communities. Site preparation and installation of poles may temporarily impact approximately 0.5 acre of habitat at each structure location. Except

²³¹ Ex. 113 at 54.

²³² *Id.* at 54-55.

²³³ *Id.* at 61-62.

²³⁴ *Id.* at 62.

²³⁵ *Id.* at 47-48.

for the final footprint, most of the disturbed area at each structure would be restored and allowed to re-vegetate naturally. Temporary impacts could also be caused by grading, excavation, and soil stockpiling.²³⁶

195. Permanent vegetative changes would take place at each pole footprint (55 square feet) and within the right of way in forested communities. Only trees or stands that would interfere with safety and equipment would be removed. Co-locating with existing corridors through wooded areas would reduce the impact to trees on the river valley bluffs. After the right-of-way is established, vegetation is managed with a prescribed management plan that includes mechanical means and herbicides to keep the area clear of vegetation that would interfere with operation of the line. Vegetation that does not interfere with the safe operation of the transmission line would be allowed to re-establish in the right-of-way.²³⁷

196. Most of the route options for this project use existing right-of-ways, including roads and agricultural field lines. Accordingly, impacts to native vegetation are not anticipated to substantially disrupt vegetative community quality or function. Impacts to areas containing native vegetation communities could be mitigated by spanning these areas or by using the fewest possible structures. All areas disturbed by construction would be re-seeded using a native seed mix appropriate to the site.²³⁸

197. **Fauna.** Construction of the project would result in impacts to wildlife and wildlife habitat. The project area provides key habitat for 166 Species of Greatest Conservation Need (SGCN). These are species that are rare, declining, or vulnerable in Minnesota. All three route segments pass through these key habitats. Construction and maintenance of the transmission lines could potentially cause loss of SGCN habitat or fragmentation of habitat.²³⁹

198. One of the largest and most important areas for wildlife habitat within the project area is the Upper Mississippi River National Wildlife and Fish Refuge (Refuge), established in 1924. The Refuge extends 261 miles beginning near Wabasha, Minnesota, and ending near Rock Island, Illinois. An estimated 40 percent of the nation's waterfowl pass through the Refuge during annual migration, most using the North American Mississippi Migratory Flyway, which passes over the eastern end of the project and over the Refuge. This flyway is also used by numerous species of perching birds, larger birds of prey, and wading birds.²⁴⁰

199. Birds are at risk of electrocution when they perch on a transmission structure and make contact with a conducting wire. The Applicant proposes using long insulators, which would hold the wire out of reach of any birds perching on the structure, and has designed the structures in accordance with guidelines issued by the Avian

²³⁶ Ex. 113 at 48.

²³⁷ *Id.*

²³⁸ *Id.*

²³⁹ *Id.* at 48-50.

²⁴⁰ *Id.* at 48-49.

Powerline Interaction Committee (APLIC). The risk of avian electrocution is anticipated to be minimal; but the EFP recommends that the Applicant review the upcoming edition of APLIC best practices and make any structure design revisions as appropriate.²⁴¹

200. Birds also risk collision with transmission lines. These risks are highest with spans or structures located near rivers and wetlands. The incidence of collisions is also influenced by the number of horizontal planes in which the conductors are strung. Stringing the wires in a single horizontal plane presents less of a vertical barrier, but generally requires a wider configuration of structures and requires more right-of-way. The Applicant, in collaboration with the USFWS, the Minnesota DNR, and the Wisconsin DNR, has proposed several potential structure configurations for the Mississippi River crossing to minimize avian and general wildlife habitat impacts. After the line is constructed, bird flight diverters can be used to mark the lines to increase visibility and decrease collisions.²⁴²

201. Route alternatives that follow existing transmission line routes, roads, or field and property lines would require less clearing of potential wildlife habitat than those that follow new alignments. Alternatives that require new corridors would create new collision hazards for birds.²⁴³

202. One temporary impact associated with construction is displacement of animals due to physical disturbance of their habitat. Based on the availability and suitability of other unaffected and similar habitat within and near the project area, these potential temporary impacts are not expected to cause a change in listing status or a detectable permanent change in local populations.²⁴⁴

203. Permanent impacts—habitat loss and fragmentation—occur primarily when a new transmission line bisects large forest tracts that provide habitat for woodland species. Routes that tend to follow existing corridors, such as roads, existing transmission lines, and field lines, reduce the potential for substantial habitat loss and fragmentation. If clearing in forested areas is limited to only those trees necessary to permit the passage of equipment and to maintain the appropriate cleared right-of-way width, wildlife impacts would be reduced.²⁴⁵

204. Several route alternatives in all three segments of the transmission line pass through or near an area in which an adult deer infected with chronic wasting disease (CWD) was harvested in 2010. This location was three miles from an elk farm located between Pine Island and Oronoco that was depopulated in 2009 when an infected elk was discovered. CWD is spread by a disease agent called a prion, an abnormal form of cellular protein that animals can shed through body fluids. Prions bound to soil particles can remain in the ground and may remain infectious for up to two

²⁴¹ Ex. 113 at 52.

²⁴² *Id.*

²⁴³ *Id.*

²⁴⁴ *Id.* at 50.

²⁴⁵ *Id.* at 50-51.

years. The DNR recommends avoiding construction work within the fence of the Elk Run Development and use of best management practices, including the removal of soil from construction equipment used in the area, to minimize the risk of spreading CWD.²⁴⁶

H. Effects on Rare and Unique Natural Resources.

205. A number of plants and animals have been identified within one mile of the project area and within certain route rights-of-way as being state-endangered, state-threatened, state special-concern species, non-status tracked species, federally endangered species, or federally threatened species. The largest number of rare species, by far, was identified in Segment 3. These effects will be discussed in more detail below.²⁴⁷

I. Use of Parallel or Existing Right-of-Way.

206. When a transmission line is placed across private land, a right-of-way agreement (easement) is typically required. The Applicant intends to locate poles as close to property division lines as possible to reduce the amount of right-of-way required from any one property owner.²⁴⁸

207. When a transmission line parallels roads, railroads, or other transmission lines, the easement required of a landowner may be narrowed. Along roadways, for example, the general practice is to place poles on the adjacent private property, a few feet inside the existing road right-of-way. This narrows the amount of land required for an easement.²⁴⁹

208. Siting transmission lines along existing rights-of-way can minimize the proliferation of new utility corridors and impacts to private landowners; however, the Applicant must obtain approval to share the right-of-way from the owner or agency overseeing it, such as MnDOT. The requirements of MnDOT's Utility Accommodation Policy vary depending on whether the utility is crossing a highway or being installed parallel to it. For controlled access freeways, MnDOT's policy is to preclude installation of any new utility facilities longitudinally within the right-of-way, except in special cases under strictly controlled conditions.²⁵⁰ This means that the transmission structure—including the poles and davit arms—must be completely outside the freeway right-of-way. For this project, it would mean placing a pole approximately 20 to 25 feet outside the right-of-way.²⁵¹

²⁴⁶ Ex. 113 at 51; DNR letter to Matt Langan (Apr. 29, 2011).

²⁴⁷ Ex. 113 at App. F.

²⁴⁸ Ex. 113 at 17.

²⁴⁹ *Id.*

²⁵⁰ *Id.* Exceptions require approval by the Federal Highway Administration, and the requirements of the National Environmental Policy Act would be applicable to this process.

²⁵¹ *Id.*

J. Undergrounding.

209. Undergrounding may be feasible for some low-voltage transmission lines, but it is a complex and expensive option for high-voltage transmission lines. Additional equipment is required to compensate for voltage rise along the distance of the transmission line, which translates to a higher overall cost, limits the length of the installation, and increases the likelihood of failure due to additional components. Cooling equipment might be required at underground transmission line substations, which increases noise levels above ground. In general, there are three major types of underground transmission facilities: high- and low-pressure oil-filled systems, solid dielectric systems, and compressed gas insulated systems. These systems may require the installation of additional cables to meet the equivalent capacity requirements of an overhead line. Because of these challenges, undergrounding is a practice generally used only when there is no viable overhead corridor and for very limited distances.²⁵²

210. An underground transmission line is expected to cost up to ten times more per mile compared to the construction of an overhead line, due to time, materials, process, and the use of specialized labor. Unstable slopes, hazardous material sites, wetlands, and bedrock must be avoided. The Applicant prepared a feasibility study of undergrounding the 1.3-mile segment under the Mississippi River near Kellogg, Minnesota. The estimated cost was \$90 million, or approximately \$70 million per mile for a single-circuit 345-kV line, compared to approximately \$12 million per mile for a triple-circuit overhead crossing.²⁵³

211. The Applicant has engaged in extensive discussions with the USFWS regarding the crossing of the Mississippi River. At one time, the USFWS encouraged exploration of an underground crossing; now, however, the agency's design preference is for an overhead crossing that removes the existing Q-3 line and builds new structures that have fewer planes of conductors in order to minimize the potential for bird impacts.²⁵⁴

K. Effects on Transportation and Public Services.

212. Transmission lines must be located in a manner that does not present safety hazards to highway users, and the design considerations for safe pole placement are addressed by the American Association of State and Highway Transportation Officials (AASHTO) for low-volume local roads and by MnDOT for higher-volume roads. The placement of transmission poles will avoid any permanent safety impacts to traffic use and travel, but could create long-term impacts to travelers along scenic roadways.²⁵⁵

²⁵² Ex. 113 at 18.

²⁵³ *Id.* at 18, 29.

²⁵⁴ Tr. 1:37-38 (Hillstrom).

²⁵⁵ Ex. 113 at 57-58.

213. Federal law prohibits new utility installations on highway right-of-way or other lands that are acquired or improved with Federal aid or direct Federal highway funds and that are located within or adjacent to areas of scenic enhancement and natural beauty, with exceptions granted in certain limited circumstances. Areas of scenic enhancement include park and recreation lands, wildlife and waterfowl refuges, and historic sites. In Segment 3, all routes cross the Great River Road National Route (US Highway 61) near Kellogg. This road parallels the Mississippi River from Lake Itasca to the Gulf of Mexico. Two of the route alternatives would parallel US 61 for approximately 1.3 miles. Construction of the transmission line could affect the visual aesthetic of travel along this road.²⁵⁶

214. Temporary impacts associated with equipment and material delivery during construction and maintenance of the project are likely. In addition, in areas where transmission lines cross a freeway, temporary traffic barriers will need to be installed to protect the area where work will take place. Temporary lane closures will likely be required in both directions. If implosive charges are used to splice the wire, there will be a need for careful monitoring and management of traffic. MnDOT has emphasized that managing traffic impacts along Highway 52 in particular will require significant planning and coordination among many groups, including the Applicant, the Department, the Highway Patrol, and local highway and law enforcement. In addition, MnDOT has stressed that the Applicant should bear the financial responsibility for costs such as renting equipment and the labor costs for off-duty Highway Patrol officers needed to supervise traffic control procedures.²⁵⁷

215. In the long term, transmission line pole placement might impact future road construction projects, such as widening a roadway, adding a turn lane, or adding an overpass or interchange. The Applicant plans to place utility poles outside the public right-of-way to avoid the cost of moving the poles in the future, should that be required for a road construction project. In Segment 1 along US 52, there are several areas where roadway changes are likely to occur in the future. The primary method of mitigating impacts to future projects is through coordination with roadway authorities.²⁵⁸

216. Some portions of the proposed routes parallel existing railroad corridors, and some route alternatives would require crossing railroad corridors. When an HVTL is located near a railroad, tracks and signals may be subjected to electromagnetic interference with signals and switches. If modeling suggests this type of impact may occur, the Applicant would need to work with the railroad to design and install mitigating equipment. Few impacts are anticipated because of the relatively small number of crossings and the short distances of parallel alignment with railroad corridors.²⁵⁹

217. There are two airports within one mile of at least one route alternative: Stanton Airfield, an FAA non-primary commercial service, reliever, and general aviation

²⁵⁶ Ex. 113 at 58.

²⁵⁷ *Id.* at 58-59.

²⁵⁸ *Id.* at 59.

²⁵⁹ *Id.*

airport; and the Lake Zumbro Seaplane Base, a private airport. Neither airport requires precision guidance systems for land approach. Regulatory obstruction standards apply only to airports that are available for public use. If a route is selected that is near an airport, the Applicant would file all necessary notices with the FAA and MnDOT to identify mitigation measures and ensure compatibility with air navigation stations and equipment.²⁶⁰

L. Effects on Recreation.

218. No state or federal parks are located within the project area, but there are a variety of outdoor recreational opportunities, including snowmobiling, biking, hiking, canoeing, boating, fishing, camping, swimming, hunting, and nature observation. Recreational areas within the project area consist of rivers, lakes and streams, trails, public and private recreation areas, scenic byways, wildlife management areas (WMAs), and scientific natural areas (SNAs).²⁶¹ Impacts that are specific to each route will be discussed below.

219. The primary means of mitigating impacts to recreational resources is to avoid them through prudent routing. Impacts could be minimized by spanning resources that cannot be avoided. Indirect impacts may result from changing the viewshed of recreational areas; these impacts can be minimized by choosing route alternatives that intersect the resource at an angle, as opposed to paralleling the resource.²⁶²

M. Application of Various Design Considerations.

220. The entire length of the 345 kV transmission line will be constructed with 345 kV double circuit capable poles so that a second 345 kV circuit could be strung when the Commission deems it necessary. This includes location where the 345 kV transmission line is co-located with a lower voltage line; both sides will be constructed at 345 kV standards, although the lower voltage side will only be operated at the lower voltage until an increase in voltage is justified. This will allow for maximizing the use of existing right-of-way and minimizing the construction time for a new circuit when circumstances merit expansion. In addition, constructing the lower voltage line to 345 kV standards will minimize impacts to sensitive areas as they will not need to be accessed for the stringing of new conductor when conditions justify increasing the voltage of the lower voltage line.²⁶³

221. The Applicant also proposes to install six conductors during initial construction at highway crossings and interchanges to facilitate the addition of the second circuit in the future. Initial installation of six conductors will minimize

²⁶⁰ Ex. 113 at 59.

²⁶¹ *Id.*

²⁶² *Id.* at 61.

²⁶³ Ex. 26 at 4-5, 9 (Stevenson Direct).

construction-related conflicts with the existing transmission line and disruptions to highway facilities at the time when the second circuit is added.²⁶⁴

222. Where the 3P and 3A routes would follow the Q-3 line to Alma, the Applicant proposes installing 345 kV conductors and insulators on both circuits. The segment would be energized at 345/161 kV to carry the new line and the existing Q-3 line.²⁶⁵

223. At such time as deployment of a second 345 kV circuit is warranted, the Q-3 line would need to be routed to a new 345/161 kV substation located in the Plainview area to maintain community service reliability. In addition, a new 345/161 kV substation may be required near Alma to maintain outlet capability of Dairyland Power Cooperative's generating plant.²⁶⁶

224. The new substations described above would not be required when a second circuit is added if the project were constructed along the Highway 42 Route Alternative (3B-003).²⁶⁷

N. Electrical System Reliability.

225. The purpose of the project is to (1) improve community reliability of the transmission system in Rochester, Winona, La Crosse, and the surrounding areas; (2) improve the regional reliability of the transmission system; and (3) increase generation outlet capacity.²⁶⁸ The Commission has determined that the project is needed and has granted a Certificate of Need, as described above.

O. Cost.

226. When all significant route options are considered (not just the preferred and alternate routes), the Minnesota portion of the Project is estimated to cost between \$229 million and \$253 million (in 2009 dollars), depending on the route selected. These estimates include survey, engineering, materials, construction, right-of-way, and project management associated with the transmission line and substations, and the estimates are dependent, in significant part, on the design of the transmission line facilities.²⁶⁹

227. The Applicant has combined the cost information for the 345 kV lines in Segments 1 and 3 and has estimated those costs as follows.²⁷⁰

²⁶⁴ Ex. 26 at 9.

²⁶⁵ *Id.*

²⁶⁶ *Id.* at 10.

²⁶⁷ *Id.*

²⁶⁸ Ex. 113 at 5; Ex. 2 at 6 (Hillstrom Direct).

²⁶⁹ Ex. 26 at 14 (Stevenson Direct). The costs for the Hampton Substation were assumed to be zero for purposes of these calculations as this substation is being permitted and constructed as part of the CapX2020 Brookings County – Hampton 345 kV Transmission Project (Docket No. E002/TL-08-1474).

²⁷⁰ *Id.*; Ex. 71.

<u>Route</u>	<u>Cost (millions)</u>
1P and 3P	\$194
1P and 3P w/McCarthy Lake Option	\$199
1P and 3P w/crossing at Zumbro Dam	\$191
1P and 3P w/Highway 42 Option	\$196
1A and 3A	\$202
1A and 3A w/McCarthy Lake Option	\$207
1A and 3A w/Highway 42 Option	\$202

228. For the 161 kV line, the cost for 2P is estimated at \$16 million, whereas the cost for 2A is estimated at \$17 million.²⁷¹

229. The principal operating and maintenance cost for transmission facilities is the cost of inspections, usually done monthly by air.²⁷² Annual operating and maintenance costs for transmission lines in Minnesota and the surrounding states vary.²⁷³ For voltages from 115 kV through 345 kV, the Applicant's experience is that costs are approximately \$300 to \$500 per mile.²⁷⁴ Actual line-specific maintenance costs depend on the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used, and the age of the line.²⁷⁵

P. Irreversible and Irretrievable Commitment of Resources.

230. The Project will require few irreversible and irretrievable commitments of resources. Only construction resources, such as concrete, steel, and hydrocarbon fuels, will be irreversibly and irretrievably committed to this Project. This commitment of resources is greater for longer routes.

V. SEGMENT 1: APPLICATION OF ROUTING CRITERIA .

A. Description of Route Alternatives.

231. The 1P Route and its alternatives generally follow US 52 to a point just north of Zumbrota, where it drops south and runs cross-country or along field lines for approximately five miles until it connects with a transmission line and turns east into the preferred location of the North Rochester substation. The 1P Route is 36.11 miles in length.²⁷⁶

232. The City of Zumbrota supports the 1P route.²⁷⁷

²⁷¹ Ex. 26 at 14 (Stevenson Direct).

²⁷² Ex. 1 at 3-19.

²⁷³ *Id.*

²⁷⁴ *Id.*

²⁷⁵ *Id.*

²⁷⁶ Ex. 113 at 66.

²⁷⁷ See Letter dated 6/20/11, Mayor Rich Bauer, filed 6/24/11.

233. Alternatives 1P-001 through 1P-003 follow 1P until just north of Cannon Falls, where they leave US 52 and run south for about two miles along Harry Avenue before re-connecting to the 1P route at different points generally south of the City.²⁷⁸ These route options offer the advantage of avoiding the residences and businesses constructed close to US 52 near the intersection of Highway 19, and they are supported by some members of the public²⁷⁹ and the City of Cannon Falls²⁸⁰ for that reason. The disadvantage of these route options is that they cross Lake Byllesby in an area where Dakota County is planning to build a regional park recreational trail and bridge crossing.²⁸¹ These route options are opposed by Dakota County and by residents living along Harry Avenue.²⁸²

234. Alternatives 1P-004 through 1P-007 are generally in the area where the 1P route leaves US 52 north of Zumbrota and begins running south cross-country to connect with the substation. 1P-004 and 1P-005 would leave the highway just north of where the 1P Route turns south; 1P-006 and 1P-007 would continue on US 52 approximately 0.5 and 1.5 miles farther, respectively, than does Route 1P before turning west cross country and along 440th Street.²⁸³

235. The owners of two farms objected to the 1P Route where it begins to run south through their farmland; option 1P-007 would mitigate impacts to their fields but

²⁷⁸ Ex. 113 at 74-76.

²⁷⁹ See comments of Andy Sandstrom, 20127 59th Avenue Way, Stanton Township, supports 1P-003 or 1A route farther west, Tr. Cannon Falls 6/16/11 6:30 p.m., at 80; Pub. Ex. 51; Letter 11/11/10, Richard Busiahn, St. Paul's Lutheran Church and School, 30289 59th Ave Way, Cannon Falls, efiled 11/22/10, petition requests alternative route over Lake Byllesby dam, turning east and running along the south side of Hwy 19 (Option 1P-002); Letter 6/27/11, Roland and Dorothy Spillman, 5771 Highway 19 Blvd., efiled 7/27/11, advocating in support of route options using Hwy 56 or Harry Ave; comment of Roland Spillman, Tr. Cannon Falls 6/16/11 1:30 p.m., at 110; comment of Joe Lopez, 5908 303rd Street Way, Cannon Falls, Tr. 6/16/11 6:30 p.m., at 136: supports 1P-001 to 1P-003.

²⁸⁰ The City of Cannon Falls advocated for any alternate route that would bypass the City of Cannon Falls. See Letter dated 6/24/11, Aaron Reeves, City Administrator, efiled 7/27/11.

²⁸¹ Ex. 113 at 106.

²⁸² See Letter dated 6/21/11, Joseph Harris, Chair, efiled 7/27/11. See also email dated 6/29/11, Ed and Paula Gergen, 28706 Harry Ave, Randolph, MN, efiled 10/20/11, objects to 1P-003 along Harry Avenue, has a horse arena within 40 feet; Letter 6/18/11, Barbara Dick, 29155 Harry Avenue, Randolph, efiled 6/24/11, opposes 1P-001, 1P-002, and 1P-003 on Harry Avenue North of Cannon Falls due to impact on family farm and two housing developments nearby; also objects to impacts on Lake Byllesby and the Cannon Falls Golf Course; Letter 6/28/11, Mark Dezelar, 8215 292nd Street E, Randolph, efiled 7/27/11, comments of Mark Dezelar Tr. Cannon Falls 6/16/11, 1:30 p.m., at 53: Opposes 1P-003, supports preferred route; comment of Dena Reising, 28605 Harry Ave, Cannon Falls, Tr. 6/16/11 6:30 p.m., at 65: opposes 1P-003; Pub Ex. 50; comment of Steven Burgstahler, 31599 Oxford Mill Road, Cannon Falls, Tr. Cannon Falls 6/16/11 1:30 p.m., at 38: Opposes 1P-003; Pub. Ex. 39.

²⁸³ Ex. 113 at 77-80. See also comment of William Budensiek, 15065 Sherwood Trail, Zumbrota, Tr. Pine Island 6/15/11 6:30 p.m., at 108: opposes 1P-004 and 1P-005, prefers 1P route on Highway 52. Another commenter opposed 1P-007 because of the proximity to her home. See comment of Wanda Samuelson, 43980 Highway 52 Boulevard, Zumbrota, Tr. Pine Island 6/15/11 1:30 p.m., at 97.

would run closer to one residence.²⁸⁴ Option 1P-007 would also potentially interfere with MnDOT's future plans to build an interchange in the area of County Road 7.²⁸⁵

236. 1P-008 is an option near the City of Hampton that would take the transmission line off of the highway to the eastern boundary of the City for approximately 1.25 miles before returning to US 52.²⁸⁶

237. The City of Hampton supports Route Option 1P-008 because there are a number of homes and businesses on the west side of US 52 in this area.²⁸⁷ The current alignment proposed by the Applicant, however, has the transmission line on the east side of US 52, across from the homes along the west side of the highway.²⁸⁸ Residents living near Route Option 1P-008 oppose this route due to impact on irrigation systems and generally prefer the 1P route.²⁸⁹

238. 1P-009 is an option that would run the transmission line south down Minnesota Highway 56 for approximately 14 miles and then east along County State Aid Highway 9 for 7 miles before returning to US 52.²⁹⁰ Although some residents living near Cannon Falls supported this option,²⁹¹ the vast majority of public comments opposed it because of impacts on the Nansen Agricultural Historical District and the Stanton Airport, both of which are on the National Register of Historic Places.²⁹²

239. The 1A Route and its alternatives (1A-001 through 1A-004, 1B-001, and 1B-003) leave the Hampton Substation heading east and run south cross-country or on field lines before crossing US 52 and running south at a point west of Highway 56 through Randolph, Dennison, and near Nerstrand, before turning east and connecting

²⁸⁴ See comment of Paul Kalass, 16099 440th Street, Zumbrota, Tr. Cannon Falls 6/16/11 6:30 p.m., at 143; email 6/30/11, Connie and Daniel Rude, 44781 165th Avenue, Zumbrota, efiled 10/20/11, would affect their organic farm.

²⁸⁵ See Ex. 113 at App. A, A-20, Sheet Map NR 18.

²⁸⁶ Ex. 113 at 81.

²⁸⁷ See comment of Marlin Reinardy, Public Works Dept., City of Hampton, Tr. Cannon Falls 6/16/11 1:30 p.m., at 20.

²⁸⁸ Ex. 36 at Sheet Map 2.

²⁸⁹ See comment of Lori Endres, 22745 Northfield Blvd., Hampton, Tr. Cannon Falls 6/16/11 6:30 p.m., at 111; Pub Exs. 56 and 57, also opposes 1A route across country, would split property owned by Endres Farms and interfere with pivot irrigation systems. Email Lori Endres, 6/28/11, efiled 7/27/11; *see also* letter dated 6/29/11, Mary Lou and Melvin Endres, efiled 7/27/11.

²⁹⁰ Ex. 113 at 82.

²⁹¹ Email 6/22/11, John Peterson, 31643 County 24 Blvd., Cannon Falls, efiled 6/24/11; letter 6/30/11, Linda S. Carnel-Dillon, Robert J. Carnel Family Trust, efiled 7/27/11; comment of Tim Dillon, Tr. Cannon Falls 6/16/11 6:30 p.m., at 20.

²⁹² Comment of Dan Rechtzigel, Goodhue County Commissioner, Tr. Cannon Falls 6/16/11 1:30 p.m., at 56; Pub Ex. 41; Email 6/30/11, Arden Liotta Goudy, 25911 Emery Avenue (Hwy 56), Randolph, efiled 7/27/11, objects to 1P-009 and 1B-005 routes on Highway 56; comment of Stan Molstad, 7093 County 9 Boulevard, Tr. Cannon Falls 6/16/11, 1:30 p.m., at 96, opposes 1P-009 along County 9 Boulevard; Letter 6/28/11, Melanie and Eric Flom, Doris and Lester Flom, 5185 County 9 Blvd, Dennison, efiled 7/27/11, opposing 1P-009 along Hwy 9 because Sogn and Nansen are historical sites; email 6/27/11, Jeff and Janis Anderson, 37518 Co. 14 Boulevard, Dennison, efiled 7/27/11, objecting to 1P-009 because it goes through Sogn and Nansen Valleys, would interfere with recreational activities and wildlife.

with the alternate location of the North Rochester Substation south of Zumbrota. The 1A Route is 48.62 miles in length.²⁹³

240. A number of residents along Route 1A objected generally to it on the basis that it runs along field lines and cross-country instead of through an existing corridor. These commenters generally preferred the 1P Route.²⁹⁴ Some residents living along US 52, however, specifically endorsed the 1A Route.²⁹⁵

241. Route option 1A-001 would shift the transmission line about 0.5 miles south from where 1A runs cross-country between Kenyon and Wanamingo, along Minnesota Highway 60. In the same area, option 1A-004 would shift the line about 0.5 miles south to run along an existing transmission line in the same area.²⁹⁶

242. The City of Wanamingo opposes the 1A route and similar options as being too close to new residential development and too near a planned future water tower.²⁹⁷

243. Route 1A-003 would shift the 1A route about 0.3 miles west for about one mile along 350th Street north of Dennison.²⁹⁸

244. Route 1B-001 would continue the 1A route all the way east to US 52, instead of running south cross-country to the substation. Route 1B-003 would continue the 1A route straight east to where it would connect with the 1P Route running cross-country west of Zumbrota.²⁹⁹

245. Route 1B-005 generally follows Highway 56 south to the point where it intersects with Route 1A heading east cross-country to the substation. The first half is similar to 1P-009, but it follows Highway 56 for approximately 6 miles farther before rejoining the 1A route.³⁰⁰ Again, comments regarding this route option were almost uniformly negative because of impacts to the Sogn Valley, the Nansen Agricultural Historical District, and the Stanton Airport. The Goodhue County Historical Society opposed this option and supported the 1P Route, as did Warsaw Township.³⁰¹

²⁹³ Ex. 113 at 67.

²⁹⁴ Comment of Robert Eneidy, 23076 Lewiston Boulevard, east of Hampton, Tr. Cannon Falls 6/16/11 1:30 p.m., at 91; Pub. Ex. 43; Letter dated 6/27/11, Geraldine Howie, 11395 Lamb Ave., Dennison, efiled 7/27/11; comment of Norma Monroe, 2162 Highway 24 Boulevard, Tr. Cannon Falls 6/16/11 6:30 p.m., at 129; comment of Mary Lazaretti, 44755 50th, Kenyon, Tr. Pine Island 6/15/11 6:30 p.m., at 87; comment of John Conzemius, Tr. Cannon Falls 6/16/11 1:30 p.m., at 61 & 82; Pub. Ex. 42; comment of Wayne Lystrom, owner of property at 46728 135th Avenue, Zumbrota, Tr. 6/16/11 6:30 p.m., at 39.

²⁹⁵ Letter 6/27/11, Karen Carnel Schwengels, efiled 7/27/11, supporting 1A.

²⁹⁶ Ex. 113 at 68 & 70.

²⁹⁷ See Tr. Pine Island 6/15/11 1:30 p.m., at 89. See also comment of Chris Hogan, Mission Creek Co., Tr. Cannon Falls 6/16/11 1:30 p.m., at 109, concerned about impact on housing development outside of Wanamingo.

²⁹⁸ Ex. 113 at 69.

²⁹⁹ *Id.* at 71-72.

³⁰⁰ *Id.* at 73.

³⁰¹ Comment of Char Henn, director of Goodhue County Historical Society, Tr. Cannon Falls 6/16/11 1:30 p.m., at 23; Pub. Ex. 36; Letter 6/27/11, Andrea Hamilton, Chair of Goodhue County Historical Society,

B. Effects on Human Settlement.

246. **Proximity to Structures.** The 1P route alternatives that share or parallel existing infrastructure (particularly US 52) tend to have more homes within the 1,000-foot route width; however, these route options meet non-proliferation requirements and minimize new infrastructure impacts. The 1A alternatives impact fewer homes, but each of them includes at least one residence within the existing right-of-way. The following chart summarizes the proximity of homes from the center line of each route alternative in Segment 1.³⁰²

Table 8.1.4.3-1 Proximity of homes along each proposed route alternative - Segment 1

Route Alternative	Number of Homes				
	Within 0-75 feet	Within 76-150 feet	Within 151-300 feet	Within 301-500 feet	Total homes within 500 feet
1P	1	12	23	95	131
1P-001	2	12	20	74	108
1P-002	2	23	22	77	124
1P-003	2	13	22	69	106
1P-004	1	12	24	94	131
1P-005	1	12	24	95	132
1P-006	1	12	24	95	132
1P-007	2	13	24	96	135
1P-008	1	12	22	82	117
1P-009	7	20	36	48	111
1B-001	1	3	9	8	21
1B-003	2	8	11	10	31
1B-005	1	3	13	8	25
1A-001	2	5	10	9	26
1A-003	1	8	13	15	37
1A-004	1	3	10	8	22
1A	4	7	29	37	77

247. St. Paul Lutheran Church and School is located within the 1,000-foot route width of route options 1P and 1P-004 through 1P-008. None of the other route options

efiled 7/27/11; letter 6/15/11, Jimmilee Miller, Township Clerk, attaching Warsaw Township resolution supporting 1P route along US 52, efiled 6/17/11; comment of Greg Soule, 2915 345th Street, Warsaw Township, Tr. Cannon Falls 6/16/11 6:30 p.m. at 98; Pub. Exs. 52-55; comment of Regina Harris, 1235 Hwy. 19, Stanton, Tr. Cannon Falls 6/16/11 6:30 p.m., at 32; comment of Jeff Beckman, 35030 30th Avenue, Tr. Cannon Falls 6/16/11 1:30 p.m., at 45; Letter 6/27/11, Karen Kieffer, 34241 Highway 56 Blvd., Dennison, efiled 7/27/11; comments of Doug and Mary Kleese, 4667 County 30 Blvd, Tr. Cannon Falls 6/16/11 6:30 p.m., at 87; comment of Barb St. John, 44866 40th Avenue, Tr. Cannon Falls 6/16/11 6:30 p.m. at 140; comments of Louise and Howard Midje, 36885 County 24 Blvd, Dennison, Tr. Cannon Falls 6/16/11 6:30 p.m., at 46; comment of John Huseeth, 3146 Sogn Valley Trail, Dennison, Tr. Cannon Falls 6/16/11 1:30 p.m., at 27; Letter 6/28/11, John Huseeth, Clay View Dairy, 35694 215th Avenue, Goodhue, efiled 7/27/11; comment of Ronald Huseeth, 38765 Highway 56 Blvd., Dennison, Tr. Cannon Falls 6/16/11 1:30 p.m., at 34; Pub. Ex. 38; comment of Runice Bauer, 42599 Highway 56 Blvd., Tr. Cannon Falls 6/16/11 6:30 p.m., at 42; Letter 6/21/11, Runice and Henry Bauer, 42599 Highway 56 Blvd., Nerstrand, efiled 6/24/11; Letter 6/18/11, Theodore and lone Lorch, 2282 430th Street, Nerstrand, efiled 6/24/11.

³⁰² Ex. 113 at 86.

include schools within the route width. All of the 1P alternatives except 1P-003 and 1P-009 pass within one mile of the Cannon Falls Community hospital. There is one church and one cemetery within the route width of 1P-009, and there is one church within the route width of options 1B-001, 1B-003, 1B-005, 1A-001, 1A-003, and 1A-004.³⁰³

248. **Displacement.** Displacement would occur where any occupied structure (residence or business) is located within the 150-foot right-of-way of proposed route alternatives. A pinch point is an area along a route where there are human settlement features or important resources on both sides of the route, where it might not be possible to avoid displacement by moving the route centerline.

249. There is one home within the right-of-way of route 1P on US 52, just south of the junction with Goodhue County Highway 8. The EFP has confirmed that there appears to be no obstacle to relocating the center line to the opposite side of the road to avoid displacement of this home.³⁰⁴

250. There are 6 pinch points on 1P-009 and three pinch points on 1B-005.³⁰⁵

C. Effects on Land Use.

251. All route alternatives in this segment are located primarily on or adjacent to agricultural land. Transmission towers and lines can change the visual quality of views within the agricultural landscape; however, given low population densities and small numbers of travelers along most of the route alternatives, this impact would not affect many people. The 1P route alternatives parallel US 52 and therefore run adjacent to more developed land than other route alternatives. These areas are already extensively impacted by human modifications to the landscape, and the marginal impact of the proposed project is not expected to fundamentally change the visual character of the corridor.³⁰⁶

252. The topography in this area is generally flat with a few rolling hills and some steeper slopes along river valleys. Route options 1P-004 and 1P-005 would experience the greatest change in topography with slopes of 12% to 20% near the Zumbro River.³⁰⁷

253. Eleven route alternatives would pass through portions of Lake Byllesby Regional Park in Dakota County. These options are 1A, 1A-001, 1A-003, 1A-004, 1B-001, 1B-003, 1B-005, 1P-001, 1P-002, 1P-003, and 1P-009. Selection of any of these routes would be inconsistent with Dakota County Park Ordinance #107, which provides for the preservation of the land in its natural state.³⁰⁸

³⁰³ Ex. 113 at 86.

³⁰⁴ *Id.*

³⁰⁵ *Id.*

³⁰⁶ *Id.* at 89-90.

³⁰⁷ *Id.* at 88.

³⁰⁸ *Id.* at 90.

D. Effects on Land-Based Economies.

254. **Agriculture.** Much of the land in this segment is designated as “prime farmland,” meaning that it is most desirable for agricultural production. The percentage of prime farmland or farmland of statewide or local importance within the right-of-way does not change significantly from one route alternative to the next in this segment.³⁰⁹

255. **Forestry.** There are no known economically important forestry resources present along any of the route alternatives in this segment.

256. **Mining.** All of the route options in this segment would have one or two aggregate mines within the 1,000-foot route width, except for 1P-009 and 1B-005, which have five and three mines, respectively, within their widths.

E. Effects on Cultural Resources.

257. There are archeological sites within one-half mile of all route options within this segment, but none are on the National Register of Historic Places (NHRP). Most of the 1P alternatives would have visual impacts on four sites, except for 1P-009 (two) and 1P-002 (five). Most of the 1A route alternatives would potentially affect five sites.³¹⁰ Actual impacts would not be known until a route and alignment are selected.

258. With regard to historical architectural sites, the 1P alternatives are approximately equivalent; there are approximately 53 sites within one-half mile of either side of the proposed centerline, except for 1P-001 (47) and 1P-003 (37). There are eight sites registered with the National Register of Historic Places, all of them in Cannon Falls. The 1A alternatives would potentially affect between 29 and 38 historic sites, only one of which is registered. Route 1B-005 would have the highest number of potential impacts (64 sites).

259. The Nansen Agricultural and Historic District is made up of 94 buildings and 43 structures within a 46,000-acre area in Goodhue County located in the vicinity of Minnesota Highway 56 and County Highways 14 and 49 in Holden Township. Route options 1P-009 and 1B-005 and the east-west portion of Routes 1A, 1A-001, and 1A-004 would directly impact this area.³¹¹

260. There is one fossil-collecting site along 1P near US 52 and County Highway 14, south of Cannon Falls. This site is a small grassy cut in a hillside that could likely be spanned with proper tower placement. Two additional fossil-collecting sites are located on 1B-005 and 1P-009. One is a large area known as “Wang’s Corner,” located on the east side of Highway 56 at the junction of County Highway 9; in this area, 1P-009 is aligned on the side of the road opposite the fossil collection site.

³⁰⁹ Ex. 113 at 90.

³¹⁰ *Id.* at 100.

³¹¹ *Id.* at 101, Map 8.1-25.

The second site is a small area four miles south on Highway 56 that could likely be spanned.³¹²

261. Once a route is permitted, archeological investigations would be required to locate sites and to develop specific mitigation plans, which could entail compensation for the losses of properties that are eligible for listing on the NRHP.³¹³

F. Effects on the Natural Environment.

262. **Water Resources.** The main watercourses that run through this segment are the Cannon River, the North Fork of the Zumbro River, Belle Creek, Butler Creek, Dry Run Creek, Little Cannon River, Pine Creek, Chub Creek, Prairie Creek, Shingle Creek, and Spring Creek. Each of the route alternatives would cross the Cannon River in an area where it is designated recreational under the Wild and Scenic Rivers Act.³¹⁴

263. The 1P route would cross the Cannon River along US 52;³¹⁵ 1P-001 through 1P-003 would cross at the dam, where there is an existing 69 kV HVTL crossing;³¹⁶ 1P-009 would cross along Highway 56,³¹⁷ and the 1A routes would cross on a field line, where there is no existing infrastructure.³¹⁸

264. Each of the route options has between 33 and 52 watercourse crossings within the 150-foot right-of-way. The 1P alternatives cross significantly fewer watercourses than the 1B and 1A route options.³¹⁹

265. The 1P route options and 1B-005 would all cross trout streams or trout stream tributaries.³²⁰ Pine Creek is the DNR-designated trout stream south of Hampton that is crossed by US 52.

266. All route alternatives would cross at least one impaired watercourse. With the exception of 1P-009, the 1P options cross only one impaired stream, while the remaining options would cross between three and five impaired streams. Lake Byllesby is also listed on the impaired waters list; it is not located within the 150-foot right-of-way of any route option; however, it is located within the 1,000-foot route width of options 1P-001, 1P-002, 1P-003, 1P-009, and 1B-005.³²¹

267. The 1P route alternatives (except for 1P-009) also have the fewest acres of wetlands present within the right-of-way and the route width (approximately nine

³¹² Ex. 113 at 102.

³¹³ *Id.*

³¹⁴ *Id.* at 97.

³¹⁵ Ex. 1, App. M, Sheet Map 10.

³¹⁶ *Id.*

³¹⁷ *Id.* at Sheet Map 4.

³¹⁸ *Id.* at Sheet Map 3.

³¹⁹ Ex. 113 at 97.

³²⁰ *Id.*

³²¹ *Id.*

acres within the right-of-way and 49 to 57 acres within the route width). Other route options impact approximately 14 to 19 acres of wetland within the right-of-way and 99 to 121 acres within the route width. 1P-009 and 1B-005 each have one wetland within the right-of-way that is wider than 1,000 feet, which may not be capable of being spanned.³²²

268. **Flora.** The vegetation community cover types associated with all route options in this segment are primarily agricultural or other artificial types fragmented by humans. The 1P alternatives are generally 57% cropland, 24% grassland, and 13% artificial cover types, whereas the 1A alternatives are generally 72% cropland, 22% grassland, and 1% artificial. There is little forested cover, approximately 4% in both the 1P and 1A routes.

269. **Fauna.** The Woodbury WMA is a 76-acre wildlife management area just west of Zumbrota. Approximately 60 acres of the property is restored to native prairie and provides nesting habitat for grassland birds. All of the 1P route alternatives come within one mile of the Woodbury WMA but do not cross it. The Gemini Aquatic Management Area is in the northwest corner of Cannon Falls, and approximately ten acres of it is located within the 1P route. The eastern edge of the Lake Byllesby Important Bird Area (IBA) is within one mile of where the 1P routes cross the Cannon River. Sand hill cranes have been observed near Lake Byllesby during breeding season, although no confirmed nesting records exist. This is a species known to collide with transmission lines.³²³

270. The 1A alternatives cross the Cannon River approximately two miles west of the western edge of the Lake Byllesby IBA. The 1A alternatives also come within one mile of the Woodbury WMA and the Warsaw WMA, but do not cross them. The North Fork Zumbro Woods Scientific and Natural Area (SNA) is approximately 0.5 miles north of where the 1A routes cross State Route 60.³²⁴

271. There are two Grassland Bird Conservation Areas (GBCAs) within one mile of the 1P route alternatives; one is within the Woodbury WMA, the other west of the 1P routes. There are three GBCAs within one mile of the 1A route alternatives, one of which crosses a GBCA about four miles southeast of Wanamingo. Impacts to grassland habitats are likely to be temporary, and long-term impacts are estimated to be minimal.³²⁵

272. All 1P and 1A alternatives have similar amounts of land in conservation easements within the right-of-way and within one mile, except for 1P-009 and 1B-005, which impact fewer acres of conservation easement land, and 1B-001, which impacts more acres of conservation easement land than the others.³²⁶

³²² Ex. 113 at 97-99.

³²³ *Id.* at 96.

³²⁴ *Id.*

³²⁵ *Id.*

³²⁶ *Id.*

G. Effects on Rare and Unique Natural Resources.

273. Twelve threatened and endangered species have been documented within one mile of the route alternatives in Segment 1: six plant species, one snake, one turtle, one bird, two mussels, and one fish. Because most water bodies and watercourses could be spanned, impacts to water species are not anticipated. The loggerhead shrike has been found within the right-of-way of all route options within this segment; the prairie bush clover has been found within the right-of-way of the 1A route alternatives, as well as 1B-001 and 1B-003; and the glade mallow has been documented within the right-of-way of 1P-009 and 1B-005.³²⁷

274. Bald eagles have been found within one mile of all route alternatives and within the right-of-way of all 1A routes, 1P-009, 1B-001, and 1B-003. Bald eagles may construct new nests, however, so even if a favorable route for eagles is selected, there is a potential for impacts.³²⁸

275. DNR native plant communities and Sites of Biodiversity Significance (SBS) are present within the right-of-way of all route alternatives in this segment, and all route options impact similar acreages, except for 1P-003, 1P-009, and 1B-009 (more acreage impacts to native plant communities), and 1B-005 (no impacts to SBS).³²⁹

276. There are no impacts to state designated railroad prairie in this segment except for routes 1B-005 and 1P-009, which both impact 60 feet within the right-of-way.³³⁰

277. When a route is selected, surveys for threatened or endangered species would be conducted as directed by state agencies. If impacts to rare species are unavoidable, the DNR may require a takings permit along with other conditions.³³¹

H. Use of Parallel or Existing Right-of-Way.

278. Sharing of right-of-way with existing infrastructure reduces the amount of land that must be acquired from private land owners and can minimize impacts to adjacent property. Where right-of-way is shared, however, there are potential impacts to transportation corridors.

279. The 1P Route follows US 52 for 27 miles and an existing transmission line for approximately 18 miles. It is approximately 10 miles shorter than the 1A Route.³³² The Applicant proposes to consolidate the existing 69 kV transmission line and the proposed 345 kV line for 15.5 miles between Cannon Falls and north of Zumbrota.³³³

³²⁷ Ex. 113 at 92.

³²⁸ *Id.*

³²⁹ *Id.*

³³⁰ *Id.*

³³¹ *Id.* at 94.

³³² Ex. 1 at 7-13 and 7-71.

³³³ Ex. 1 at 7-13.

280. The 1P route options share substantially more right-of-way with roads and utility lines (80% of the route) than do all of the 1A, 1B-001, and 1B-003 options (20% or less). About 60% of route 1B-005 is shared with roads and utility lines, but this route includes Highway 56 and Nansen Historical Agricultural District.³³⁴

I. Effects on Transportation.

281. The Applicant will need to obtain Utility Permits from MnDOT to occupy state trunk highway right-of-way, for crossings, and potentially for longitudinal installations.³³⁵ The Applicant has met with MnDOT to review potential alignments along US 52; however, it is uncertain at this time what alignment MnDOT will permit along or near the highway right-of-way.³³⁶

282. MnDOT's future plan for US 52 is to make the highway a full controlled-access highway.³³⁷ MnDOT has stated that this upgrade would result in construction of new interchanges along US 52 and the construction of frontage roads alongside US 52.³³⁸ It would also prohibit use of highway right-of-way for maintenance access.³³⁹ In addition, MnDOT stated that it will apply "freeway standards" to US 52 when evaluating Xcel Energy's Utility Permit Application.³⁴⁰ This means that MnDOT will not allow a permanent overhang of transmission facilities on longitudinal installations unless an exception is approved by MnDOT and the Federal Highway Administration (FHA).³⁴¹

283. If transmission poles must be relocated in the future because of the need to improve a road, the cost of moving the structure will be borne by the utility if the pole is located within the public right-of-way; however, if the pole is outside the right-of-way, the funds for relocation would come from the State Trunk Highway Fund.³⁴² MnDOT is consequently concerned about maximizing its flexibility to make road improvements in the future while minimizing its responsibility for relocation costs.

284. There are two interchanges along US 52 that are funded and planned to be constructed within the next ten years: at County Road 47 (just north of Hampton), and County Road 24 (just south of Cannon Falls). In these areas the Applicant designed alignments that would avoid occupation of the highway right-of-way.³⁴³

³³⁴ Ex. 113 at 104. There appears to be a typographical error in Appendix H of Ex. 113, in which the right-of-way percentages for 1P and 1A are transposed.

³³⁵ Minn. R. 8810.330, subp. 1.

³³⁶ Ex. 113 at 104; Tr. 3:144-45 (Seykora).

³³⁷ Ex. 2 at 26 (Hillstrom Direct); Ex. 106 at 11.

³³⁸ Ex. 106 at 11-12.

³³⁹ Ex. 2 at 26 (Hillstrom Direct).

³⁴⁰ Ex. 106 at 11; Tr. 3:144 (Seykora).

³⁴¹ Tr. 3:215 (Seykora); Ex. 15 at 9 (Hillstrom Rebuttal).

³⁴² Ex. 113 at 58.

³⁴³ Ex. 15 at 8 (Hillstrom Rebuttal).

285. The Applicant has requested a wider route width in an area north of Cannon Falls where there are Farmland Natural Areas Program (FNAP) easements.³⁴⁴ FNAP easements are conservation easements granted in favor of Dakota County, the U.S. Department of Agriculture, and the Natural Resource Conservation Service, and the easements generally prohibit the placement of transmission lines within the easement area.³⁴⁵

286. If physical occupation of the FNAP easement areas will not be allowed, the pole structures could potentially be placed in the eight feet of space between the edge of road right-of-way and the FNAP easement.³⁴⁶ While large enough to accommodate a transmission structure base, this placement would require permanent overhang of the conductors on road right-of-way, which MnDOT has stated that it will not allow without an exception to its Utility Accommodation Policy.³⁴⁷

287. The other alignment option is to place the line away from US 52 in agricultural fields at the outer edge of the FNAP easements.³⁴⁸ This second alternative is the only alternative that appears to be feasible at present.

288. There are several other areas along US 52 where interchanges may be built in the future: a potential interchange at County Road 86 (just north of where the Harry Avenue route options drop off of US 52, and just south of the FNAP easement area described above),³⁴⁹ a potential railroad overpass north of Cannon Falls,³⁵⁰ a potential interchange at the intersection of County Road 1 or County Road 9,³⁵¹ and potential interchanges at the intersections of County Road 50, Minnesota Highway 57, and County Road 7.³⁵² These potential projects do not have identified funding, timelines, or plans.³⁵³ Based on the uncertainty of when or whether these projects would be built and the lack of clearly defined plans at the time of hearing, the Applicant proposed wider route widths in most of these areas, but has not attempted to design an alignment around potential future improvements.³⁵⁴

289. The Applicant did not specifically seek a wider route width in the area of US 52 and County Road 86.³⁵⁵ This area is immediately south of the FNAP easement

³⁴⁴ Ex. 36 at Sheet Map 6.

³⁴⁵ Ex. 2 at 16 (Hillstrom Direct); Ex. 74 (FNAP Easements).

³⁴⁶ Ex. 93.

³⁴⁷ Tr. 3:17 (Stevenson).

³⁴⁸ Ex. 2 at 17 (Hillstrom Direct); Ex. 36 at Sheet Map 6.

³⁴⁹ Ex. 36 at Sheet Map 7; Ex. 104.

³⁵⁰ Ex. 36 at Sheet Map 8.

³⁵¹ Ex. 36 at Sheet Map 14.

³⁵² Ex. 36 at Sheet Maps 18, 20, and 23.

³⁵³ *Id.*

³⁵⁴ The widened route widths are depicted in Ex. 113, App. A: pp. A-4 and A-5, Sheet Maps NR 2 & 3 (County Road 47); p. A-7, Sheet Map NR 5 (FNAP easements); p. A-9, Sheet Map NR 7 (railroad grade separation project); p. A-10, Sheet Map NR 8 (Highway 19); pp. A-11 and A-12, Sheet Maps NR 9 & 10 (County Road 24); pp. A-14 and A-15, Sheet Maps NR 12 and 13 (County Roads 1 and 9); and pp. A-15 and A-16, Sheet Maps NR 13 & 14 (County Road 50 and Minnesota Highway 57).

³⁵⁵ Ex. 113, App. A, p. A-8, Sheet Map NR 6 (County Road 86).

area, and just north of Harry Avenue. MnDOT maintains that the route should account for a future interchange in this area.³⁵⁶

290. In this area, the route width is already somewhat wider simply because options 1P-001, 1P-002, and 1P-003 drop off US 52; it appears possible that the wider route width in the FNAP area could be extended somewhat farther on the south without affecting any additional landowners to provide more flexibility in placement of the line in the vicinity of County Road 86. In addition, the Applicant did not propose a wider route width in the area of the intersection of US 52 and County Road 7, because the 1P route drops off of US 52 just north of that area.³⁵⁷

291. At the Highway 19 and US 52 interchange in Cannon Falls, a 25-foot setback from highway right-of-way is not possible within the proposed route width without removing an existing home. As a result, the Applicant requested that a wider route width be approved for this area. Under this proposal, the transmission line would leave US 52 just north of Highway 19 and run through a field behind the homes and other structures located close to US 52, before rejoining the highway just south of Highway 19.³⁵⁸ The owner of this land objected to the alignment as conflicting with the owner's current and future planned use of the property.³⁵⁹ Residents living in the vicinity of US 52 and Highway 19, however, tended to support this alignment.³⁶⁰

292. The Applicant has also proposed constructing the line along the original proposed alignment adjacent to US 52 and Highway 19, with a transmission pole located inside the interchange area.³⁶¹ It seems unlikely that MnDOT would approve this alignment.³⁶²

293. As noted above, the area south of County Road 24 Boulevard is another area in which businesses have been developed close to the highway, and an interchange is planned in the future. The original alignment was next to US 52 on the east side of the frontage road. The Applicant identified an alignment behind these businesses to the west that is within the original proposed route width.³⁶³

³⁵⁶ Tr. 3:146 (Seykora); Ex. 104.

³⁵⁷ See Ex. 113, App. A, p. A-20, Sheet Map NR 18.

³⁵⁸ Ex. 36 at Sheet Map 9.

³⁵⁹ Letter 6/28/11, Patricia Doffing, 3300 Cannon Ave, Hastings, Doug Doffing, 924 West Main Street, Cannon Falls, efiled 7/27/11, object to alternate alignment on Sheetmap 9, the land is farmed, will create issues for equipment and machinery, may be developed as residential or commercial use, may sell part of it to DNR for use as recreation trail.

³⁶⁰ Comment of Cory McDonald, St. Paul Evangelical Lutheran Church, 30289 59th Avenue Way, Cannon Falls, Tr. 6/16/11 1:30 p.m., at 116: Prefers the new alignment to the west at intersection of US 52 and 19; email 6/23/11, Curtis Burdick and Darlene Burdick, 5772 304th Street Way, Cannon Falls, efiled 7/27/11; letter 6/27/11, Gloria Strain, 30510 57th Avenue Way, Cannon Falls, efiled 7/27/11; comment of Larry Dammer, 1107 West Main Street, Cannon Falls, Tr. 6/16/11 1:30 p.m., at 86: should minimize potential for conflict with interchange and future development on south end of Cannon Falls.

³⁶¹ Ex. 94.

³⁶² Tr. 3:179 (Seykora).

³⁶³ Ex. 36 at Sheetmap 10. See also letter 6/23/11, Laurie J. Felton, efiled 7/27/11, supports 1P route through commercial and industrial properties; would not negatively impact an area that consists primarily

294. MnDOT anticipates that routes along US 52 will have significantly greater impacts on highway traffic than routes that run across or along lower volume roads. MnDOT has requested that if a 1P route is selected, the Applicant should coordinate with the agency to fully accommodate road improvements.

295. On the 1A routes, the primary location of issues regarding road safety and expansion are at the crossing of US 52 and Highway 56.³⁶⁴

296. The 1A route parallels an abandoned railroad grade just after crossing Minnesota Highway 56, but no impacts are otherwise expected for rail transport.

297. The centerline of the 1P route is approximately five miles east of the Stanton Airfield, while the centerline of the 1A route is approximately 1.2 miles west of the Stanton Airfield. These routes are outside the safety zones established by the FAA and MnDOT. Route options 1B-005 and 1P-009 are within 300 feet of the east end of one of the Stanton Airfield runways and would present an obstacle to safe operation of the airfield. No impacts to navigation systems or antennas are expected on the 1P or 1A routes.³⁶⁵

J. Effects on Recreation.

298. The Woodbury WMA and the Warsaw WMA are both located in Segment 1. The Woodbury WMA is within one mile of all route alternatives and is unlikely to be impacted by any route option because of distance. The Warsaw WMA is within one mile of the 1A and 1B route alternatives and 1P-009, and it is within the 1,000 foot route width of Routes 1B-005 and 1P-009.³⁶⁶

299. The North Fork Zumbro Woods SNA is located within one mile of the 1A and 1B route alternatives. No impacts are expected to this SNA.³⁶⁷

300. All of the 1A and 1B alternatives would run along Randolph Road, which goes through West Byllesby Park (managed by Dakota County).³⁶⁸

301. Route alternatives 1P-001, 1P-002, and 1P-003 would run along existing 69 kV, 115 kV, and 161 kV transmission lines on Harry Avenue to the Cannon Falls substation located near the hydroelectric dam that creates the Lake Byllesby Reservoir. This is the east boundary of Lake Byllesby Regional Park (managed by Dakota County)

of paved surfaces, managed right of way, and other highly improved commercial properties. For an opposing viewpoint, see email 6/28/11, Mitchel and Christin Morey, 3976 57th Avenue, Cannon Falls, efiled 7/27/11, please narrow route width south of Cannon Falls at intersection of CR 14/24 and US 52, our entire property is within the 1,000 foot corridor, we plan to use it for retirement.

³⁶⁴ Ex. 113 at 104.

³⁶⁵ *Id.* at 106.

³⁶⁶ *Id.* at 106-07.

³⁶⁷ *Id.* at 106.

³⁶⁸ *Id.*

and Lake Byllesby County Park (managed by Goodhue County). These route alternatives would also parallel a planned regional park recreational trail and a bridge crossing the Cannon River that are proposed in the park 2005 Master Plan and are planned for construction in 2013. Because the viewshed in this area is already impacted by existing high-voltage transmission lines, however, impacts to these parks would be minimal if one of these route options were chosen.³⁶⁹

302. The Cannon Golf Club is just north of the Cannon River and west of US 52. Route alternatives 1P and 1P-004 through 1P-008 would run along the eastern boundary of the Cannon Golf Club. Route alternatives 1P-001 through 1P-003 would run approximately 0.25 miles west of the Cannon Golf Club boundary.³⁷⁰

303. All of the 1P and 1A route alternatives would cross the Cannon River in a section that is designated as recreational; this means bordering lands have been developed for a variety of uses but are also readily accessible for recreational activities. None of the route alternatives would be visible from the section of the Cannon River that is designated scenic, approximately 1.5 miles east of where these alternatives cross the river.³⁷¹

304. All route alternatives would have between 7 and 24 snowmobile trail crossings within the right-of-way and between 2.5 and 7.8 miles of trail within the route width. The 1A and 1B route alternatives and 1P-009 have more crossings than the others, and 1B-005 and the 1P route alternatives (except for 1P-009) have fewer miles of trails within the route width than other routes.³⁷²

K. ALJ Recommendation for Segment 1.

305. In general, use of the 1P route will minimize impacts to areas that are not already disrupted by human activity. It uses or parallels substantially more existing right-of-way than the other options and is most consistent with principles of non-proliferation. The 1A routes are longer, more expensive, and use or parallel relatively little existing right-of-way.

306. There are, however, significant problems following US 52 through the Cannon Falls area in the vicinity of Highways 19 and 24, because of the proximity of homes, churches, schools, and businesses. Use of option 1P-003 would bypass this area and would impact fewer total residences; would avoid the church, school, and businesses; would parallel existing transmission lines and use mostly existing road corridors; and would provide the opportunity to avoid potential conflicts with two future road projects (the railroad overpass and the County Road 24 interchange).³⁷³

³⁶⁹ Ex. 113 at 106-07; Ex. 1, Vol. 2, section M (Sheet Map 10).

³⁷⁰ *Id.*

³⁷¹ *Id.*

³⁷² *Id.*

³⁷³ Ex. 113, Appendix A at A-11 (Map NR 9); Ex. 36 at Sheetmap 10.

307. With regard to the substation locations, the Prairie Island to Byron 345 kV line would run north and south through both proposed locations, and the 1P route would run along a parallel 69 kV line just before entering the southern location.³⁷⁴ Selection of one location over the other would not materially impact the amount of right-of-way sharing.

308. In light of the record as a whole, the ALJ recommends use of 1P, as modified by 1P-003, because these routes satisfy nonproliferation requirements but balance impacts to human settlement and the natural environment. The Administrative Law Judge also recommends approval of widened route widths in areas along US 52 where FNAP easements exist and interchanges may be built in the future, including County Road 86.

VI. SEGMENT 2: APPLICATION OF ROUTING CRITERIA.

A. Description of Route Alternatives.

309. The modified 2P route heads east from the North Rochester Substation (southern location) along 500th Street.³⁷⁵ It generally following roads (including County State Aid Highway (CSAH) 31 and 60th Avenue NW) heading east and south until it reaches the Douglas State Trail/transmission line. It follows the Douglas State Trail for 1.25 miles until it turns south following a transmission line and enters the Northern Hills Substation. The 2P route is approximately 15.39 miles in length.³⁷⁶

310. The City of Pine Island and people living along these roads tended to object to the 2P route.³⁷⁷

³⁷⁴ Ex. 1 at Maps 8.2-4; 9.2-4, and 10.1-1.

³⁷⁵ Ex. 35.

³⁷⁶ Ex. 113 at 110.

³⁷⁷ Letter 4/25/11, Abraham Algadi, City Administrator, efiled 4/29/11; letter 6/22/11, Abraham Algadi, City Administrator, efiled 7/27/11; 2P route goes through proposed bio-business park near Elk Run; recommends route through Oronoco be used (2C3-002 through 2C3-007). *See also* letter dated 6/25/11, Edward and Linda Manthei, Township 109, Range 15, Section 29, efiled 7/27/11, object to 2P along 500th Street; comment of David Arndt, 21196 510th Street, Pine Island Township, Tr. Pine Island 6/15/11 6:30 p.m., at 83: objects to 2P route along 210th Avenue and 2C3-002-2. **The following persons objected to any route including the CSAH 31 Corridor:** email 6/16/11, Theresa and Daniel Hiebert; comment Daniel Hiebert, 12150 CR 31 NW, Pine Island, Tr. Pine Island 6/15/11 6:30 p.m., at 90: opposes 2P or 2P-001, supports 2P-002 (through Oronoco), 2A, 2C3-002-2 through 2C3-004-2; Pub Ex. 34; email 6/30/11, Bonnie Flitsch, 12156 CR 31 NW, Pine Island, efiled 10/20/11, supports 2P-002, 2C3-002-2 through 2C3-004-02; comment of Bonnie Flitsch, Tr. Pine Island 6/15/11 6:30 p.m., at 97. **The following persons had objections to use of the 60th Avenue NW corridor:** comment of Heidi Sems, 9585 55th Avenue NW, Oronoco, Tr. Pine Island 6/15/11 6:30 p.m., at 95; supports 2A-001 along the Douglas Trail; Email dated 6/30/11, Heidi Sems, efiled 10/20/11; email 6/28/11, Barbara Prigge, 100th Street and 60th Avenue NW, Oronoco, efiled 7/27/11; email 6/19/11, Donald Millering, 6130 100th Street NW, Pine Island, efiled 6/24/11, if 2P is selected, line should be placed on east side of 60th Avenue NW to avoid impact to corn fields; email 6/17/11, Marc Jackson, Oronoco Township section 19, efiled 6/24/11, if 2P is selected, should be placed on west side to avoid impact to farming operation.

311. Route 2P-001 is similar to 2P, except that instead of following CSAH 31 south for 1.3 miles, it continues about 0.25 miles south on US 52 before dropping south and running cross-country for 1.2 miles.³⁷⁸

312. Route 2P-002 would remain on US 52 through Pine Island township and Oronoco, before turning west on 65th St. NW to enter the substation. This route is 17.84 miles in length.³⁷⁹

313. The 2A Route generally follows transmission lines and county roads straight south from the North Rochester Substation (northern location) and to the west around Pine Island. It then heads east and south following roads (125th Street NW, CSAH 3, 75th Avenue NW, and 65th Street NW), field lines, and the Douglas State Trail until connecting to a transmission line that runs to the Northern Hills Substation. The 2A Route is 17.97 miles in length.³⁸⁰ The Applicant proposed that the northern substation location would be used only if the 3A route to the Mississippi River is selected for Segment 3; however, the 2A route could run from the southern location of the substation, shortening the route by approximately two miles.³⁸¹

314. Route 2A-001 is similar to 2A, except that it follows the Douglas State Trail for an additional 2.6 miles instead of using 75th Avenue and 65th Street NW.³⁸² Route 2A-002 would drop south on CSAH 3 and head east cross-country before rejoining the 2A route, avoiding 125th Street NW and the first part of the Douglas State Trail.³⁸³ Route 2A-003 is similar to 2A-002, except that it would remain on CSAH 3 until it intersects with the 2A route, avoiding the cross-country section of 2A-002.³⁸⁴

315. Many persons objected to the 2A routes along CSAH 3.³⁸⁵

³⁷⁸ Ex. 113 at 111.

³⁷⁹ *Id.* at 112. This route option was inadvertently included in the scoping decision; but because it was included in the scoping decision, EFP staff included it in the FEIS. See Ex. 57.

³⁸⁰ Ex. 113 at 113.

³⁸¹ *Id.*, App. A at A-59-60, Maps NH1 & 2; *id.* at App. I.

³⁸² This route option was supported by an owner on 65th Street NW; see comment of Richard Sonsalla, 8000 65th Street NW, Byron, Tr. Pine Island 6/15/11 6:30 p.m., at 72. Other commenters opposed any use of the Douglas State Trail for the transmission line. See email 6/20/11, Dave Youngers, efiled 6/24/11.

³⁸³ Ex. 113 at 114-115.

³⁸⁴ *Id.* at 116. These route options were supported by one commenter on the basis that they use existing right of way. See comment of Harold Radtke, owner of property in section 28 of Pine Island Township, Tr. Pine Island 6/15/11 6:30 p.m., at 43; comment of Tom Suther, 7212 117th St NW, Oronoco, Tr. Pine Island 6/15/11 6:30 p.m., at 61: objects to 2P along 65th Street, supports 2A-003 along CSAH 3.

³⁸⁵ Letter 6/22/11, Kent Kerkhoff and Bruce Kerkhoff, 10650 CR 3 NW, Pine Island, efiled 7/27/11, object to 2A-002; email 6/27/11, Mary Jane Rasmussen, efiled 7/27/11, objects to 2A route, would ruin the landscape; email 6/27/11, Van P. Jacobsen, efiled 7/27/11, objects to 2A, advocates route that follows US 52; email 6/27/11, Randy and Linda Fuhrman, 7931 100th St NW, Pine Island, MN, efiled 7/27/11; email 6/29/11, John and Cheri Hart, 10325 CR 3, Pine Island, efiled 7/27/11 (2A); letter 6/24/11, Cheri Hart, 10325 CR3 NW, Pine Island, efiled 7/27/11; email 6/30/11, Alex and Sherry Cragoe, 9622 CR 3 NW, Pine Island, efiled 7/27/11, objects to 2A, supports 2P; email 6/16/11, Anne Tolan, 9955 125th St NW, Pine Island, efiled 6/17/11, objects to 2A south of Pine Island; letter 6/14/11, Todd and Doreen Wagner, 9288 115th Street NW, Pine Island, efiled 6/17/11, object to 2A-002.

316. Option 2B-001 follows the 2P route to CSAH 31; instead of turning east on 117th St. NW, it would continue south on CSAH 31 and CSAH 3 before joining the 2A route at the Douglas State Trail.³⁸⁶

317. There are eight route options that create a parallel alignment of the 161 kV line in Segment 2 and the 345 kV line in Segment 3. Depending on the specific route, these options range from 15.2 to 17.9 miles in length.³⁸⁷

318. Option 2C3-001-2 would follow a transmission line out of the substation and US 52 southeast for approximately 4.3 miles, where the 345 kV line would split and head straight east through Pine Island. The 161 kV segment would loop south and west until it returned to the 2P route north of Oronoco.³⁸⁸ Property owners planning to develop land along US 52 in this area objected to this route option,³⁸⁹ as did a resident who believed this route option ran too close to the Pine Island cemetery, where his son is buried.³⁹⁰

319. Option 2C3-002-2 would head east following the 2P route out of the southern location of the substation, but would continue heading east and south cross-country. The 345 kV line would split just north of Pine Island, and the 161 kV line would proceed straight south through Pine Island and the western boundary of Oronoco before rejoining the 2P route at the southwestern corner of Oronoco.³⁹¹ 2C3-003-2 is similar but would exit the northern location of the substation and head straight east before heading straight south; the 345 kV portion would continue east at the point where the 161 kV line turns south. Option 2C3-004-2 is the same except the 345 kV line would turn south as well until just north of Pine Island, where it would split and head southeast.³⁹² Farmers in this area objected to routes impacting their farms.³⁹³

³⁸⁶ Ex. 113 at 117. In the area where 2A, 2A-003, and 2B-001 would intersect, property owners objected to these routes: Comment of Jeff Billman, 10234 County Road 31 NW, New Haven Township, Tr. Pine Island 6/15/11 1:30 p.m., at 90; comment of Theresa Kundert, 6916 91st Street NW, Oronoco, Tr. Pine Island 6/15/11 1:30 p.m., at 106: supports 2P or the US 52 route; email 6/16/11, Theresa Kundert, efiled 6/17/11; comment of Steven Walters, 11637 County Road 31 NW, Oronoco, Tr. Pine Island 6/15/11 1:30 p.m., at 96: prefers route running down US 52.

³⁸⁷ Ex. 113 at App. I.

³⁸⁸ Ex. 113 at 118.

³⁸⁹ See letter dated 6/25/11, Edward and Linda Manthei, Township 109, Range 15, Section 29, efiled 7/27/11; comment of Tony Love, 51525 North 210 Avenue, Pine Island, Tr. Pine Island 6/15/11 6:30 p.m., at 59: Pine Island comprehensive plan calls for commercial development along US 52 in this area.

³⁹⁰ See comment of Jim Kehoe, Tr. Pine Island 6/15/11 1:30 p.m., at 100.

³⁹¹ Ex. 113 at 119. See comment of Tim Kottke, 201 13th Lane SW, Oronoco, Tr. Pine Island 6/15/11 6:30 p.m., at 81 (objects to 2C3-002).

³⁹² Ex. 113 at 120-21.

³⁹³ See Letter 6/24/11, Phyllis Crawford, 48822 County 55 Blvd, Pine Island, efiled 7/27/11, objects to 2C3-004 based on impact on farm; comment of Jeannie Schreder, 48325 240th Avenue, Mazeppa, Tr. Cannon Falls 6/16/11 1:30 p.m., at 97: century farm affected by 2C3-004-2, 2C3-003-2; Pub. Ex. 44; comment of James Schreder, Tr. Cannon Falls 6/16/11 1:30 p.m., at 102: keep the line on US 52; Pub. Ex. 45; comment of Jenny King, 19344 480th Street, Zumbrota, Tr. Pine Island, 6/15/11 6:30 p.m., at 92.

320. Option 2C3-005-2 is a slight variation on the 2P route; it would leave the southern location of the substation and head south before heading east on 500th Street (instead of exiting the substation to the east before turning south to 500th Street). The parallel alignment would split at CSAH 11; the 161 kV line would turn south there, and the 345 kV line would continue east.³⁹⁴

321. Route option 2C3-006-2 would leave the northern location of the substation and proceed south on US 52 to 500th Street, where it would turn east. From there it is the same as 2C3-005-2. Option 2C3-007-2 is similar to 2C3-005-2 except that the parallel alignment would continue east on 500th Street past CSAH 11 to the point where 2C3-003-2 and 2C3-004-2 turn south cross-country. The parallel alignment would end in the same location as 2C3-003-2 and 2C3-004-2.³⁹⁵

322. Finally, route option 2C3-008-2 would exit the southern location of the substation and head east to US 52, where it would turn south for 0.5 miles. The parallel alignment would end there at 500th Street. The 161 kV line would head east, while the 345 kV line would head south and east.³⁹⁶

B. Effects on Human Settlement.

323. **Proximity to Structures.** The parallel alignment portion of the 161 kV and 345 kV lines in this segment requires a right-of-way of 200 feet (100 feet on either side of the centerline); the right-of-way for the 161 kV portion alone would be 80 feet (40 feet on either side of the centerline). The following chart summarizes the proximity of homes from the center line of each route alternative in Segment 2:³⁹⁷

³⁹⁴ Ex. 113 at 122.

³⁹⁵ *Id.* at 123-24.

³⁹⁶ *Id.* at 125.

³⁹⁷ *Id.* at 128. There is double-counting of impacts along the portion of the C route alternatives where the 161 kV and 345 kV lines run parallel to each other. The separate impacts can be calculated from Appendix I of Ex. 113.

Table 8.2.4.3-1 Proximity of homes along each proposed route alternative - Segment 2

Route Alternative	Number of Homes					
	Within 0-40 feet	Within 41-100 feet (Parallel alignment portion)	Within 41-100 feet (161 kV portion)	Within 101-300 feet	Within 301-500 feet	Total homes within 500 feet
2P	0	NA	7	51	49	107
2P-001	0	NA	6	45	49	100
2P-002	3	NA	5	59	110	177
2B-001	1	NA	4	39	54	98
2A-001	0	NA	1	32	53	86
2A-002	0	NA	3	32	49	84
2A-003	0	NA	3	35	55	93
2A	0	NA	1	27	49	77
2C3-001-2	3	2	5	46	67	123
2C3-002-2	3	0	4	40	50	97
2C3-003-2	3	0	4	35	50	92
2C3-004-2	3	0	4	35	50	92
2C3-005-2	0	0	7	51	49	107
2C3-006-2	0	3	7	57	54	121
2C3-007-2	3	0	4	42	50	99
2C3-008-2	0	0	7	51	48	106

324. The 2A route option has the fewest homes within the 1,000-foot route width, and 2P-002, which goes through Oronoco, has significantly more homes within the route width than any other option.

325. There are no schools, churches, cemeteries, or hospitals within the 1,000-foot route width of any of the proposed alternatives in this segment.³⁹⁸

326. **Displacement.** Displacement impacts have the potential to occur for homes in the 0-40 foot column of all route options; in addition, there may be displacements of homes in the 41-100 foot column in routes using the parallel alignment.³⁹⁹

327. Homes are present within the right-of-way of route alternatives 2B-001, 2P-002, 2C3-001-2 through 2C3-004-2, 2C3-006-2, and 2C3-007-2. With a total of five homes within the right-of-way, route option 2C3-001-2 has the greatest number of potential displacement impacts.

328. Within this segment, pinch points are located along 2P (three pinch points), 2B-001 (one pinch point), and along all 2C3 route alternatives (three pinch points). All three pinch points on the 2P route occur along 65th Avenue NW.⁴⁰⁰

³⁹⁸ Ex. 113 at 128.

³⁹⁹ *Id.*

⁴⁰⁰ *Id.* at 129-30.

C. Effects on Land Use.

329. All route alternatives in this segment are located on or adjacent to primarily agricultural land in use for crops, pasture, or grassland. Each alternative also runs adjacent to a small amount of forested land.⁴⁰¹

330. The topography in this area is generally flat, with a few rolling hills and some steeper slopes along river valleys. Route options 2C3-003-2, 2C3-004-2, and 2C3-007-2 would experience the greatest change in topography, with slopes of about 12% to 20% around section 25 of township 109, range 15, near the Dry Run Creek.⁴⁰²

331. Goodhue County Zoning Ordinances protect agricultural lands from development. The portions of the proposed project that cross agricultural lands would not, however, be subject to scrutiny by the county. In addition, the Olmsted County General Land Use Plan provides that location of high voltage transmission lines should be controlled to the extent allowable to minimize potential aesthetic and other public health or welfare impacts, including property impacts; however, Olmsted County has no direct authority over the route permit for this project.⁴⁰³

D. Effects on Land-Based Economies.

332. **Agriculture.** All route alternatives in this segment would impact similar amounts of prime farmland within the right-of-way, except that the percentages of prime farmland are slightly lower in route options 2P-001, 2B-001, 2C3-002-2 through 2C3-004-2, and 2C3-007-2. Overall, these differences are not significant.⁴⁰⁴

333. **Mining.** All of the 2A route alternatives and 2B-001 have one aggregate mine within the 1,000-foot route width.⁴⁰⁵ In addition, the DNR has identified an undeveloped deposit of sand and gravel in the northwest corner of New Haven Township (sections 5 through 8) that the DNR considers important, because these resources are scarce in the region.⁴⁰⁶ All 2A route alternatives go through this area. Impacts to this area likely could be mitigated through careful alignment within the route.⁴⁰⁷

334. **Forestry.** There is one tree farm located in New Haven Township in Olmsted County; this is the only known small-scale forestry resource located in this segment. Route alternatives 2P, 2C3-001-2, 2C3-005-2, 2C3-006-2, and 2C3-008-2 would run along 117th Street NW, adjacent to the tree farm. Because these routes would run along the street, impacts to the tree farm are not anticipated.⁴⁰⁸

⁴⁰¹ Ex. 113 at 130.

⁴⁰² *Id.*

⁴⁰³ *Id.* at 132.

⁴⁰⁴ *Id.*

⁴⁰⁵ *Id.*

⁴⁰⁶ DNR letter to Matt Langan (Apr. 29, 2011); Ex. 113 at 132.

⁴⁰⁷ Tr. 3:86 (Schrenzel).

⁴⁰⁸ Ex. 113 at 132.

E. Effects on Cultural Resources.

335. There are no archeological sites registered with the NRHP within one-half mile of either side of the proposed centerline for any of the route alternatives in Segment 2; however, there is one site within one mile of some of the 2P alternatives that has been recommended to be eligible for listing on the NRHP. The remaining archeological sites were identified as “Not Determined” to be eligible for listing. The 2P route alternatives would potentially affect between six and 14 archaeological sites; alternative 2P-001 would affect 14 sites, the most of any route option. The 2A route alternatives would potentially affect four sites, except for 2A-001, which would affect three sites. The 2B and 2C alternatives have potential impacts ranging from one to nine sites.⁴⁰⁹

336. There are no historic architectural sites registered on the NRHP within one-half mile of the 2P route alternatives; there are three within one mile of the 2A options, all within the municipal boundary of Pine Island. The route options would impact approximately equal numbers of historical architectural sites within one-half mile of either side of the proposed route centerline, potentially affecting between 22 and 29 sites; however, options 2P-002 and 2C3-001-2 would impact 63 and 75 historic sites, respectively.⁴¹⁰

F. Effects on the Natural Environment.

337. **Water Resources.** The main watercourses that run through this segment are the Middle Fork Zumbro River, Dry Run Creek, and the North and South Branch of the Middle Fork Zumbro River. The 2P route option would cross the Middle Fork Zumbro River, as would options 2P-001, 2C3-002-2, 2C3-004-2, and 2C3-007-2. The 2A route alternative would cross the Middle Fork Zumbro River and the North and South Branch of the Middle Fork Zumbro River. Options 2A-003 and 2B-001 would cross the South Branch of the Middle Fork Zumbro River.⁴¹¹

338. There are no designated trout streams or designated trout stream tributaries within the right-of-way of any route alternatives in this segment.⁴¹²

339. There are two impaired watercourses within this segment: the Middle Fork Zumbro River and the South Branch of the Middle Fork Zumbro River. With the exception of route 2P-002 (which does not cross any impaired watercourse), all route options would require crossing at least one impaired watercourse.⁴¹³

340. Shady Lake is the only lake listed in the public waters inventory in this segment. The following route options would require crossings of Shady Lake in three

⁴⁰⁹ Ex. 113 at 141.

⁴¹⁰ *Id.*

⁴¹¹ *Id.* at 137.

⁴¹² *Id.*

⁴¹³ *Id.*

locations: 2P-002, 2C3-002-2, 2C3-003-2, 2C3-004-2, and 2C3-007-2. The remaining route options would not cross Shady Lake.⁴¹⁴

341. The DNR opposes the use of all routes that cross Shady Lake where there is no existing infrastructure (all the above routes except for 2P-002, which would cross the lake on US 52).⁴¹⁵

342. Route option 2P-002 has the fewest number of watercourse crossings, with the remainder having between 10 and 25 crossings. Options 2P, 2P-001, 2P-002, 2B-001, 2C3-001-2, 2C3-005-2, and 2C3-008-2 have only two PWI watercourse crossings; the rest range from three to seven crossings. With regard to impaired stream crossings, all route options cross impaired streams between one and three times except for 2P-002, which does not cross any impaired streams.⁴¹⁶

343. Wetlands in this segment consist mostly of small freshwater emergent wetlands and forested wetlands. Route option 2A-001 has significantly more wetland within its right-of-way than the other route alternatives; option 2C3-001-2 has the most acres of forested wetland within its right-of-way. Option 2P-002 contains no forested wetland areas. Options having the fewest wetland impacts within the route width (less than 50 acres) are 2P, 2P-001, 2P-002, 2B-001, 2A, 2A-002, and 2C3-005-2, 2C3-006-2, and 2C3-008-2. The following route options have wetlands within the right-of-way that are wider than 1,000 feet and could potentially require pole placement within the wetland: 2A-001, 2C3-002-2 through 2C3-004-2, and 2C3-007-2.⁴¹⁷

344. **Flora.** There is little variability in vegetation cover between the 2P and 2A route alternatives. These areas have approximately the same proportions of cropland, grassland, forested land, shrubland, aquatic, and artificial vegetation communities.⁴¹⁸

345. **Fauna.** There is one grassland bird conservation area (GBCA) located south of Pine Island that is less than one mile from the P route alternatives, but is not crossed by any of these alternatives. There are two GBAs within one mile of the 2A routes, and only one of them is crossed by these alternatives, for approximately 2.6 miles.⁴¹⁹

346. All route options have a comparable number of acres (45 to 65) of conservation easements within one mile, except for 2C3-002-2 and 2C3-007-2, which have significantly more acres (85) within one mile. The 2A alternatives and 2C3-001-2 have no acres of conservation easement land within the right-of-way; all other options have between 8 and 40 acres of conservation easement land within the right-of-way.⁴²⁰

⁴¹⁴ Ex. 113 at 137.

⁴¹⁵ DNR letter to Matt Langan (Apr. 29, 2011).

⁴¹⁶ Ex. 113 at 137-38.

⁴¹⁷ *Id.* at 139, 141.

⁴¹⁸ *Id.* at 135.

⁴¹⁹ *Id.* at 137.

⁴²⁰ *Id.*

347. There are no National Wildlife Refuges, Waterfowl Production Areas, DNR Wildlife Management Areas, DNR Scientific and Natural Areas, DNR designated trout streams, or Important Bird Areas within one mile of the 2P or 2A alternatives.⁴²¹

G. Effects on Rare and Unique Natural Resources.

348. Seven threatened species have been documented within one mile of the various route alternatives in Segment 2: two plant species, two mussel species, two turtles, and one snake. No state endangered species or federally listed species have been documented within one mile of this segment. Because watercourses could likely be spanned, impacts to mussel species are not anticipated.⁴²²

349. A threatened plant (the Indian plattain) has been found within the right-of-way of 2P, 2P-001, 2P-002, and all of the 2C alternatives. The Blandings turtle has been documented within the right-of-way of the 2A, 2B-001, and 2P-001 routes. The timber rattlesnake has been documented within the right-of-way of 2A, 2A-001, and 2A-002.⁴²³

350. With the exception of 2P-001, there are no DNR native plant communities present within the right-of-way of any route alternative in this segment. They have been documented within one mile of 2A, 2A-001 through 2A-003, 2B-001, 2C3-003-2, 2C3-004-2, and 2C3-006-2.⁴²⁴

351. With the exception of 2A-002 and 2C3-001-2, which have at least five acres of Sites of Biodiversity Significance within the right-of-way, all other route options have less than two acres of SBS within the right-of-way.⁴²⁵

352. There are no acres of designated railroad prairie within the right-of-way of any route alternatives in this segment.⁴²⁶

H. Use of Parallel or Existing Right-of-Way.

353. The following route alternatives all share right of way with existing infrastructure (transmission line, county or township roads, and/or trail) for more than 90% of the total route distance: 2P, 2P-001, 2P-002, 2B-001, 2C3-005-2, 2C3-006-2, and 2C3-008-2.⁴²⁷ Route 2P, for example, has the following percentages of shared right-of-way: 68.3% county or township road; 2.3% trail; 9.6% transmission line; 3.8% transmission line and county or township road; and 8.2% transmission line and trail. In addition, 4.2% of this route follows field lines and 3.6% is cross-country.⁴²⁸

⁴²¹ Ex. 113 at 137.

⁴²² *Id.* at 133.

⁴²³ *Id.*

⁴²⁴ *Id.*

⁴²⁵ *Id.*

⁴²⁶ *Id.*

⁴²⁷ *Id.* at 143.

⁴²⁸ Ex. 113 at App. I.

354. Route alternatives 2A, 2A-001 through 2A-003, and 2C3-001-2 offer the greatest opportunity to minimize corridor proliferation by following existing transmission line corridors.⁴²⁹ Route 2A, for example, has the following percentages of shared rights of way: 33.2% county or township road, 9.4% trail, 30.7% transmission line, 1.9% transmission line and county or township road, and 7% transmission line and trail. About 10.8% of this route follows field lines, and 7.0% is cross-country. For the 2A-003 option, the percentages on roads and transmission lines are higher, and the cross-country percentage is smaller: 41.4% of the route is on county or township roads, 32% on transmission line, 3.8% is on trail, 9.1% is on field lines, and 4.3% is cross-country.⁴³⁰

355. Route alternatives 2C3-002-2 through 2C3-004-2 and 2C3-007-2 offer the fewest opportunities for right-of-way sharing.⁴³¹

I. Effects on Transportation.

356. The proposed route alternatives run parallel to a variety of roadway types, including county roads and highways, state highways, and a US Highway. The 2P route parallels various local roads as well as County Road 31, the Douglas Trail, and US 52.

357. The 2P (and 3P, and some 2C3) routes leave the southern location of the substation and run along 500th Street for approximately two miles. This is a road that MnDOT plans to improve as a supporting road for the Elk Run interchange (described below). The Applicant would have to work closely with MnDOT to obtain a workable alignment on 500th Street.⁴³²

358. MnDOT is currently constructing an interchange on US 52 south of Pine Island, known as the Elk Run project. The project involves construction of a new interchange, realignment of existing county roads including CSAH 11 (Goodhue County), and addition of frontage roads. A number of routes would be within or near the Elk Run project, including 2P, 2B-001, 2C3-001-2, 2C3-005-2, 2C3-006-2, 2C3-007-2, and 2C3-008-2. If any of these routes are chosen, additional consultation with MnDOT would be necessary to identify and assess the possibility of avoiding conflicts with this project.⁴³³

359. According to MnDOT, it would be difficult or impossible to find an acceptable alignment for route 2P-002, which would stay on US 52 through Oronoco

⁴²⁹ Ex. 113 at 143.

⁴³⁰ Ex. 113 at App. I.

⁴³¹ *Id.*

⁴³² Tr. 3:156 (Seykora); Ex. 108.

⁴³³ Ex. 113 at 145; Tr. 3:147-55 (Seykora). Route 2P-001 does not go through the Elk Run interchange, but it goes through the area in which a future business park is proposed. The Applicant does not support this option. See Ex. 2 at 21 (Hillstrom Direct).

into Rochester.⁴³⁴ The Applicant also opposes 2P-002 because of its length, constructability issues, and impacts to residences.⁴³⁵

360. The 2A routes avoid the area of the Elk Run interchange and the future business park.⁴³⁶ The 2A route parallels various local roads as well as the Douglas Trail. Based on consultation with MnDOT, the 2A routes are not expected to impact future road expansion or infrastructure along these roadways.⁴³⁷

361. The proposed routes in this segment do not parallel or cross any railroads and do not run close to any public airports or aviation facilities.⁴³⁸

J. Effects on Recreation.

362. There is one local park, Pine Island Wayside Park, located in this segment. It is not within the right-of-way of any route alternative, but it is within the 1,000-foot route width of 2C3-001-2. The park would be visually impacted by the 2C3-001-2 route.

363. The entire Zumbro River system, including its forks and branches, is part of the Minnesota State Recreation Water Trail network. It offers recreational opportunities for boating, fishing, and swimming. Route alternatives 2P, 2P-002, 2C3-001-2, 2C3-006-2, and 2C3-008-2 cross branches of the Zumbro River twice, while all other route alternatives would cross branches of the Zumbro River four or five times.⁴³⁹ The above route alternatives would minimize visual impacts to the river because they have the fewest crossings; however, alternative 2P-002 would require a 900-foot crossing of the Middle Fork and an 1,100-foot crossing of the South Branch.⁴⁴⁰

364. The 2A route alternatives would cross the North Branch, Middle Fork, and South Branch of the river. The North Branch crossing would be approximately 260 feet and would follow an existing transmission line crossing. The Middle Fork and South Branch crossings would be on new alignments and would be 65 feet and 55 feet, respectively.⁴⁴¹

365. Route alternative 2C3-002-02 would require a 390-foot crossing of the Middle Fork, and three crossings of the South Branch of 65 feet, 105 feet, and 90 feet.⁴⁴²

⁴³⁴ Tr. 3:154 (Seykora).

⁴³⁵ Ex. 2 at 20 (Hillstrom Direct).

⁴³⁶ Ex. 1, App. M, Sheet Map 17.

⁴³⁷ *Id.*

⁴³⁸ *Id.*

⁴³⁹ Ex. 113 at 145. Route 2P-001 crosses the river once, but it connects to 2P, which has additional crossings.

⁴⁴⁰ Ex. 113 at 60-61.

⁴⁴¹ *Id.* at 60.

⁴⁴² *Id.* at 60-61.

366. The proposed transmission lines would not impede use of the Minnesota State Recreational Water Trail; however, the transmission line crossings would have visual and aesthetic effects.⁴⁴³

367. The Douglas State Trail runs through Segment 2 between Pine Island and Rochester. The Douglas State Trail is a 12.5-mile, multiple use state trail that was developed on an abandoned railroad grade. One treadway is paved for bicyclists, hikers, in-line skaters, and skiers; the other is a natural surface for horseback riders and snowmobilers.⁴⁴⁴ The Douglas Trail is a valued recreation resource in the area north of Rochester.

368. The DNR purchased the Douglas State Trail with funds from the Land and Water Conservation Act (LAWCON). This funding source requires that land planned, developed, or improved with these funds cannot be converted to uses other than outdoor recreation unless replacement land with reasonable equivalent usefulness is provided. Transmission lines currently run parallel to the trail between 60th Avenue NW and CSAH 22; the lines are not, however, in the trail right-of-way. The DNR recommends that the project avoid the trail right-of-way to the greatest extent possible; it also recommends minimizing the removal of woody vegetation that provides a wind break, shade, and scenic value to trail users.⁴⁴⁵

369. The transmission structures would be placed outside the trail itself, but in places where there is not dense tree cover the poles would be visible from the trail. It is likely that trees would need to be removed along some areas of the trail. The Applicant would work with the DNR during the detailed design and permitting stages to develop a mitigation plan that would minimize the loss of trees. The trail would not be converted to non-recreational use.⁴⁴⁶

370. The 2P Route follows the Douglas Trail for approximately 1.25 miles and crosses the trail in one location, whereas the 2A Route follows the Douglas Trail for approximately 3.5 miles and crosses the trail in three locations.⁴⁴⁷ Option 2A-001 would follow the Douglas Trail for approximately 6.25 miles; options 2A-002 and 2A-003 would follow it for about 2.5 miles.⁴⁴⁸

371. All route alternatives in this segment would have between four and ten snowmobile trail crossings within the right-of-way and between 2.5 and 8.6 miles of snowmobile trail within the 1,000-foot route width. Alternatives 2A, 2A-001, and 2C3-001-2 have the most snowmobile crossings within the right-of-way and the most miles of trail within the route width (2A-001 follows the longest portion of the Douglas Trail, portions of which also function as a snowmobile trail). Option 2A-003 has fewer

⁴⁴³ Ex. 113 at 61.

⁴⁴⁴ *Id.* at 60.

⁴⁴⁵ DNR letter to Matt Langan (Apr. 29, 2011).

⁴⁴⁶ Ex. 113 at App. O, p. O-12.

⁴⁴⁷ Ex. 1 at 9-14 (Application).

⁴⁴⁸ Ex. 113 at 145.

crossings than the 2P routes, but it has more miles of trail within the 1,000-foot route width.⁴⁴⁹

K. ALJ Recommendation for Segment 2.

372. The 2P, 2B-001, and 2C route alternatives all have three pinch points on 65th Avenue NW, which would make it difficult to move the centerline without displacing homes. The 2P alternatives and several of the 2C alternatives also would have transportation impacts, as they would run near the area where the Elk Run interchange is currently being constructed on US 52. Option 2P-002 would greatly increase the number of residences impacted by the line, because it would stay on US 52 through Oronoco. In addition, many of the 2C route alternatives would involve multiple crossings of Shady Lake where there is no existing infrastructure.

373. The 2A route alternatives have no pinch points and would impact substantially fewer homes than the 2P alternatives; they follow fewer roadways but substantially more existing transmission line corridors than 2P (30.7% vs. 9.6%). In addition, the 2A options (except 2A-001) generally impact fewer wetlands and lands with conservation easements. There are more river crossings on the 2A routes, but the crossings are shorter than for the 2P-002 route, and one crossing would follow an existing transmission line.

374. All route options would impact the Douglas Trail to some extent. Option 2P would follow the trail for 1.25 miles; 2A for 3.5 miles; 2A-001 for 6.25 miles; and 2A-002 and 2A-003 for 2.5 miles. Option 2A-002, however, has a significantly larger impact on Sites of Biodiversity Significance within the right-of-way.

375. The Administrative Law Judge concludes the 2A route option would share the most transmission corridor and would provide the best balance of impacts on human settlement and the natural environment. If the Commission were to select a route other than the 3A option for Segment 3, the 2A route could commence two miles farther south at the southern location of the North Rochester substation; in that event, the length and cost of the 2A route would be comparable to the length and cost of the 2P option.⁴⁵⁰

VII. SEGMENT 3: APPLICATION OF ROUTING CRITERIA.

A. Description of Route Alternatives.

376. The 3P route leaves the southern location of the North Rochester substation and runs generally south and east, following a few short segments of county or township road but mostly following field lines or going cross-country for 33 miles, until it joins the Q-3 transmission line heading northeast to the crossing of the Mississippi River. The route generally stays east of Pine Island and north of the City of Oronoco; it passes through a portion of Oronoco Township west of the Zumbro River that contains

⁴⁴⁹ Ex. 113 at 146.

⁴⁵⁰ See Ex. 113 at App. I.

small hobby farms, as well as many miles of agricultural land to the east. The 3P route crosses the Zumbro River at White Bridge Road. It is 44.74 miles in length.⁴⁵¹

377. While the White Bridge Road (southern) crossing would require some additional tree clearing, the bridge provides an existing corridor that could be used to minimize impacts to the river.⁴⁵²

378. Olmsted County and Oronoco Township opposed the selection of route 3P on the basis that it would interfere with planned residential areas in Oronoco Township and would have a negative impact on recreational use of Lake Zumbro.⁴⁵³

379. In general, persons living in Oronoco Township objected to the 3P route because it would affect more residences in an area where the township has gone to considerable effort to zone carefully to protect wildlife and to develop housing in a manner that accommodates the needs of its residents.⁴⁵⁴

380. Residents living in the vicinity of White Bridge Road tended to object to the 3P route and support the 3A route to the north, contending the line should be placed in less densely populated areas.⁴⁵⁵ A portion of the land (less than one mile of the route)

⁴⁵¹ Ex. 113 at 148.

⁴⁵² Ex. 1 at 5-18 (Application).

⁴⁵³ Email dated 6/30/11, Paul Wilson, Chair, Olmsted County Board of Commissioners, efiled 6/17/11, attaching resolution dated 6/14/11 opposing route 3P; Exs. 66-69.

⁴⁵⁴ Comment of Charlie Lacey, Oronoco Township Planning Commission, Tr. Pine Island 6/15/11 6:30 p.m., at 37; comment of Paige Collins, Oronoco Township Planning Commission, Tr. Pine Island 6/15/11 1:30 p.m., at 34; comment of Sheldon King, president of Lake Zumbro Improvement Assoc., 58 Shorewood Lane NE, Rochester, Tr. Pine Island 6/15/11 6:30 p.m., at 32: objects to the two south crossings of Zumbro River.

⁴⁵⁵ Comment of Neil Stolp, Township supervisor, 3951 White Bridge Road NW, Oronoco Township, Tr. Pine Island 6/15/11 1:30 p.m., at 91; comment of Quin Feuerstein, 13426 Power Dam Road NW, Oronoco, Tr. Pine Island 6/15/11 6:30 p.m., at 33; email 6/22/11, Lori and Leland Glabe, 12406 CR 18 NW, Oronoco, efiled 6/24/11, concerned about stray voltage and effect on cell phones, tvs, computer reception; comment of Mark Thein, Township supervisor, 11032 Cedar Beach Drive NW, Oronoco, Tr. Pine Island 6/15/11 1:30 p.m., at 55; Pub Ex. 18; email 6/28/11, Mark Thein, 11032 Cedar Beach Drive NW, Oronoco, efiled 7/27/11; email dated 6/27/11, Marie Thein, efiled 7/27/11, objects to 3P-001 to -010, would run adjacent to her property at White Bridge Hills subdivision; comment of Craig Thein, 976 Golden Finch Lane NE, Oronoco Township, Tr. Pine Island 6/15/11 1:30 p.m., at 112; email 6/29/11, Craig Thein, 976 Gold Finch Lane NE, Oronoco Township, efiled 7/27/11, pick route that will harm fewest people, parcels, and property values; comment of Karen Sandberg, 11128 Cedar Beach Drive, Tr. Pine Island 6/15/11 1:30 p.m., at 61: fears impact to swans, eagles, and pelicans on Cedar Beach; Pub Ex. 19; comment of Paige Collins, Oronoco Township Planning Commission, Tr. Pine Island 6/15/11 1:30 p.m., at 34; comment of Kevin Collins, 1082 White Bridge Road NW, Tr. Pine Island 6/15/11 1:30 p.m., at 88; Pub. Ex. 25; email dated 6/27/11, Kevin Collins, 1082 White Bridge Road NW, Oronoco, efiled 7/27/11; comment of Penny Robinson, 11820 14th Ave NW, Oronoco, Tr. Pine Island 6/15/11 1:30 p.m., at 44; letter/email Penny Robinson, 11820 14th Ave NW, Oronoco, efiled 6/17/11, objects to 3P route, also 3P-005, 3P-009; supports 3A or 3P-Zumbro-N routes; email 6/21/11, Judy and Ron Haglund, 12235 25th Ave NW, Oronoco, efiled 6/24/11; email 6/29/11, David and Jan Marie Munz, 11098 Cedar Beach Drive NW, Oronoco, efiled 10/20/11; email 6/30/11, John Ryba, 12400 Cardinal Lane NE, Rochester, efiled 10/20/11.

near the White Bridge Crossing is identified as “Potential Suburban” for future residential development;⁴⁵⁶ the land near the other crossings is zoned agricultural.⁴⁵⁷

381. Farmers living just east of the Zumbro River in Oronoco Township objected to impacts to the township’s largest feedlot and two remaining dairy farms.⁴⁵⁸

382. A number of residents urged that, if the Commission were to select the 3P route, the line should be moved farther from their homes within the route width. The Applicant generally supported this type of accommodation.⁴⁵⁹

383. Farmers living farther east, in the vicinity of Plainview Township, also objected to the impacts of the 3P route on their farming operations.⁴⁶⁰

384. The DNR supported this route because, in its judgment, the White Bridge Road crossing would involve less tree clearing than the Zumbro Dam crossing.⁴⁶¹

385. Route option 3P-001 would leave the southern location of the substation and follow 500th Street and CSAH 11 for about 4.7 miles before turning south to join 3P; 3P-002 is a minor variation that would shift the line south running cross-country for about 1.5 miles before joining the 3P route. Option 3P-003 is similar to 3P but would run farther east on 500th Street (2.95 miles) before turning south on 200th Avenue.⁴⁶²

⁴⁵⁶ Ex. 15 at 4 (Hillstrom Rebuttal).

⁴⁵⁷ Ex. 66 at 25.

⁴⁵⁸ Jim and Heanie Rucker, 2765 115th St NW, Oronoco; Adam Rucker; Vernon and Marie Rucker, Kathy Rucker; Kraig Rucker, efiled 10/20/11, owners of largest feedlot in township potentially impacted by 3P, 3P-010; comment of John Markham, 1548 White Bridge Road NW, Oronoco, Tr. Pine Island 6/15/11 1:30 p.m., at 73: Jersey cows are difficult to raise, farm is north of 3P, south of 3P-010, east of 3P-009; Pub Ex. 22; comment of John Tiedeman, 1647 115th Street, Tr. Pine Island 6/15/11 1:30 p.m., at 78: Just south of 3P, only two dairy farms in Oronoco Township and power line would go right through them; Pub Ex. 23; comment of Gerald Tiedeman, 1647 115th Street, Tr. Pine Island 6/15/11 1:30 p.m., at 87.

⁴⁵⁹ Julie Devick, 11884 14th Avenue NW, Oronoco, Tr. Pine Island 6/15/11 1:30 p.m., at 31: supporting alignment alternative 10 on 3P route; letter 6/20/11, Julie Devick, efiled 6/24/11; comment of Allan and Jennifer Whipple, 12005 Highway 63 North, Farmington Township, Tr. Plainview 6/14/11 1:30 p.m., at 47, 51: proposes moving line farther from his home within the 1,000-foot route width of 3P; Public Ex. 3; comment of Lisa Bayley, attorney on behalf of Dan and Laura Kreofsky, Tr. Plainview 6/14/11 1:30 p.m., at 34, 45: existing Q-3 line runs close to farmhouse and outbuildings, alignment alternative 12 would move line farther from the home within the route width; Pub. Exs. 1 and 2.

⁴⁶⁰ Letters 6/27/11, Alfred Thedens and Mike Thedens, 4236 125th St NE, Farmington Township, efiled 7/27/11, 3P route runs along south and east property line of his farm; would make it difficult to combine with son’s farm directly south and cousin’s farm directly east, as has been planned for some time; letter 5/26/11, Lisa Romball, regarding 12223 County Road 128 NE, Elgin, MN, efiled 6/1/11, objects to 3P route along section 9 of Farmington Township, this is productive farmland; comment of Pat Melvin, 26098 CR 79, Plainview Township, Tr. Plainview 6/14/11 6:30 p.m., at 89; comment of Robert Lambrecht, 25476 550th Street, Plainview Township, Tr. Plainview 6/14/11 6:30 p.m., at 21: 3P impacts prime agricultural land, already has transmission poles on his land;

⁴⁶¹ DNR letter to ALJ (June 29, 2011); DNR letter to Matt Langan (Apr. 29, 2011).

⁴⁶² Ex. 113 at 151-52.

386. Route alternative 3P-004 is a minor variation of the 3P route intended to mitigate impacts to a farm field in the area just before 3P joins the Q-3 line to head northeast.⁴⁶³

387. Alternatives 3P-005, 3P-006, and 3P-007 are minor variants of 3P that follow roads for short distances instead of following field lines in Oronoco Township.⁴⁶⁴ These variants are calculated, not always successfully, to avoid impacts to farm fields or farm operations.⁴⁶⁵

388. Route 3P-008 is another minor variant that would turn south just before the 3P route does, and it would proceed southeast for about 0.3 miles before returning to the 3P route.⁴⁶⁶

389. Option 3P-009 is a more significant variation that would continue east for three miles cross country in the area where 3P turns south; it would then run south on Postier Drive for 1.25 miles and connect with a transmission line for about 0.25 miles before rejoining 3P and heading east.⁴⁶⁷ Several members of the public who live on or near this route objected to it.⁴⁶⁸

390. Route 3P-010 would cross the Zumbro River at White Bridge Road and then follow White Bridge Road for 1.75 miles just north of the 3P route, which goes along field lines or cross-country in this area.⁴⁶⁹ Option 3P-011 would shift the 3P route 0.75 miles to the south for about one mile in this same area.⁴⁷⁰

391. The 3P-Kellogg route follows 3P until the point where it crosses US 61 (the Great River Road) near Kellogg. Instead of crossing the McCarthy Lake WMA, 3P-Kellogg would parallel US 61 north along a railroad line for 2.2 miles before turning east along County Road 84 and connecting with the Q-3 line again from the north as it crosses the Mississippi.⁴⁷¹

⁴⁶³ Ex. 113 at 152; *see also* comment of Roland Wood, 22060 CR 27, Plainview, Tr. Plainview 6/14/11 6:30 p.m., at 76: advocates 3P-004, which would move the line one quarter mile north on property line instead of across the middle of his property; Pub Ex. 15.

⁴⁶⁴ Ex. 113 at 152-53.

⁴⁶⁵ See email dated 6/30/11, Eilert and Sharon Muller, 3078 125th St. NW, Oronoco, efiled 10/20/11, impacted by 3P-005 and 3P-010; email 6/27/11, Mike and Lynne Thompson, efiled 7/27/11, objects to 3P-007, would run through farming operation and disrupt terraces installed for water and soil erosion.

⁴⁶⁶ Ex. 113 at 153.

⁴⁶⁷ *Id.* at 154.

⁴⁶⁸ Comment of Lori Isch, 41025 565th Street, Mazeppa Township, Tr. Pine Island 6/15/11 6:30 p.m., at 26: Too many route alternatives, too difficult to follow; comment of David Midthun, 13442 25th Avenue NW, Oronoco, Tr. Pine Island 6/15/11 6:30 p.m., at 49; Pub. Ex. 27, 28, 29, 30; comment of Theda Lyke, 13051 18th Ave NW, Oronoco Township, Tr. Pine Island 6/15/11 6:30 p.m., at 69; Pub. Ex. 32; email 6/21/11, Richard Lyke, 13051 18th Avenue NW, Oronoco, efiled 6/24/11; comment of Cheryl Baertlein, 56901 CR 21, Mazeppa, Tr. Pine Island 6/15/11 6:30 p.m., at 109; email Denise Leedham, 56448 County Road 21, Mazeppa, efiled 7/27/11.

⁴⁶⁹ *Id.* A resident who planned to build a home there objected to this route. See comment of Mike Riester, Section 11, Oronoco Township, Tr. Pine Island 6/15/11 1:30 p.m., at 25.

⁴⁷⁰ Ex. 113 at 156.

⁴⁷¹ *Id.* at 154.

392. Route 3P-Zumbro-S would follow 3P out of the southern location of the substation, but instead of turning south through Pine Island and Oronoco townships, it would keep heading straight east. It crosses the Zumbro River at the dam (the middle crossing), then heads south and southeast, where it connects to 3P at the point where it heads straight east.⁴⁷² This route is 42.92 miles in length.

393. Route 3P-Zumbro-N is similar to 3P-Zumbro-S, but it combines the 3P and 3A routes after crossing the Zumbro River. It follows 3P out of the southern location of the substation, but instead of turning south through Pine Island and Oronoco townships, it would keep heading straight east and cross the Zumbro River at the dam (the middle crossing). It then connects with the 3A route just west of Hammond. This route is 40.42 miles in length.⁴⁷³

394. At the (middle) Zumbro Dam crossing, there is an existing crossing of the river (the Zumbro Dam and Hydroelectric Generation Facility), and a 69 kV transmission line runs west from the dam.⁴⁷⁴ This crossing option would require new tree clearing on the east bank of the Zumbro River.⁴⁷⁵

395. Some members of the public objected to routes using the Zumbro Dam crossing of the river.⁴⁷⁶

396. The 3A route heads south for about one mile then straight east from the northern location of the substation, again mostly on field lines and cross-country. After crossing the Zumbro River (the north crossing), it heads southeast and east until it connects to the Q-3 transmission line to cross the Mississippi River. This route is 42.02 miles in length.⁴⁷⁷

397. The north crossing follows a property line across the Zumbro River at a location where there is no existing linear corridor on either side of the river.⁴⁷⁸ The north crossing would require more clearing of forested areas compared to the White Bridge Road Crossing.⁴⁷⁹

⁴⁷² Ex. 113 at 155.

⁴⁷³ *Id.*

⁴⁷⁴ Ex. 1 at Map 9.2-4; *id.* at App. M, Sheet Map 21.

⁴⁷⁵ Tr. 3:89 (Schrenzel); DNR letter to ALJ dated 6/29/11.

⁴⁷⁶ See letter 6/17/11, Lee Nauss, MD, 57227 406th Avenue, Mazeppa, efiled 6/24/11 (objects to 3P-Zumbro N and 3P-Zumbro-S, also 3A; supports 3P); comment of Lee Nauss, Tr. Plainview 6/14/11 6:30 p.m., at 83; comment of Merl Norman, board member of Layman for Christ, Inc., Woodland Camp, 39814 573rd Street, Zumbro Falls, Tr. Plainview 6/14/11 6:30 p.m., at 72; comment of Steven Walker, 57040 Highway 63N, Zumbro Falls, Tr. Plainview 6/14/11 6:30 p.m., at 96: 3A and 3P-Zumbro-S cross his farm, prefers 3P.

⁴⁷⁷ Ex. 113 at 149.

⁴⁷⁸ Ex. 1 at 5-18.

⁴⁷⁹ *Id.*

398. Wabasha County, the City of Mazeppa, the Mazeppa Township Board, and the Zumbro Township Board objected to the 3A route and voted to support the 3P route using the White Bridge Road crossing of the Zumbro River.⁴⁸⁰

399. The DNR recommended against the 3A crossing of the Zumbro River because it is a greenfield crossing (no existing infrastructure) that could fragment wildlife habitat.⁴⁸¹

400. Many members of the public living on or near the 3A route objected to it on the basis of its impact on the natural environment and farms.⁴⁸²

⁴⁸⁰ Comment of Deb Roschen, Wabasha County Commissioner, Tr. Plainview 6/14/11 6:30 p.m., at 30; Pub Ex. 8; comment of Duane Hofschulte, city administrator of City of Mazeppa, Tr. Plainview 6/14/11 1:30 p.m., at 67; Pub. Ex. 6; comment of Jay Sanborn, Chair of Mazeppa Township Board, Tr. Pine Island 6/15/11 1:30 p.m., at 29; Pub Ex. 17; comment of Steven Walker, supervisor of Zumbro Township Board, Tr. Plainview 6/14/11 6:30 p.m., at 33; Pub Ex. 9.

⁴⁸¹ Tr. 3:89 (Schrenzel).

⁴⁸² Comment of Chris Wheatley, 39270 590th St, Zumbro Falls, Tr. Cannon Falls 6/16/11 6:30 p.m., at 62: presenting 209 signatures on petition opposing 3A north route alternative based on deforestation, lack of existing infrastructure, contrary to policy of nonproliferation; Pub Ex. 48; Pub. Ex. 49; email from Christine Wheatley, 39270 590th Street, Zumbro Falls, efiled 7/27/11; email 6/16/11, John Adams, Supervisor, Mazeppa Township, efiled 6/17/11; email 6/7/11, efiled 6/14/11; email 6/30/11, Ron and Shirley Anderson, 57435 375th Avenue, Zumbro Falls, MN, efiled 10/20/11; email 6/27/11, Curtis Kuecker, 2213 White Bridge Rd NE, Rochester, efiled 7/27/11, supports 3P, puts HVTL in an increasingly developed area, but objects to 3P-011, 3P-006, 3P-007; email 6/30/11, Keith Danielson, 56994 375th Avenue, Zumbro Falls, efiled 7/27/11; letter dated 4/2/11, Richard Olson and Elizabeth Olson, 57419 N. CR 8, Plainview, efiled 10/20/11; email dated 6/25/11, Lois Silker, efiled 7/27/11; email 6/28/11, Sandra Nelson, 57734 406th Avenue, Mazeppa, opposes all routes, especially 3A; comment of Robert Kettner, 48820 County 55 Boulevard, Tr. Pine Island 6/15/11 1:30 p.m., at 30; email 6/29/11, Robert Kettner, 48820 County 55 Blvd, Pine Island, efiled 7/27/11; letter 6/24/11, Phyllis Crawford, 48822 County 55 Blvd, Pine Island, efiled 7/27/11, objects to 3A and 2C3-004 based on impact on farm; comment of Dean Regnier, 59363 CR 71, Mazeppa, Tr. Plainview 6/14/11 1:30 p.m., at 52: their land is located in Richard J. Dorer Memorial Hardwood Forest, 3A would fragment their parcels; Pub. Ex. 4; email 6/29/11, Dean Regnier, Mazeppa Township; email 6/29/11, Vernetta Pahl, 206 NE 1st Avenue, Pine Island, efiled 10/20/11; Letter 6/29/11, Jeannie and James Schreader, 48325 240th Ave, Mazeppa, efiled 7/27/11, opposes 3A route, 2C3-003, and 2C3-002; would cut our century farm in half horizontally and vertically; supports 3P; Comments of Marilyn Grossbach and Tom Grossbach, 42931 595th Street, Wabasha County, Tr. Plainview 6/14/11 1:30 p.m., at 64; Pub. Ex. 5; comment of Joe Mulholland, 59261 CR 7, Zumbro Falls, Tr. Plainview 6/14/11 1:30 p.m., at 68; Pub. Ex. 7; comment of Paul and Laura Mulholland, 59413 CR 7, Zumbro Falls, Mazeppa Township, Tr. Plainview 6/14/11 6:30 p.m., at 37; Pub Ex. 10; Pub Ex. 11; comment of Beau Kennedy, 59525 415th Ave, Mazeppa, Tr. Plainview 6/14/11 6:30 p.m., at 77; Pub Ex. 16; comment of Katie Kennedy, 59525 415th Avenue, Tr. Pine Island 6/15/11 1:30 p.m., at 82; Pub. Ex. 24; comment of Sue Johnson, 42167 603rd Street, Mazeppa Township, Tr. Plainview 6/14/11 6:30 p.m., at 85; comment of Kia Hackman, Tr. Plainview 6/14/11 6:30 p.m., at 86; letter 6/27/11, Kia Hackman, efiled 7/27/11; comment of Craig Weckwerth, 39386 590th Street, Zumbro Falls, Tr. Plainview 6/14/11, 6:30 p.m., at 75; email 6/28/11, Anita and Robert Seemann, Zumbro Falls, efiled 7/27/11; comment of Eric Walker, 57040 Highway 63 N, Zumbro Township, Tr. Plainview 6/14/11, 6:30 p.m., at 85: Route 3A goes through the family farm; comment of Ed Jostock, 3451 574th Street, Zumbro Township, Tr. Pine Island 6/15/11 6:30 p.m., at 22; email 6/29/11, Brian and Jill Draayer, 59207 423rd Ave, Mazeppa Township, efiled 7/27/11; comment of Mike Steffes, 35044 568th Street, Rochester, Tr. Plainview 6/14/11 6:30 p.m., at 26; email 6/23/11, David Theel, Oakwood Township, efiled 6/24/11; comment of George Bronk, 57195 CR 23, Millville, Tr. Plainview 6/14/11 6:30 p.m., at 92: 3A goes through his property.

401. The 3A Crossover route follows 3A to the point where 3A heads straight east; instead of turning east, it proceeds south cross-country and on field lines to connect with 3P where it heads straight east.⁴⁸³

402. Option 3A-001 is a minor variant of 3A; the line would shift about 0.25 miles to the south for 1.6 miles along CSAH 14 before joining the Q-3 transmission line.⁴⁸⁴

403. Option 3A-003 and 3A-004 are minor variants in the area where 3A turns south before heading straight east. These routes are similar in length to 3A.⁴⁸⁵

404. The 3A-Kellogg route is similar to 3P-Kellogg but follows the 3A route east to the Q-3 line, then parallels US 61 and avoids the McCarthy Lake WMA.⁴⁸⁶

405. Route 3B-003 would follow the 3P route until it intersects with Highway 42; instead of heading east to join the Q-3 line, the route would proceed northeast on Highway 42 for 11 miles, then follow County Road 84 for about 2.75 miles before connecting to the Q-3 line from the north. This route option is 45.57 miles long.⁴⁸⁷ This route offers the advantage of avoiding further impacts to the McCarthy Lake Wildlife Management Area, but has the disadvantage of using an additional corridor that is not already impacted by transmission lines.⁴⁸⁸

406. There are nine route options that correspond generally to the parallel alignments of the 161 kV line and 345 kV line, described above in Segment 2, and propose various alternatives for the 345 kV line through the rest of Segment 3. Option 2C3-001-3a is a continuation of 2C3-001-2 along US 52 south of the substation; it would travel east cross-country to Ash Road NW, where it would connect with 3P. Option 2C3-001-3b is similar, but it would continue southeast on CSAH 18 and east on White Bridge Road for 0.7 miles before returning to 3P.⁴⁸⁹

407. Route 2C3-002-3 is a continuation of 2C3-002-2 that connects to 3P in the northeast corner of Pine Island Township.⁴⁹⁰

408. Option 2C3-003-3 leaves the northern substation location and connects to the 3A route; Option 2C3-004-3 leaves the northern substation and connects to the 3P route in the northeast corner of Pine Island Township.⁴⁹¹

⁴⁸³ Ex. 113 at 156.

⁴⁸⁴ *Id.* at 150.

⁴⁸⁵ *Id.*

⁴⁸⁶ *Id.* at 155.

⁴⁸⁷ *Id.* at 151.

⁴⁸⁸ See Comment of Robert Wallace, 63336 Highway 42, Kellogg, Tr. Plainview 6/14/11 1:30 p.m., at 59: opposes 3B-003; comment of Roy Terry, 57174 205th Avenue, Tr. Plainview 6/14/11 6:30 p.m., at 67: 3A and 3B-003 cross his horse pasture.

⁴⁸⁹ Ex. 113 at 157.

⁴⁹⁰ *Id.*

⁴⁹¹ *Id.* at 158.

409. Route option 2C3-005-3 continues 2C3-005-2, leaving the southern substation location and following 500th Street for an additional 0.75 miles before turning south to connect with 3P north of Pine Island Township. 2C3-006-3 is similar, but it follows 500th Street east and turns south at 220th Avenue before connecting to 3P. Option 2C3-007-3 continues 2C3-007-2, connecting to the 3P route in the northeast corner of Pine Island Township. Option 2C3-008-3 connects to the 3P route on US 52 before it heads east.⁴⁹²

B. Effects on Human Settlement.

410. **Proximity to Structures.** All of the route options between North Rochester and the Mississippi River impact relatively low numbers of residences, with between 20 and 50 homes within 500 feet of the center line for this approximately 45-mile segment. The following table summarizes the proximity of homes from the center line of each route alternative in Segment 3.⁴⁹³

Table 8.3.4.3-1 Proximity of homes along each proposed route alternative - Segment 3

Route Alternative	Number of Homes						
	Within 0-75 feet		Within 0-100 feet		Within 76-150 feet	Within 151-300 feet	Within 301-500 feet
	150 foot ROW portion	200 foot ROW portion	150 foot ROW portion	200 foot ROW portion			Total homes within 500 feet
3P	0	NA	0	NA	1	5	20
3P-Kellogg	1	NA	1	NA	1	8	24
3P-Zumbro-N	0	NA	0	NA	2	6	15
3P-Zumbro-S	0	NA	0	NA	2	7	15
3P-001	0	NA	0	NA	0	12	18
3P-002	0	NA	0	NA	1	5	19
3P-003	0	NA	0	NA	0	12	17
3P-004	0	NA	0	NA	1	5	20
3P-005	0	NA	0	NA	1	7	20
3P-006	2	NA	2	NA	1	9	21
3P-007	0	NA	0	NA	1	4	18
3P-008	0	NA	0	NA	1	5	19
3P-009	6	NA	7	NA	4	12	18
3P-010	1	NA	2	NA	6	11	22
3P-011	0	NA	0	NA	1	5	18
3B-003	2	NA	2	NA	4	15	23
3A-001	0	NA	0	NA	0	4	16
3A-003	0	NA	0	NA	0	4	16
3A-004	0	NA	0	NA	0	4	16
3A-Crossover	0	NA	0	NA	0	5	16
3A-Kellogg	1	NA	1	NA	0	7	20
3A	0	NA	0	NA	0	4	16
2C3-001-3a	2	4	2	5	1	8	36
2C3-001-3b	3	4	3	5	1	10	38
2C3-002-3	0	0	0	0	1	9	19
2C3-003-3	0	0	0	0	0	4	16
2C3-004-3	0	0	0	0	0	5	19
2C3-005-3	0	0	0	0	0	12	19
2C3-006-3	0	0	0	3	6	15	23
2C3-007-3	0	0	0	0	0	12	19
2C3-008-3	0	0	0	0	1	5	20

⁴⁹² Ex. 113 at 160.

⁴⁹³ *Id.* at 164. Again, there is double-counting of impacts along the portion of the C route alternatives where the 161 kV and 345 kV lines run parallel to each other. The separate impacts can be calculated from Appendix J of Ex. 113.

411. Route options 3A, 3A-001, 3A-003, and 3A-004 have the fewest homes (20) within the 1,000-foot route width. Routes 3P-Zumbro-N, 3P-Zumbro-S, 3P-002, 3P-007, 3P-008, 3P-011, 3A Crossover, 2C3-003-3, and 2C3-004-3 have between 21 and 25 homes in the route width. Options 3P, 3P-001, 3P-003, 3P-004, 3A-Kellogg, and 2C3-002-2 have between 26 and 30 homes in the route width. The routes with the highest number of homes in the route width (more than 40) are 3P-009 and 3P-010, 3B-003, 2C3-001-3a, 2C3-001-3b, and 2C3-006-3.

412. There are no schools, churches, cemeteries, or hospitals within the route width of any of the proposed route alternatives in Segment 3.⁴⁹⁴

413. Oronoco Township disputes that impacts to human settlement should be measured in terms of the proposed route width (1,000 feet); it maintains that impacts should be measured in increments up to 1,350 feet on either side of the centerline (2,700 feet total) based on field reconnaissance activities indicating that 1,350 feet is the “effective distance at which one can see infrastructure and clearly discern that it is a high voltage transmission pole.”⁴⁹⁵ It also maintains that human settlement analysis should include any structure (including outbuildings). The Township also counted the number of “parcels” of land within the route width of what it considered its “study area,” which is between US 52 and Highway 63.⁴⁹⁶ When counted this way, the 3A option would impact 167 structures, the 3P route would impact 334 structures, and the middle crossing route would impact 218 structures; and the 3A route would affect 129 parcels, while the 3P route would affect 252 and the middle crossing route would impact 98.⁴⁹⁷

414. The Township also maintains that the 3P route would run across an area designated for suburban development and would effectively remove 550 acres of land from the suburban residential area;⁴⁹⁸ however, the 3P route does not cross any area identified as suburban development in the county’s future land use map. It crosses less than one mile of an area identified as potential suburban.⁴⁹⁹

415. Finally, the Township argues that land in agricultural use can tolerate transmission infrastructure more easily than land that is developed for residential use.⁵⁰⁰

416. The purpose of using a narrower route width is to give the public the most accurate information available as to where the line might actually go. Moreover, the Township has purported to count the number of structures and parcels within an expanded route width, but it has not evaluated any of the other routing criteria using this analysis; this makes it difficult to balance impacts to human settlement versus impacts to agriculture, the natural environment, transportation, recreation, and all the other factors to be examined. Human settlement is one of many factors, but it is certainly not

⁴⁹⁴ Ex. 113 at 164.

⁴⁹⁵ Ex. 66 at 12.

⁴⁹⁶ Tr. 2:102-05 (Smith).

⁴⁹⁷ Ex. 66 at 15-16 & attached exhibits 3 and 4; Ex. 68 at 10.

⁴⁹⁸ Ex. 66 at 24; Ex. 68 at 8-9

⁴⁹⁹ Ex. 15 at 4 (Hillstrom Rebuttal).

⁵⁰⁰ Ex. 66 at 25.

determinative, and there is no legal presumption in routing a transmission line that residential areas and hobby farms should be spared at the expense of prime farmland. The Township's analysis is not useful to a systematic evaluation of the routing criteria in the statute and rule.

417. **Displacement.** Route alternatives 3P-Kellogg, 3P-006, 3P-009, 3P-010, 3B-003, 3A-Kellogg, 2C3-001-3a, 2C3-001-3b, and 2C3-006-3 all have homes located within the right of way and might result in displacement. Along the 2C3 routes, houses located within the 200-foot right-of-way might also face displacement.⁵⁰¹

418. There is one pinch point on 3B-003, along County Road 84 just east of US 61, where two homes are located on opposite sides of the road directly across from each other; the other is on 3P-006, on White Bridge Road, where the line runs between adjacent residences that are both located close to the road.⁵⁰²

419. With regard to the 3B-003 route, the Applicant requested a wider route width to avoid displacement of the home that is in the right-of-way; the Applicant also believes that there is sufficient room at the pinch point on 3B-003 when the line is located on the north side of County Road 84.⁵⁰³

C. Effects on Land Use.

420. All route alternatives in this segment are located on or adjacent to primary agricultural land in crop, pasture, or grassland use; however, forests make up a more significant portion of the land use adjacent to the route alternatives than in other segments.⁵⁰⁴ There are no significant differences among the route alternatives as to the amount of cropland affected; route options 3P-Zumbro-N, 3A, 3A-001, 3A-003, 3A-004, 3A-Kellogg and 2C3-003-3 affect more forested land than the other route options.⁵⁰⁵

421. The topography in this area is generally flat with a few rolling hills and some steeper slopes along river valleys. All of the 3A route alternatives and 2C3-003-3 experience large changes in topography, with slopes of 12% to 20% near the Zumbro River. All route alternatives except for 3B-003 follow the existing transmission line leading to the Mississippi River; this area has large elevation changes with slopes of more than 12 percent.⁵⁰⁶

422. Transmission towers and lines change the visual quality of views in the agricultural landscape; however, due to the relatively low population densities and small numbers of travelers on most route alternatives, this Project would affect relatively few

⁵⁰¹ Ex. 113 at 164.

⁵⁰² *Id.*

⁵⁰³ Ex. 6 (Schedule 4 to Hillstrom Direct); Ex. 114.

⁵⁰⁴ Ex. 113 at 164.

⁵⁰⁵ *Id.* at 166.

⁵⁰⁶ *Id.* at 164.

people. The major impact on residential areas may include changes to viewsheds and potential minor noise impacts for properties close to the transmission line.⁵⁰⁷

423. In general, the route alternatives in this segment are not inconsistent with city or county ordinances or land use plans.⁵⁰⁸

D. Effects on Land-Based Economies.

424. **Agriculture.** The primary land-based economies in this segment are agricultural, including crops (corn and soybeans), livestock (turkeys, pigs, hogs, and cattle), dairy farms, and bee-keeping.⁵⁰⁹

425. More than 70% of the land in this segment is designated as “prime farmland if drained or protected from flooding.” The percentage of prime farmland within the right-of-way is slightly higher in route options 3A, 3A-001, 3A-003, 3A-004, 3A-Crossover, 3A-Kellogg, and 2C3-003-3; these same routes tend to affect less land that is designated as “prime farmland if drained or protected from flooding.”⁵¹⁰

426. **Mining.** There are mines and future reserve areas located along the route options in this segment, but the transmission line would not directly impact any existing mining operations.⁵¹¹

427. **Forestry.** Within the RJD State Forest, there are 53 DNR forest stands located within 500 feet of the route alternatives in this segment; timber plans for these stands are not currently available. There is a small, privately owned tree farm in the RJD State Forest in Township 109, Range 14, Section 15; all the 3A route alternatives and 2C3-003-3 would run through this tree farm. Several other tree farms and woodlots are in the vicinity of the proposed routes. Owners of these farms objected strongly to route options that would impact their property.⁵¹²

E. Effects on Cultural Resources.

428. Along most of the 3P route alternatives, there are seven archaeological sites documented within one mile of the route centerline. Two are listed as single artifacts, two are listed as earth works and artifact scatter, one is listed as artifact scatter, and two are listed as lithic scatter. One of the lithic scatter sites is not eligible for listing on the NRHP; the other is recommended to be eligible for listing. Eligibility for

⁵⁰⁷ Ex. 113 at 166.

⁵⁰⁸ *Id.*

⁵⁰⁹ *Id.*

⁵¹⁰ *Id.* (Fig. 8.3.4.5-1).

⁵¹¹ *Id.* at 167.

⁵¹² Comment of LaVerne Hofschulte, Zumbro Township, Tr. Plainview 6/14/11 6:30 p.m., at 52; email 6/30/11, Sara Trimm, 181 State Rt. 68, Colton, NY, efiled 10/20/11; email 6/30/11, Laura Holst, efiled 7/27/11; email 6/30/11, Krista Estee, efiled 7/27/11; Mark Hofschulte, efiled 7/27/11; comments of Dale and Suzanne Rohlfing, Tr. Plainview 6/14/11 6:30 p.m. at 56, Pub Exs. 12-14; email 6/30/11, Katherine Rohlfing, efiled 7/27/11.

the remaining sites has not been determined. Options 3P-Kellogg and 3P-Zumbro-N pass near nine and ten sites, respectively.⁵¹³

429. Along most of the 3A alternatives, eight archaeological sites have been documented within one mile of the centerline. One of the sites listed as lithic scatter is not eligible for listing on the NRHP, and eligibility of the remaining sites has not been determined. 3A-Kellogg and 3A-Crossover pass near 11 and six sites, respectively. The 3B and 2C3 route alternatives could potentially impact six to eight archeological sites.⁵¹⁴

430. With regard to historical architectural sites, the 3P route alternatives potentially affect 13 to 15 sites; 3P-Zumbro-N and 3P-Zumbro-S would affect up to 11 sites; and the 3A alternatives generally affect nine sites. Route option 3B-003 would affect more than 20 sites; the C route options generally affect between nine and 15 sites, except for 2C3-001-3a and 2C3-001-3b, which would affect 65 and 68 historic sites, respectively.⁵¹⁵

F. Effects on the Natural Environment.

431. **Water Resources.** The main watercourses that run through this segment include the Zumbro River, Snake Creek, East Indian Creek, West Indian Creek, Silver Spring Creek, Gorman Creek, Hammond Creek, Long Creek, Middle Creek, Dry Run Creek, and the Mississippi River.⁵¹⁶

432. The Zumbro River cuts through deep, narrow valleys defined by rocky cliffs for much of its length below the Zumbro Dam eastward to Thielman. At that point, the valley widens, with farmland adjacent to the river. Canoeing and fishing are popular activities on the Zumbro River and its branches and forks. The wooded floodplain and steep slopes provide habitat for a number of rare reptiles and amphibians. Bird species ranging from large raptors and other birds of prey to uncommon perching birds find foraging, nesting, and cover habitat in the floodplain forests and other habitats along the river.⁵¹⁷

433. All route alternatives in Segment 3 would cross the Zumbro River twice. The first crossing, between the North and Middle Forks of the River, varies in length by route. The 3A crossings are approximately 135 feet; the 3P-Zumbro-N and 3P-Zumbro-S middle crossing at the dam is about 620 feet; and the 3P crossing at White Bridge Road is approximately 845 feet. The second crossing is approximately 365 feet northwest of the confluence of the Zumbro and Mississippi Rivers, near the point where the 345 kV line crosses the Mississippi.⁵¹⁸

⁵¹³ Ex. 113 at 168.

⁵¹⁴ *Id.* at 178.

⁵¹⁵ *Id.* at 178, 180.

⁵¹⁶ *Id.* at 174.

⁵¹⁷ *Id.*

⁵¹⁸ *Id.* at 60.

434. All 3P alternatives, except 3P-Zumbro-N and 3P-Zumbro-S, would cross the Zumbro River on the north side of White Bridge Road to avoid residences located southeast of the bridge. All 2C3 alternatives, except 2C3-003-3, would also cross the Zumbro River at this point.⁵¹⁹

435. All 3A alternatives and 2C3-003-3 would cross the Zumbro River along a property line approximately 2.2 miles north of the Zumbro Dam.⁵²⁰

436. Alternatives 3P-Zumbro-N and 3P-Zumbro-S would follow an existing transmission line that crosses the Zumbro River at the Zumbro Dam and Hydroelectric Generation facility.⁵²¹ Either of these two options could minimize impacts to the Zumbro River, because of the existing high-voltage transmission line already in place at this location.⁵²²

437. Certain mitigation measures the Applicant proposes to use for the Mississippi River crossing—bird diverter markers on shield wires, and structure configurations that would minimize avian impacts—could also be implemented at the Zumbro River crossing.⁵²³

438. Portions of East Indian Creek, Long Creek, and Hammond Creek are designated trout streams, and portions of East Indian Creek, Snake Creek, and a few unnamed streams are designated trout stream tributaries.⁵²⁴

439. There are three impaired watercourses within Segment 3: the Zumbro River, West Indian Creek, and the Mississippi River. All the route alternatives in this segment would require between two and four crossings of impaired streams. In addition, all route alternatives using the southern crossing at White Bridge Road would require crossing Lake Zumbro, which is on the impaired waters list.⁵²⁵

440. The route alternatives within this segment have between 56 and 79 watercourse crossings within their right-of-way, with 3B-003 having the fewest watercourse crossings (56). Option 3B-003 would not require any trout stream crossings, while all other alternatives would require between ten and 14 trout stream crossings. It would also cross fewer watercourses on the public waters inventory (five), while all other alternative would have between 15 and 24.⁵²⁶

441. With regard to wetlands, alternatives 3P-Kellogg, 3B-003, and 3A-Kellogg have the fewest acres of wetlands within the right-of-way (between 14 and 23 acres);

⁵¹⁹ Ex. 113 at 174.

⁵²⁰ *Id.*

⁵²¹ *Id.*

⁵²² *Id.* at 176.

⁵²³ *Id.* at 174.

⁵²⁴ *Id.*

⁵²⁵ *Id.*

⁵²⁶ *Id.*

they also have the fewest acres of forested wetlands within the right-of-way (between 7 and 10 acres). The remaining alternatives have generally equal impacts on wetlands (just under 40 acres), except for 2C3-001-3a and 2C3-001-3b, which would impact just under 45 acres. These 2C route options also would impact more acres of forested wetlands than the other alternatives, which generally would have equal impacts on forested wetlands (12 to 15 acres).

442. In January 2011, the Upper Mississippi River Floodplain Wetlands, including the national wildlife refuge and the adjacent state-managed areas (including the McCarthy Lake Wildlife Management Area), were designated as wetlands of international significance under the Ramsar Convention, an international treaty that provides a framework for scientific exchange and cooperative conservation.⁵²⁷

443. Option 3B-003 does not have any wetlands wider than 1,000 feet within the right-of-way, and 3P-Kellogg and 3A-Kellogg have only one wetland wider than 1,000 feet in the right-of-way. The remaining options have between three and four wetlands wider than 1,000 feet within the right-of-way.

444. The DNR objects to 3A-Kellogg because it would cross a wetland mitigation bank that is under construction.⁵²⁸

445. **Flora.** The vegetation community cover types for all the routes in this segment are fairly similar. The 3P alternatives are generally 61% cropland, 25% grassland, 11% forested, and 1% each shrubland, aquatic, or artificial. The 3A routes are generally 59% cropland, 21% grassland, and 17% forested.⁵²⁹

446. **Fauna.** All route alternatives cross an estimated 0.5 mile of the Upper Mississippi River Refuge, near the point where the proposed line would cross the Mississippi River into Alma, Wisconsin. The Refuge is a 240,000-acre wildlife conservation area located in and along 261 miles of the Upper Mississippi River. It is also designated as an Important Bird Area (IBA).⁵³⁰

447. Similarly, all but three route options cross an estimated 0.9 mile of the 128-acre McCarthy Lake WMA. The WMA is currently crossed by an existing 161 kV transmission line. If the existing 161 kV right-of-way is used, the 161 kV line and the new 345 kV line would be hung on the same structures, which would have a low, wide configuration to reduce avian collisions. These structures would require widening of the existing right-of-way by approximately 100 feet. The wider structures would enlarge the existing potential hazards to bird migration, but would not create new, separate impacts for wildlife. The wider structure configuration, however, would mitigate the effects of the wider right-of-way.⁵³¹

⁵²⁷ Ex. 113 at 176.

⁵²⁸ DNR letter to Matt Langan (Apr. 29, 2011).

⁵²⁹ Ex. 113 at 171.

⁵³⁰ *Id.*

⁵³¹ *Id.* at 16, 171, 173.

448. The three options that would not cross the McCarthy Lake WMA are 3P-Kellogg, 3A-Kellogg, and 3B-003. Both 3P-Kellogg and 3A-Kellogg would parallel the Canadian Pacific Railroad along the east side of US 61, beginning about 2.6 miles south of Kellogg. They would continue north about two miles, then turn east following road and property lines to the point where all route alternatives converge for the crossing. Route 3B-003 would follow Wabasha County Highway 42 and join 3P-Kellogg and 3A-Kellogg to converge with the other routes.⁵³²

449. The existing 161 kV line would remain in place, regardless of the route alternative chosen. If 3B-003 were chosen, a new corridor about 11 miles long would be created 1.5 to two miles northwest of the existing 161 kV line; if 3P-Kellogg or 3A-Kellogg were chosen, a new 4.7-mile corridor would be created within two miles of the existing line. These new corridors would present separate new potential hazards to bird migration parallel to the North American Mississippi River flyway, in the form of avian collisions or electrocutions.⁵³³

450. The DNR recommends the use of route 3B-003 to avoid additional impacts to state forest.⁵³⁴

451. There are two IBAs in the vicinity of most routes in Segment 3: the Whitewater Valley IBA and the Refuge IBA. The McCarthy Lake WMA is located within the Whitewater Valley IBA, which is contiguous with the Refuge IBA. All route options except 3B-003 cross the Whitewater Valley IBA along the existing 161 kV line for about 7,500 feet near the river crossing.⁵³⁵

452. Four Aquatic Management Areas (AMAs) are located within one mile of all P route alternatives, with the exception of 3B-003. Two units of the East Indian Creek AMA are located 2,600 and 4,700 feet south of most of these route alternatives. Two separate units of the Snake Creek AMA are also located within one mile; one is 450 feet south, and the other is 4,000 feet south of the alternatives. East Indian Creek and Snake Creek are also designated trout streams.⁵³⁶

453. Four AMAs are also located in proximity to the 3A route alternatives, but none are within the route width or crossed by the proposed centerlines. The Long Creek AMA is about 2,500 feet north; West Indian Creek AMA is about 4,000 feet north; and two separate units of the Snake Creek AMA are 450 feet and 4,000 feet south, respectively. The 3A route alternatives also cross two trout streams, Hammond Creek and Long Creek. They also cross the Zumbro River in a rural area with little human activity and no existing infrastructure.⁵³⁷

⁵³² Ex. 113 at 171; Tr. 1:151 (Hillstrom).

⁵³³ Ex. 113 at 171.

⁵³⁴ DNR letter to Matt Langan (Apr. 29, 2011).

⁵³⁵ Ex. 113 at 173.

⁵³⁶ *Id.*

⁵³⁷ *Id.*

454. The number of acres of land in conservation easements within one mile and within the right-of-way is similar for all 3P alternatives (about 175 acres within one mile and about 25 within the right-of-way) except for 3P-011, which has about 100 acres of easement land within one mile, and 3P-008, which has less easement land within the right-of-way. The 3A alternatives have less land in conservation easements within one mile (about 100 acres) and very little if any land within the right-of-way. The 2C3 options are similar to the 3P alternatives in terms of land in conservation easements.⁵³⁸

455. Mitigation of potential impacts on sensitive wildlife habitats must be coordinated through the federal EIS process, the Wisconsin state permitting process, and the USFWS Special Use Permit process.⁵³⁹

G. Effects on Rare and Unique Natural Resources.

456. Three state-endangered and 18 state-threatened species have been documented within one mile of the route alternatives in this segment. None are federally listed; however, one species is a candidate for federal listing (a mussel). The state-endangered species include two mussels and one plant; the state-threatened species include seven mussel species, five plant species, two turtles, two birds, one fish, and one snake. Again, because watercourses will most likely be spanned, impacts to mussels and fish are not anticipated.⁵⁴⁰

457. The Blanding's turtle and the timber rattlesnake have been documented within the right-of-way of all 31 route alternatives in this segment, and the Indian plantain has been documented within the right-of-way of 22 of the 31 route options. The wood turtle has been documented in the right-of-way of 3A, 3A-001, 3A-003, 3A-004, 3A-Crossover, 3A-Kellogg, and 2C3-003-3.⁵⁴¹

458. Bald eagles have been documented within the right-of-way of all route alternatives in this segment.⁵⁴²

459. A bat colony has been documented within one mile of seven route alternatives, but not within the right-of-way of any route alternative.⁵⁴³

460. A freshwater mussel concentration area has been documented within one mile of routes 3P-Kellogg, 3P-Zumbro-N, 3P-Zumbro-S, 3B-003, 3A-001, 3A, 3A-003, 3A-004, 3A-Crossover, 3A-Kellogg, 2C3-001-3a, 2C3-001-3b, and 2C3-003-3; however, none have been found within the right-of-way of any route alternative.⁵⁴⁴

⁵³⁸ Ex. 113 at 173.

⁵³⁹ *Id.* at 174.

⁵⁴⁰ *Id.* at 167.

⁵⁴¹ *Id.*

⁵⁴² *Id.* at 170.

⁵⁴³ *Id.*

⁵⁴⁴ *Id.*

461. Native plant communities and similar numbers of Sites of Biodiversity Significance (SBS) are present within the right-of-way of all route alternatives in this segment. Route 3B-003 has significantly fewer acres of native plant community and SBS within the right-of-way, compared to other route options.⁵⁴⁵

462. As noted above, the northern crossing of the Zumbro River is a greenfield crossing. It is near one SBS site ranked as moderate, and a state-listed turtle has been documented in the vicinity. The middle crossing is near an SBS site ranked as high; the rare species there include the American ginseng and muscatel (plants). The White Bridge Road crossing is near one SBS site ranked as moderate and one ranked as below.⁵⁴⁶

H. Use of Parallel or Existing Right-of-Way.

463. Unlike Segments 1 and 2, there are fewer existing corridors and fewer opportunities for sharing of right-of-way in Segment 3. All of the routes are roughly comparable in terms of sharing utility lines and roads (30% to 40%); they are also roughly comparable in terms of using field lines (30% to 40% of the route), except for 3P-Zumbro-N, 3A, 3A-001, 3A-003, and 3A-004, and 3A-Crossover, which incorporate fewer field lines and cut more cross-country than the other routes. All of the route alternatives in this segment follow field lines or cut cross-country for 60% to 70% of the total route distance.⁵⁴⁷

464. Two of the proposed Zumbro river crossings, White Bridge Road and the Zumbro Dam, utilize existing infrastructure crossings of the river, while the north crossing would require creation of a new corridor across the Zumbro River.⁵⁴⁸ There is a bridge, but no existing aerial crossing at White Bridge Road; this crossing would be 845 feet in length. There is an existing aerial crossing at the dam, and its length would be 620 feet.⁵⁴⁹

I. Effects on Transportation.

465. As noted above, the 3P (and some 2C3) routes leave the southern location of the substation and run along 500th Street for approximately two miles. This is a road that MnDOT plans to improve as a supporting road for the Elk Run interchange. The Applicant would have to work closely with MnDOT to obtain a workable alignment on 500th Street.⁵⁵⁰

466. Route 3P also shares right-of-way for a short distance along 230th and 375th Avenue. Route 3A parallels local roads (195th Avenue and 375th Avenue) for two

⁵⁴⁵ Ex. 113 at 70.

⁵⁴⁶ Tr. 3:88-90 (Schrenzel); DNR letter to ALJ (6/29/11).

⁵⁴⁷ Ex. 113 at 180, 182.

⁵⁴⁸ *Id.* at 174, 176.

⁵⁴⁹ *Id.* at 60.

⁵⁵⁰ Tr. 3:156 (Seykora); Ex. 108.

short stretches and requires crossing of US 52 at US 63. According to MnDOT, these alternatives may impact roadway expansion plans on US 52. Selection of these routes would require additional consultation with MnDOT to avoid and mitigate impacts to the roadway. In addition, MnDOT has expressed concerns about steep banks, erosion, slope failure, water drainage, and rock fall along Hwy 42 (route 3B-003).⁵⁵¹

467. Where the 3P and 3A routes share an alignment near the Mississippi, they cross one railroad, the Canadian Pacific Railroad, about 3.5 miles southwest of the river crossing. Impacts to rail transport along these route alternatives could be minimized as described above.⁵⁵²

468. The Lake Zumbro Seaplane Base is a privately owned airport located in Olmsted County within one mile of the 3P-Zumbro-N, 3P-Zumbro-S, and 3P-009 route alternatives. Impacts to the seaplane base could be avoided by using modified structures to meet the maximum height limitations where the line is in close proximity.⁵⁵³

469. Both the 3P and 3A Routes cross US 61, also known as the Great River Road, south of Kellogg where the existing Q-3 line is located.⁵⁵⁴ The Great River Road is a National Scenic Byway that parallels the Mississippi River from Northern Minnesota to southern Mississippi.⁵⁵⁵ At the Great River Road crossing point, both the 3P and 3A routes would place the existing Q-3 161 kV transmission line on new structures with the new 345 kV line.⁵⁵⁶ Both of these routes would minimize impacts to the Great River Road, as the crossing of the Great River Road would be perpendicular and would utilize an existing transmission line corridor in an area that is shielded from view by trees.⁵⁵⁷

470. MnDOT has stated that there does not appear to be any impediment to issuing a Utility Permit for this section of the Great River Road. MnDOT has no plans to treat US 61 as a freeway and will not require the application of freeway standards.⁵⁵⁸

471. Route options 3P-Kellogg and 3A-Kellogg would parallel the Great River Road for approximately 1.5 miles before crossing the river.

472. The Mississippi River Parkway Commission opposes routes that follow the Great River Road (3P-Kellogg and 3A-Kellogg) and supports alignments that avoid it.⁵⁵⁹ The Parkway Commission also opposed the Highway 42 route (3B-003), because of impacts to the viewshed as the highway enters the Mississippi River Valley and because of the crossing of slopes and bluffs that are prone to erosion. The Commission advocated that every effort should be made to co-locate the route with existing lines in

⁵⁵¹ Ex. 113 at 182.

⁵⁵² *Id.*

⁵⁵³ *Id.*

⁵⁵⁴ Ex. 2 at 22-23 (Hillstrom Direct).

⁵⁵⁵ *Id.*

⁵⁵⁶ *Id.*

⁵⁵⁷ *Id.*; Ex. 9 (Schedule 7 to Hillstrom Direct).

⁵⁵⁸ Tr. 3:190-91, 217 (Seykora).

⁵⁵⁹ Letter to Matt Langan 4/29/11.

the vicinity and all possible strategies should be used to avoid, minimize and mitigate any impact to Great River Road and Mississippi River corridors.⁵⁶⁰

473. The Mississippi River Parkway Commission of Minnesota also made several recommendations for permit conditions. It requested permit language to ensure on-going communication between the Applicant and the Parkway Commission and the provision of plans to the Parkway Commission for review and response prior to implementation. It suggested specific language such as:

- Permittee shall make every effort to minimize the impact of the project on the intrinsic qualities for which the Great River Road received National Scenic Byway designation when installing the HVTL on the approved route.
- Permittee shall consult with MNDOT and the MMRPC regarding final structure locations and design, construction methods that minimize damage to vegetation along the Great River Road, installation of replacement vegetation to limit visual impacts from surrounding areas, and other methods to minimize any negative impact or maximize any positive impact.
- Permittee shall minimize the number of trees to be removed in selecting the right-of-way and designing a prescribed removal plan for construction.

The Parkway Commission advocated inclusion of this language in the permit based on its experience with construction of the HVTL between St. Cloud and Monticello, where it maintains the Great River Road has incurred irreparable damage due to vegetation removal and pole construction.⁵⁶¹

J. Effects on Recreation.

474. The main recreation resources in this segment are the McCarthy Lake WMA, the Refuge, the National Scenic Byway, the RJD State Forest, a local park, a ski resort, Lake Zumbro, the Zumbro River, and snowmobile trails.⁵⁶²

475. Most of the route alternatives in this segment would run through the northern part of the McCarthy Lake WMA along the existing transmission line corridor; however, routes 3P-Kellogg and 3A-Kellogg would run along the northwest boundary of the WMA for approximately one mile, while 3B-003 would avoid it by running about 0.5 miles north of the WMA's northern boundary.⁵⁶³

⁵⁶⁰ Email June 30, 2011, Sheldon Johnson, Chair, Mississippi River Parkway Commission, efiled 10/20/11.

⁵⁶¹ *Id.*

⁵⁶² Ex. 113 at 182.

⁵⁶³ *Id.*

476. Recreational opportunities within the wildlife refuge include boating, hunting, hiking, swimming, fishing, and wildlife viewing. No public access points or developed recreational facilities are located within one mile of the project area. All of the route alternatives would cross about 0.5 miles of the Refuge along the existing transmission line corridor.

477. All route alternatives would also cross US 61 where it is designated the Great River Road National Scenic byway. As noted above, the Mississippi River Commission objects to route options that parallel the highway because of the impact on US 61.

478. The RJD State Forest covers approximately 2 million acres of land, and according to the DNR it is one of the best places in the state for birdwatching, motorized trail riding, horseback riding, and mountain biking. It is also used for camping, picnicking, hiking, and fishing. The Snake Creek Management Unit, which is part of the RJD State Forest, has several miles of trails for hiking, cross country skiing, motorcycles, ATVs, and snowmobiles. The Snake Creek Management Unit also offers opportunities for camping and fishing.⁵⁶⁴

479. The RJD State Forest falls within the 1,000-foot route width of all route alternatives in this segment; however, there is significantly higher acreage (about three times more) of the RJD State Forest within the route width of options 3P-Zumbro-N, 3A, 3A-001, 3A-003, 3A-004, 3A-Kellogg, and 2C3-003-3 than other route alternatives.⁵⁶⁵

480. All routes except 3B-003 would run through the Snake Creek Management Unit.

481. The Pine Island Wayside Park is in the vicinity of this segment, but is not within the right-of-way of any route alternatives. It is within the route width of options 2C3-001-3a and 2C3-001-3b.⁵⁶⁶

482. The Steeplechase Ski and Snowboard Resort is located in Segment 3, west of the Zumbro River and south of Mazeppa. Steeplechase has about 40 acres of skiing and snowboarding, with 19 trails and four chairlifts. During the summer months, it offers mountain biking trails. The resort has been closed, but the owner is attempting to sell it to someone who will operate it for its intended purpose.⁵⁶⁷ All 3A route options and 2C3-003-3 would run through the northern portion of Steeplechase Ski Resort.⁵⁶⁸

483. Route option 3P-Zumbro-S would be located near a summer camp on the east bank of the Zumbro River.⁵⁶⁹

⁵⁶⁴ Ex. 113 at 60, 182-83.

⁵⁶⁵ *Id.* at 182-83.

⁵⁶⁶ *Id.* at 183.

⁵⁶⁷ Email 6/30/11, Kevin Kastler, Steeplechase Ski Area, 59468 423rd Avenue, Mazeppa, efiled 7/27/11.

⁵⁶⁸ Ex. 113 at 183.

⁵⁶⁹ Ex. 1 at 5-18 (Application).

484. In addition, all 3P route options (except 3P-Zumbro-N and 3P-Zumbro-S), all 3A route options, and 2C3-003-3 would cross Lake Zumbro, which provides recreational opportunities for boating, fishing, water skiing, tubing, and swimming.⁵⁷⁰ There are no existing aerial crossings of Lake Zumbro.

485. Snowmobile trails are abundant throughout the project area. All route alternatives would have between 10 and 26 snowmobile trail crossings within the right-of-way and between 3.1 and 9.8 miles of snowmobile trail within the route width. The following options have fewer snowmobile crossings within the right-of-way and fewer miles of trail in the route width relative to the other alternatives in this segment: 3P-Zumbro-N, 3P-Zumbro-S, 3A, 3A-001, 3A-003, 3A-004, 3A-Crossover, 3A-Kellogg, 3B-003, and 2C3-003-3.⁵⁷¹

K. ALJ Recommendation for Segment 3.

486. None of the route options offer the opportunity to share or parallel much existing right-of-way except in the sections near the Mississippi River along the Q-3 line. Route option 3P is the longest route. It involves the longest crossing of the Zumbro River, and it would also involve crossing Lake Zumbro where there is no existing aerial infrastructure. It would impact residences west of the crossing and a feed lot and farms east of the crossing.

487. The 3A route options are shorter but more expensive, because the topography is more sloped. These routes would also have significant impacts to the RJD State Forest and businesses, including farms, tree farms and a resort.

488. 3P-Zumbro-S is shorter and more direct, and it is the least expensive option. It would impact slightly fewer residences (24 homes, versus 26 on 3P). It would follow an existing transmission line at the dam crossing, and it would not involve a crossing of Lake Zumbro. The 3P-004 option would not make the route longer but would minimize impacts to a farm in the area where the line turns north.

489. Route option 3B-003 would avoid additional impacts to the McCarthy Lake WMA but would duplicate facilities in the area and is not consistent with nonproliferation policy.

490. In light of the record as a whole, the ALJ recommends the use of 3P-Zumbro-S with the 3P-004 option, as these routes satisfy nonproliferation requirements but balance competing land uses and minimize human and environmental impacts. The Applicant should work with the DNR and landowners in the area of the dam crossing to minimize impacts to the environment. Clearing of trees should be limited to only those trees necessary to permit passage of equipment and to maintain the appropriate cleared right-of-way width. The Applicant should also continue to coordinate its plans

⁵⁷⁰ Ex. 113 at 183.

⁵⁷¹ *Id.*

with the DNR and the Mississippi River Parkway Commission as to matters such as pole placement, pole type, and minimizing vegetation and wildlife impacts in the area near the McCarthy Lake WMA, the Refuge, and the Mississippi River.

Based on the above Findings of Fact, the Administrative Law Judge makes the following:

CONCLUSIONS

1. The Public Utilities Commission and Administrative Law Judge have jurisdiction to consider Applicant's Application for a Route Permit.

2. The Commission determined that the Application was substantially complete and accepted the Application on March 9, 2010. The Applicant agreed to extend the twelve-month timeframe for a decision on the permit.

3. The Applicant gave notice as required by Minn. Stat. § Section 216E.03, subds. 3a and 4, and Minn. R. 7850.2100, subps. 2 and 4.

4. The EFP gave notice as required by Minn. Stat. § 216E.03, subd. 6; and Minn. R. 7850.2300, subp. 2, and 7850.2500, subps. 2 and 7-9.

5. Public hearings were conducted in communities located along the proposed transmission line routes. The Applicant and the EFP gave proper notice of the public hearings, and the public was given the opportunity to appear at the hearings or to submit public comments.

6. All procedural requirements for processing the route permit were met.

7. In Segment 1, route options 1P and 1P-003 best satisfy the route permit criteria set forth in Minn. Stat. § 216E.03, subds. 7(a) & (b), and Minn. R. 7850.4000 & 7850.4100.

8. The Applicants should continue to work with MnDOT to seek approval for placement of the transmission line in the US 52 corridor.

9. The Applicant's request for a route width of up to 1,000 feet except for those locations identified on the record where Applicant has requested a route width up to 1.25 miles is appropriate for the Project.

10. In Segment 2, route option 2A best satisfies the route permit criteria set forth in Minn. Stat. § 216E.03, subds. 7(a) & (b), and Minn. R. 7850.4000 & 7850.4100.

11. In Segment 3, route option 3P-Zumbro-S with the 3P-004 option best satisfy the route permit criteria set forth in Minn. Stat. § 216E.03, subds. 7(a) & (b), and Minn. R. 7850.4000 & 7850.4100.

12. The recommended route options for Segments 1 through 3 present the potential for significant adverse environmental effects as provided in the Minnesota Environmental Rights Act, Minn. Stat. §§ 116B.01-116B.13, and the Minnesota Environmental Policy Act, Minn. Stat. §§ 116D.01-116D.11, but there is no feasible and prudent alternative to them.

13. The route permit should allow the Applicant to install six conductors at highway crossings and the Zumbro River crossing to facilitate the addition of a second circuit at a later date.

14. Any of the foregoing Findings more properly designated Conclusions are hereby adopted as such.

Based on these Conclusions, the Administrative Law Judge makes the following:

RECOMMENDATION

That the Commission issue a route permit for Segment 1, 2, and 3 as described in the Conclusions above with appropriate conditions.

Dated: February 8, 2012

s/Kathleen D. Sheehy

KATHLEEN D. SHEEHY
Administrative Law Judge

NOTICE

Under the Commission's Rules of Practice and Procedure, Minn. R. 7829.0100 to 7829.3200, exceptions to this Report, if any, by any party adversely affected must be filed within 15 days of the mailing date hereof with the Executive Secretary of the PUC, 350 Metro Square Building, 121 Seventh Place East, St. Paul, Minnesota 55101-2147. Exceptions must be specific, relevant to the matters at issue in this proceeding, and stated and numbered separately. Proposed Findings of Fact, Conclusions, and Order should be included, and copies served upon all parties.

The Commission shall make its determination on the application for the Route Permit after the period to file Exceptions as set forth above, or after oral argument, if such is requested and conducted in this matter. In accordance with Minn. R. 4400.1900, the PUC shall make a final decision on the Route Permit within 60 days after receipt of this Report.

Notice is hereby given that the Commission may accept, modify, condition, or reject this Report and that this Report has no legal effect unless expressly adopted by the Commission.