



MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS

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April 21, 2010

See Attached Service List

Re: *In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*
OAH 7-2500-20283-2
PUC ET-2/TL-08-1474

Dear Parties:

The document listed below has been filed with the E-Docket system and served as specified on the attached service list.

Findings of Fact, Conclusions and Recommendation.

Very truly yours,

A handwritten signature in black ink that reads "Richard C. Luis/dsc".

RICHARD C. LUIS
Administrative Law Judge

Telephone: (651) 361-7843

RCL:dsc
Enclosures

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
ADMINISTRATIVE LAW SECTION
600 NORTH ROBERT STREET
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CERTIFICATE OF SERVICE

In the Matter of the Route Permit Application by Great River Energy and Xcel Energy for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota	OAH 7-2500-20283-2 PUC ET-2/TL-08-1474
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Denise Collins, certifies that on the 21st day of April, 2010, she served a true and correct copy of the attached **Findings of Fact, Conclusions and Recommendation** by eService, (in the manner indicated below) to the following individuals:

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Poorker	Craig	Great River Energy	12300 Elm Creek Boulevard, Maple Grove, MN-55369	Paper Service	No
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STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS
FOR THE PUBLIC UTILITIES COMMISSION

**In the Matter of the Route Permit Application by Great River Energy
and Xcel Energy for a 345 kV Transmission Line from Brookings
County, South Dakota to Hampton, Minnesota.**

OAH Docket No. 7-2500-20283-2
MPUC Docket No. ET-2/TL-08-1474

**FINDINGS OF FACT, CONCLUSIONS
AND RECOMMENDATION**

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

In the Matter of the Route Permit
Application by Great River Energy and
Xcel Energy for a 345 kV Transmission
Line from Brookings County, South
Dakota to Hampton, Minnesota.

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

A Public Hearing was held before Richard C. Luis, Administrative Law Judge ("ALJ"), commencing on November 30, 2009, in Granite Falls, Minnesota and continuing at dates and places more specifically set forth below. The Evidentiary portion of the Hearing was held from December 15, 2009 to December 18, 2009 in St. Paul, Minnesota.

Lisa M. Agrimonti and Valerie Herring, Briggs and Morgan, appeared for Great River Energy, a Minnesota cooperative corporation, and on behalf of itself and its co-applicant, Northern States Power Company, a Minnesota corporation ("Xcel Energy").

Karen Finstad Hammel, Assistant Attorney General, appeared on behalf of the Department of Commerce, Office of Energy Security ("OES").

Paula Maccabee, Attorney at Law, appeared on behalf of Robert and Patricia Johnson ("Intervenor Johnsons").

Carol Overland, Overland Law Office, appeared on behalf of NoCapX2020 and United Citizens Action Network ("U-CAN").

Bob Cupit and Michael Kaluzniak, Planning Directors, Minnesota Public Utilities Commission ("Commission," "PUC," or "MPUC"), 121 Seventh Place East, Suite 350, St. Paul, MN 55101 appeared on behalf of the Commission.

STATEMENT OF ISSUE

Have Applicants satisfied the criteria set forth in Minnesota Statutes § 216E.03¹ and Minnesota Rules Chapter 7850 for a Route Permit for the Brookings to Hampton 345 kV transmission line project, including necessary system connections, and, if so, what route complies best with applicable statutes and rules?

¹ Unless otherwise noted, the statutes and rules are cited to the 2009 edition.

Based on the Findings of Fact and Conclusions that follow, the Administrative Law Judge makes the following:

RECOMMENDATIONS

1. That the Commission determine that all relevant statutory and rule criteria necessary to obtain a Route Permit have been satisfied and that there are no statutory or other requirements that preclude granting a Route Permit based on the record.

2. That the Commission grant a Route Permit to Applicants on behalf of themselves and the participating CapX2020 utilities for the facilities described below, to the effect of authorizing:

- A. For the 345 kV transmission line between Brookings to Hampton and Associated Facilities,
- (1) The Modified Preferred Route, with an aerial crossing of the Minnesota River at Le Sueur, modified further by Alternative 6P-06 between Lake Marion and Hampton;
 - (1a) If the Modified Preferred Route adjusted by Alternative 6P-06 is not granted a Permit, the ALJ recommends granting of a Route Permit for the Modified Preferred Route, modified further by Alternative 6P-06, and modified further by the Crossover/Alternate Route between Sibley County and the Helena Substation, with an aerial crossing of the Minnesota River at Belle Plaine;
 - (2) A route width of 600 feet except for those locations identified in Applicants' Proposed Findings where Applicants are requesting a route width of 1,000 feet or up to 1.25 miles²;
 - (3) Construction of four new substations (Hazel Creek Substation, Cedar Mountain Substation, Helena Substation, and Hampton Substation) at the substation sites identified in the Application;
 - (4) Modifications and additions to four existing substations (Brookings County Substation, Lyon County Substation, Minnesota Valley Substation, and Lake Marion Substation) to accommodate the new transmission line facilities;
 - (5) A short transmission line connector between the existing Wilmarth – Blue Lake 345 kV line and the new Helena Substation; and

² Attachment 2 to Applicants' Proposed Findings of Fact, Conclusions and Recommendation shows the portions of the Modified Preferred Route where Applicants are requesting a route width of up to 1.25 miles.

- (6) A short transmission line connector between the existing Prairie Island – Blue Lake 345 kV line and the new Hampton Substation.
- B. For the 115 kV transmission line between Cedar Mountain Substation and Franklin Substation,
- (1) The Revised Cedar Mountain 115 kV Route as shown on Attachment 7;
 - (2) A route width of 4,225 feet; and
 - (3) Expansion of and modifications to the Franklin Substation to accommodate the new 115 kV transmission line facilities.
3. That Applicants be required to take those actions necessary to implement the Commission's Orders in this proceeding.

Based on the Hearing record, the ALJ makes the following Findings of Fact and Conclusions:

FINDINGS OF FACT

A. APPLICANTS

1. Great River Energy is a Minnesota cooperative corporation that owns and operates high voltage transmission lines in Minnesota and provides wholesale electric service to 28 distribution cooperatives serving nearly 1.5 million customers in Minnesota and Wisconsin.³ Headquartered in Maple Grove, Minnesota, Great River Energy is the second largest utility in Minnesota and the fifth largest utility of its type in the country.⁴ Great River Energy is not a public utility.⁵

2. Xcel Energy is a Minnesota corporation headquartered in Minneapolis, Minnesota. 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.⁶

3. Applicants jointly applied for a Route Permit to construct a 345 kV transmission line project from the South Dakota/Minnesota border to Hampton, Minnesota. Applicants maintained that the proposed project will improve regional

³ Ex. 2 at p. 1-1 (Application).

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

transmission system reliability, enhance local community service, and increase the generation outlet capability of the electrical system.⁷

B. Procedural Summary⁸

4. On December 29, 2008, Applicants submitted an Application for Route Permit ("Application") for the Minnesota portion of a 345 kV transmission line between Brookings County, South Dakota and Hampton, Minnesota and associated facilities, and for a new 115 kV transmission line between Cedar Mountain Substation and the Minnesota Valley – Franklin 115 kV transmission line (collectively "the Brookings Project" or the "Project").⁹

5. On December 31, 2008, Applicants submitted a supplement to the Application.¹⁰

6. On January 21, 2009, OES Energy Facility Permitting staff filed comments and recommendations regarding the completeness of the Application and the formation of advisory tasks forces.¹¹

7. On January 27, 2009, NoCapX2020 & U-CAN filed a Petition to Intervene in the proceeding as full parties under Minnesota Rule 1400.6200 and further requested that the Commission appoint a Citizens Advisory Task Force ("CATF") under Minnesota Rule 7850.2400, subp. 2.¹²

8. On January 28, 2009, Applicants filed Confirmation of Notice including Affidavits of Mailing and Publication as required under Minnesota Statute § 216E.03, subd. 4; Minnesota Rule 7850.2100, subp. 2; and Minnesota Rule 7850.2100, subp. 4.¹³

9. On January 29, 2009, the Commission accepted the Application as complete and authorized the OES Energy Facility Permitting staff to process the Application under the full permitting process in Minnesota Rules 7850.1700 to

⁷ Ex. 2 (Application).

⁸ Additional motions concerning discovery, intervention and other matters were filed and additional orders were issued. All of these documents are included in the record.

⁹ Ex. 2 (Application).

¹⁰ Ex. 3 (Application Supplement).

¹¹ Ex. 6 (OES January 21, 2009 Comments).

¹² *In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No.: ET-2/TL-08-1474, NoCapX and UCAN Petition for Intervention (Jan. 27, 2009).

¹³ Ex. 8 (Applicant Mailed and Published Notices of Application Filing)

7850.2800.¹⁴ The Commission also authorized the OES Energy Facility Permitting staff to name a public advisor and to establish an advisory task force or task forces and develop a structure and charge for them.¹⁵

10. On February 5, 2009, the Commission assigned this matter to ALJ Richard C. Luis of the Office of Administrative Hearings ("OAH").¹⁶

11. On February 12, 2009, the Intervenor Johnsons filed a petition to intervene as full parties under Minnesota Rule 1400.6200.¹⁷

12. On March 9, 2009, OES issued a Notice of Public Information and Environmental Impact Statement ("EIS") Scoping Meetings.¹⁸

13. On March 11, 2009, OES issued a Revised Notice of Public Information Meetings.¹⁹

14. On March 11, 2009, OES appointed 16 persons to the Minnesota River Crossings to New Prague Advisory Task Force ("ATF").²⁰

15. On March 11, 2009, OES appointed 18 persons to the Lake Marion to Hampton ATF.²¹

16. OES held Public Information Meetings in the Project area from March 30, 2009 to April 2, 2009, and from April 6 to April 9, 2009.²²

17. On April 22, 2009, the Commission issued a Notice of Prehearing Conference setting on that conference for May 7, 2009.²³

¹⁴ *In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No.: ET-2/TL-08-1474, (Commission Order issued Jan. 29, 2009).

¹⁵ *Id.*

¹⁶ *In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No.: ET-2/TL-08-1474, (Commission Order issued Feb. 5, 2009).

¹⁷ *In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No.: ET-2/TL-08-1474, Petition to Intervene on Behalf Patricia and Robert Johnson (Feb. 12, 2009).

¹⁸ Ex. 11 (OES Notice of EIS Scoping Meetings).

¹⁹ Ex. 12 (OES Revised Notice of EIS Scoping Meetings).

²⁰ Ex. 16 at p. 2 (EIS Scoping Decision).

²¹ *Id.*

²² Ex. 16 at p. 3 (EIS Scoping Decision).

18. Public comments regarding the scope of the EIS were accepted by OES until April 30, 2009.²⁴

19. On April 30, 2009, Applicants filed comments requesting that OES add two additional route segment alternatives to the scope of the EIS along the South Dakota/Minnesota border and two additional route segment alternatives in the Belle Plaine area.²⁵

20. On May 1, 2009, Applicants sent notice to landowners along the two additional route segment alternatives along the South Dakota/Minnesota border and to landowners along the two additional route segment alternatives in the Belle Plaine area.²⁶

21. On June 5, 2009, the ALJ issued the First Prehearing Order setting the schedule for further proceedings and procedures to be followed throughout this contested case proceeding. The Order granted the Petitions for Intervention of NoCapX2020, U-CAN and the Johnsons; established October 7, 2009, as the deadline for a party to intervene; established October 13, 2009, as the deadline for filing Direct Testimony; established November 9, 2009, as the deadline for filing Rebuttal Testimony; established November 18, 2009, as the deadline for filing Surrebuttal Testimony; determined that the Public Hearings would be held over the period from November 23 to December 14, 2009, in the Project area; determined that the Evidentiary Hearing would be held on December 17 and 18, 2009, in Saint Paul; and established January 22, 2010, as the deadline for Initial Post-Hearing Briefs.²⁷

22. On June 12, 2009, OES filed the Minnesota River Crossings to New Prague and Lake Marion to Hampton ATF reports.²⁸

23. On June 30, 2009, OES issued the EIS Scoping Decision that set forth the alternatives and issues to be addressed in the EIS.²⁹

24. On September 11, 2009, the ALJ issued the Second Prehearing Order amending the schedule set in the First Prehearing Order. The Second Prehearing Order established October 13, 2009, as the filing date for Applicants' Direct Testimony; October 26, 2009, as the deadline for a party to intervene; November 9, 2009, as the

²³ *In the Matter of the Route Permit Application for a 345 kV Transmission Line from Brookings County, South Dakota to Hampton, Minnesota*, Docket No.: ET-2/TL-08-1474, (Notice of Prehearing Conference issued April 22, 2009).

²⁴ Ex. 16 at pp. 3-4 (EIS Scoping Decision).

²⁵ Ex. 137 (Applicants' Notice to Landowners and Applicants' April 30, 2009 EIS Scoping Comments).

²⁶ *Id.*

²⁷ Ex. 14 (ALJ First Prehearing Order).

²⁸ Ex. 16 at p. 2 (EIS Scoping Decision).

²⁹ Ex. 16 (EIS Scoping Decision).

deadline for all other Direct Testimony; and November 20, 2009, as the deadline for filing Rebuttal Testimony. The Second Prehearing Order also provided that the Public Hearings would be held from November 30 to December 11, 2009, in the Project area; that the Evidentiary Hearing would be held from December 15 to 18, 2009, in Saint Paul; set a tentative deadline of January 15, 2010, for Public Comments; and established January 22, 2010, as the tentative deadline for initial Post-Hearing Briefs.³⁰

25. On September 15, 2009, OES issued notice to landowners with property affected by the new route and segment alternatives presented for consideration in the EIS Scoping Decision.³¹

26. On October 13, 2009, Applicants filed Direct Testimony by Craig Poorker, Kevin Lennon, Dr. Peter Valberg, and Pamela Rasmussen.³²

27. On October 16, 2009, Applicants sent notice to landowners of a new route segment for the 115 kV transmission line proposed to run from County Road 71 to the existing Franklin Substation.³³

28. On October 21, 2009, OES issued the Draft EIS ("DEIS").³⁴

29. On November 6, 2009, OES issued notice to landowners with property affected by north and south route connectors that were presented for the first time in the DEIS.³⁵

30. On November 6, 2009, OES issued its Notice of Public Hearing.³⁶

31. On November 9, 2009, Intervenor Johnsons filed Direct Testimony by Dr. David Carpenter and Peter MacDonagh.³⁷

32. OES held Public Information meetings from November 12 to 16, 2009, and November 17 to 29, 2009 throughout the Project area.³⁸

³⁰ Ex. 20 (ALJ Second Prehearing Order).

³¹ Ex. 21 (OES Sept. 15, 2009 Notice to Landowners).

³² Ex. 102 (Poorker Direct); Ex. 104 (Lennon Direct); Ex. 106 (Rasmussen Direct); Ex. 108 (Valberg Direct).

³³ Ex. 27 (Applicants' Oct. 16, 2009 Notice to Landowners).

³⁴ Ex. 23 (DEIS).

³⁵ Ex. 34 (OES November 6, 2009 Landowner Notice).

³⁶ Ex. 32 (OES November 9, 2009 Notice of Public Hearing).

³⁷ Ex. 200 (MacDonagh Direct); Ex. 201 (Carpenter Direct).

³⁸ Ex. 23 at p. 3-3 (DEIS).

33. On November 20, 2009, Applicants filed Rebuttal Testimony by Craig Poorker, Kevin Lennon, Dr. Peter Valberg, and Pamela Rasmussen.³⁹

34. From November 30 to December 28, 2009, 17 public hearings were held in 8 different Minnesota communities along the Modified Preferred Route and the Alternate Route. Public hearings were held in: Granite Falls, Marshall, Redwood Falls, Winthrop, Henderson, Lonsdale, New Prague, and Lakeville.⁴⁰

35. On December 15, 2009, Applicants filed Supplemental Testimony by Craig Poorker and Kevin Lennon.⁴¹

36. From December 15 to December 18, 2009, the Evidentiary Hearing was held in the Commission's large hearing room in St. Paul.⁴²

37. On January 26, 2010, OES issued the Final EIS ("FEIS").

38. On February 8, 2010, the FEIS was published in the EQB Monitor.⁴³

39. Public comments on the proposed Project were accepted by the ALJ until February 8, 2010.

40. The Hearing record closed for all purposes on March 22, 2010.⁴⁴

C. Description of the Brookings Project

41. This Project consists of 345 kV and 115 kV transmission line facilities.⁴⁵

42. The 345 kV transmission line facilities and substation connections are between: 1) the existing Brookings County Substation near White, South Dakota and a new Hampton Substation near Hampton, Minnesota; and 2) the Lyon County Substation near Marshall, Minnesota and the Minnesota Valley Substation near Granite Falls, Minnesota.⁴⁶

³⁹ Ex. 103 (Poorker Rebuttal); Ex. 105 (Lennon Rebuttal); Ex. 107 (Rasmussen Rebuttal); Ex. 109 (Valberg Rebuttal).

⁴⁰ Ex. 30 (OES November 6, 2009 Notice of Public Hearings); Ex. 160 (Applicants' Notice of Rescheduled New Prague Public Hearing).

⁴¹ Ex. 140 (Poorker Supplemental); Ex. 141 (Lennon Supplemental).

⁴² Ex. 30 (OES November 6, 2009 Notice of Public Hearings).

⁴³ EQB Monitor Vol. 34 No. 3 (February 8, 2010) at p. 5.

⁴⁴ Email from ALJ to Parties and participants, dated March 22, 2010, Doc. Id. 20104-48694-01.

⁴⁵ Ex. 2 at §§ 2.2 and 2.4 (Application).

⁴⁶ Ex. 102 at p. 7 (Poorker Direct).

43. The Lyon County Substation – Cedar Mountain Substation – Helena Substation sections of the 345 kV transmission line, representing about half the length of the Project, will be constructed with double-circuit 345 kV facilities.⁴⁷ Applicants proposed to construct the remaining portion of the Project with double-circuit capable poles, with one circuit strung at the time of installation.⁴⁸ The 345 kV sections proposed as double-circuit capable include the Brookings County Substation – Lyon County Substation section, the Helena Substation – Lake Marion – Hampton Substation section, and the Lyon County Substation – Hazel Creek Substation – Minnesota Valley Substation section.⁴⁹

44. The Project also includes interconnections between the Helena Substation and the existing Wilmarth – Blue Lake 345 kV transmission line, and the Hampton Substation and the existing Prairie Island – Blue Lake 345 kV transmission line.⁵⁰

45. The Project also includes the construction of associated facilities including four new substations (Hazel Creek Substation, Helena Substation, Cedar Mountain Substation, Hampton Substation), expansion of four existing substations (Brookings County Substation, Lyon County Substation, Minnesota Valley Substation, and Lake Marion Substation), and related transmission line interconnections.⁵¹

46. The 115 kV transmission line runs between the new Cedar Mountain Substation and the Franklin Substation. Accommodating the line will require expansion of the Franklin Substation.⁵²

47. The Commission issued a Certificate of Need for the 345 kV facilities in May 2009.⁵³

D. Routes Proposed in the Application

48. In the Application, Applicants identified a Preferred Route and an Alternative Route for the 345 kV transmission line.⁵⁴

⁴⁷ *Id.* at p. 8.

⁴⁸ *Id.*

⁴⁹ *Id.*

⁵⁰ Ex. 102 at pp. 7-8 (Poorker Direct).

⁵¹ Ex. 102 at p. 7 (Poorker Direct).

⁵² Ex. 2 at § 2.4.4 (Application).

⁵³ *In the Matter of the Application of Great River Energy, Northern States Power Company (d/b/a Xcel Energy) and others for Certificates of Need for the CapX 345-kV Transmission Project*, Docket No. ET-2, E-002, et al./CN-06-1115 (PUC Order Granting Certificates of Need with Conditions, issued May 22, 2009 as modified August 9, 2009) (“Certificate of Need Order”).

⁵⁴ Ex. 2 at § 5 (Application); Ex. 102 at p. 11 (Poorker Direct).

49. Applicants selected these two routes at the end of a 15-month route development process that was driven by extensive public participation and agency coordination.⁵⁵ During this process, Applicants gathered environmental data, held open houses and work group meetings, collected public comments, and analyzed the statutory and rule factors set forth in the Power Plant Siting Act (“PPSA”), Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850 to develop the Preferred Route and the Alternate Route for the Project.⁵⁶

50. The Preferred Route is 237 miles long and includes six 345 kV transmission line sections between the South Dakota border and a proposed Hampton Substation near Hampton, Minnesota.⁵⁷ From west to east, the Preferred Route begins near Hendricks, Minnesota, passes north of Marshall, and then takes a southerly route via Franklin and Le Sueur. After crossing the Minnesota River at Le Sueur, the Preferred Route then heads north of New Prague and Elko New Market to terminate at the proposed substation near Hampton.⁵⁸ The Lyon County – Hazel Creek – Minnesota Valley sections of the Preferred Route head north at the existing Lyon County substation and follow an existing 115 kV corridor north to connect into a new Hazel Creek Substation.⁵⁹ The route then crosses the Minnesota River near Granite Falls to connect into the existing Minnesota Valley Substation.⁶⁰

51. The Alternate Route is 262 miles long and includes six 345 kV transmission line sections between the South Dakota border and a proposed Hampton Substation near Hampton.⁶¹ From west to east, the Alternate Route begins near Hendricks, Minnesota, passes south of Marshall, and then takes a northerly route via Redwood Falls, Franklin, and Belle Plaine.⁶² After crossing the Minnesota River at Belle Plaine, the Alternate Route then heads south of New Prague and Elko New Market to terminate at the proposed substation near Hampton.⁶³ The Lyon County – Hazel Creek – Minnesota Valley sections of the Alternate Route head north from the Lyon County Substation along an existing 69 kV line for approximately seven miles and then follow field lines and roads to connect to a new Hazel Creek Substation. After leaving the Hazel Creek Substation, the line crosses the Minnesota River at Granite Falls to connect into the existing Minnesota Valley Substation.⁶⁴

⁵⁵ Ex. 2 at § 4.0 (Application); Ex. 102 at p. 11 (Poorker Direct).

⁵⁶ *Id.*

⁵⁷ Ex. 2 at § 5.1 (Application); Ex. 102 at p. 12 (Poorker Direct).

⁵⁸ *Id.*

⁵⁹ Ex. 2 at § 5.1 (Application); Ex. 102 at p. 13 (Poorker Direct).

⁶⁰ *Id.*

⁶¹ Ex. 2 at § 5.2 (Application); Ex. 102 at p. 13 (Poorker Direct).

⁶² *Id.*

⁶³ *Id.*

⁶⁴ Ex. 2 at § 5.2 (Application); Ex. 102 at pp. 13-4 (Poorker Direct).

52. As part of the Application, Applicants presented three routing options for the new 115 kV transmission line between the new Cedar Mountain Substation and the Franklin Substation area.⁶⁵

53. The first alternative taps the existing Franklin to New Ulm 115 kV transmission line approximately one mile east of the existing Franklin Substation and runs approximately 0.75 miles to the proposed Cedar Mountain Substation South area.⁶⁶

54. The second alternative will tap the Franklin to New Ulm 115 kV transmission line and extends approximately 0.25 miles to 0.5 miles to the proposed Cedar Mountain Substation South area.⁶⁷

55. The third alternative taps the Minnesota Valley to Franklin 115 kV transmission line and would run approximately two miles to the proposed Cedar Mountain Substation North area, with an option to route the new 115 kV line into the existing Franklin Substation.⁶⁸

E. Modified Preferred Route

56. Following a thorough review and analysis of the various route and segment alternatives proposed in the EIS Scoping Decision, Applicants reevaluated the Preferred Route.⁶⁹ From this analysis, Applicants identified several modifications to the Preferred Route.⁷⁰ These four route modifications were incorporated into the Preferred Route to develop the Modified Preferred Route.⁷¹

57. The first route modification, identified as 3P-06 in the DEIS, is located in Underwood Township in Redwood County.⁷² The Modified Preferred Route leaves the Preferred Route and heads south between sections 35 and 36 until it comes to the north side of State Highway 19.⁷³ The Modified Preferred Route continues east for one mile until it joins the Preferred Route at the junction of County Highway 5 and County Highway 12.⁷⁴

⁶⁵ Ex. 2 at p. 2-4, § 7.3 (Application).

⁶⁶ Ex. 2 at p. 2-5 (Application).

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ Ex. 102 at p. 15 (Poorker Direct).

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² Ex. 102 at pp. 15-17 (Poorker Direct).

⁷³ *Id.*

⁷⁴ *Id.*

58. The second route modification, identified as 3P-04 in the DEIS, is located in Eden Township in Brown County and is approximately 0.5 mile north of 320th Street, where the Modified Preferred Route heads east along the half section line of Section 7 for one mile.⁷⁵ The Modified Preferred Route turns north on 330th Avenue for approximately one mile and turns east on the half section line of Section 5.⁷⁶ The Modified Preferred Route then turns north on 327th Avenue for 0.5 mile where it rejoins the Preferred Route.⁷⁷

59. The third route modification, identified as P-SCT-002 in the DEIS (renumbered as 5P-02 on maps used at the Hearings⁷⁸), is located between the Helena Substation and the Lake Marion Substation at the intersection of Aberdeen Avenue and 270th Street.⁷⁹ The Modified Preferred Route continues east for one mile to Delmar Avenue.⁸⁰ At Delmar Avenue, the Modified Preferred Route continues north one mile until it joins the Preferred Route at 260th Street.⁸¹

60. The fourth modification is along the South Dakota border south of Hendricks, Minnesota, along 290th Street in Hendricks Township. The Modified Preferred Route includes an approximately 2.15-mile route segment along 290th Street just south of Highway 19, where it crosses into South Dakota. The route segment includes 290th Street where it turns south for approximately 600 feet on the Minnesota border (this road becomes 201st Street in South Dakota). The route width in this area is proposed to be 1.1 miles.⁸²

61. Applicants also developed three alignment and route width modifications, which were incorporated into the Modified Preferred Route.⁸³

62. The alignment of the Preferred Route centerline at the Le Sueur Minnesota River crossing was changed to parallel U.S. Highway 169. Applicants made this modification to avoid crossing Buck's Lake, which the Minnesota Department of Natural Resources ("MnDNR") identified as a habitat to "substantial numbers of bald eagles, great egrets, and other waterfowl."⁸⁴ The MnDNR did not support a crossing of

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ *Id.*

⁷⁸ Exs. 119 and 134.

⁷⁹ Ex. 102 at pp. 15-17 (Poorker Direct).

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² Ex. 102 at pp. 15-17 (Poorker Direct).

⁸³ Ex. 103 at pp. 16-20 (Poorker Rebuttal); Ex. 140 at 11 (Poorker Supplemental).

⁸⁴ Ex. 140 at Schedule 49 at p. 2 (Poorker Supplemental).

Buck's Lake "due to the high concentration of species using the area for resting, roosting, feeding and nesting."⁸⁵

63. The Preferred Route width and proposed alignment were changed to avoid the RES Specialty Pyrotechnics, Inc. ("RES"), facilities near Belle Plaine. The Institute of Makers of Explosives has detailed guidance regarding proximity of transmission line facilities to pyrotechnic facilities. This guidance recommends that transmission lines be located no nearer to the pyrotechnic facility than the width between poles in the line (in this case, 1,000 feet).⁸⁶

64. The Preferred Route width was expanded to 3,000 feet for a certain narrow area north of Marshall, Minnesota.⁸⁷

F. Crossover Route

65. As a result of certain preferences and concerns, described in greater detail below, expressed by the United States Fish and Wildlife Service and MnDNR, Applicants developed a north/south route connector west of Arlington, Minnesota. Applicants referred to this segment alternative as the "USFWS/MnDNR Alternative."⁸⁸

66. Applicants evaluated the USFWS/MnDNR Alternative and provided information about the alternative in pre-filed Direct Testimony.⁸⁹

67. Applicants used the USFWS/MnDNR crossover segment to develop a hybrid of the Modified Preferred Route and Alternate Route (the "Crossover Route").⁹⁰

68. The Crossover Route would be approximately 247 miles long. This route alternative follows the Modified Preferred Route from the Brookings Substation to the Cedar Mountain Substation. From the Cedar Mountain Substation, the route continues east along the Modified Preferred Route, then runs north along CSAH 13 in Sibley County to State Highway 5. It then follows State Highway 5 for about 2.25 miles before turning north, running along a field line and a short portion of 421st Avenue, before finally connecting with the Alternate Route at the intersection of 417th Avenue and 220th Street. From its beginning off CSAH 13, the "connector" between the Preferred Route and Alternate Routes is approximately ten miles long. At this point, the line heads east, following the Alternative Route to cross the Minnesota River at Belle Plaine. The line would then follow the Applicants' Alternative Route to the Helena Substation

⁸⁵ *Id.*

⁸⁶ Ex. 103 at pp. 16-19 (Poorker Rebuttal); Ex. 105 at pp. 1-3 (Lennon Rebuttal).

⁸⁷ Ex. 137 (Applicants' Notice to Landowners and Applicants' April 30, 2009 EIS Scoping Comments).

⁸⁸ Ex. 140 at Schedule 44 at pp. 1-2 (Poorker Supplemental).

⁸⁹ Ex. 102 at pp. 54-9 (Poorker Direct).

⁹⁰ Ex. 140 at p. 7 (Poorker Supplemental).

North Area. From there, the Crossover Route will follow Applicants' Modified Preferred Route to the new Hampton Substation Area.⁹¹

G. Revised Cedar Mountain South 115 kV Route

69. Subsequent engineering analysis led Applicants to conclude that the 115 kV line connection from Cedar Mountain should connect directly to the Franklin Substation.⁹²

70. As a result, Applicants abandoned one of the initial route alternatives from the Cedar Mountain Substation South area that did not interconnect with the Franklin Substation; and modified the remaining Cedar Mountain Substation South alternative to interconnect with the Franklin Substation ("Revised Cedar Mountain South 115 kV Route").

71. Applicants also utilized the option to interconnect the Cedar Mountain Substation North alternative to the Franklin Substation.⁹³

72. This left two route alternatives for the new 115 kV line on the record.

H. Structure Types and Spans

73. Applicants propose to use single pole, galvanized or self-weathering steel double circuit structures for the majority of the 345 kV line portions of the Project.⁹⁴ For the 345 kV line sections where only one circuit (three phases) is proposed to be initially installed, Applicants propose to place the second set of davit arms that will be used to support the second 345 kV circuit on these structures during the initial installation.⁹⁵

74. Specialty structures, including H-frame poles, may be required in certain limited circumstances.⁹⁶ For example, H-frame structures are sometimes required near environmentally sensitive areas.⁹⁷ H-frame structures consist of two wooden or steel poles with cross bracing.⁹⁸ Concrete pier foundations may be used for angle structures or if soil conditions are poor.⁹⁹ At the Belle Plaine and North Redwood Minnesota River

⁹¹ Ex. 140 at p. 7 (Poorker Supplemental).

⁹² Ex. 102 at p. 6 (Poorker Direct).

⁹³ *Id.*

⁹⁴ Ex. 104 at p. 5 (Lennon Direct).

⁹⁵ Applicants February 8, 2010 Letter at pp. 4-5, filed 02/08/10, Doc. Id. 20102-46898-05.

⁹⁶ Ex. 104 at p. 5 (Lennon Direct).

⁹⁷ *Id.*

⁹⁸ *Id.*

⁹⁹ *Id.*

crossings on the Alternate Route, steel H-frame triple circuit structures with a distribution underbuild may also be used as dictated by final route and design.¹⁰⁰

75. For the 115 kV transmission lines facilities that will connect the new Cedar Mountain Substation with the Franklin Substation, Applicants propose to use single pole wood or steel 115 kV horizontal post poles.¹⁰¹

76. Spans of 750 to 1,100 feet between structures are expected for the majority of the 345 kV facilities.¹⁰² For the Project's 115 kV facilities, Applicants expect spans of 300 to 400 feet between structures.¹⁰³

I. Conductors

77. Each phase of the 345 kV line is proposed to consist of bundled conductors composed of two 954 kcmil 54/7 Cardinal Aluminum Conductor Steel Supported ("ACSS") cables or conductors of comparable capacity.¹⁰⁴ The same conductor and bundled configuration is being proposed for all the 345 kV single circuit and double circuit transmission line sections.¹⁰⁵ For the 115 kV line, 795 Drake ACSS conductor is proposed.¹⁰⁶ Two shield wires will be strung above the conductors to prevent damage from lightning strikes. These shield wires are typically less than one inch in diameter and will include fiber optic cables, which allow a path for substation protection equipment to communicate with equipment at other terminals on the transmission line.¹⁰⁷

J. Route Widths

78. Applicants initially requested a route width of 1,000 feet for the 345 kV transmission line, and where necessary, flexibility to increase the width up to 1.25 miles, centered on the proposed alignment for the proposed route's centerline.¹⁰⁸

79. Applicants subsequently modified their requested route width for the Modified Preferred Route to a route width of 600 feet in those areas depicted on the 17 tile maps attached to Applicants' February 8, 2010 Letter to the ALJ.¹⁰⁹

¹⁰⁰ Ex. 104 at pp. 5-6 (Lennon Direct).

¹⁰¹ Ex. 104 at p. 6 (Lennon Direct).

¹⁰² Ex. 104 at p. 7 (Lennon Direct).

¹⁰³ *Id.*

¹⁰⁴ Ex. 104 at p. 6 (Lennon Direct).

¹⁰⁵ *Id.*

¹⁰⁶ Ex. 104 at p. 6 (Lennon Direct).

¹⁰⁷ Applicants February 8, 2010 Letter at p. 5, filed 02/08/10, Doc. Id. 20102-46898-05.

¹⁰⁸ Ex. 2 at § 2.3 (Application); Ex. 140 at Schedule 48 (Poorker Supplemental).

80. Should the Commission designate another route for the 345 kV transmission line, Applicants propose to work with OES to narrow the route in a timely manner after the Commission approves a route.¹¹⁰

81. Applicants request a route width of 4,225 feet for the 115 kV transmission line between Cedar Mountain Substation and Franklin Substation.¹¹¹

K. Right-of-Way

82. A 150-foot wide right-of-way will be required for the majority of 345 kV line. In some limited instances, where specialty structures are required for long spans or in environmentally sensitive areas, a larger right-of-way width may be required.¹¹² The 115 kV line will require 80 feet of right-of-way.¹¹³

L. Project Schedule

83. Applicants expect to begin construction of the Project in the fourth quarter of 2010 and estimate that the Project will be completed by the third quarter of 2013.¹¹⁴

M. Project Costs

84. The total cost of the Project, which includes the survey, engineering, materials, construction, right-of-way, and project management associated with the transmission line and substations, is dependent, in significant part, on the length of the transmission lines facilities.¹¹⁵ The total cost is estimated to be between \$700 million and \$755 million in 2007 dollars.¹¹⁶ This estimate is subject to change as it can be affected considerably by several variables such as the timing of construction, availability of construction crews and components, and the final route selected by the Commission.¹¹⁷

N. Substations

85. This Project includes the construction of four new substations and modifications to four existing substations. The four new substations are: Hazel Creek,

¹⁰⁹ See Applicant's February 8, 2010 Letter, filed 02/08/10, Doc. Id. 20102-46898-05.

¹¹⁰ See Applicants' Post-Hearing Reply Brief at pp. 8-9.

¹¹¹ Ex. 102 at Schedule 3 (Poorker Direct).

¹¹² Ex. 2 at § 3.1.1.2 (Application).

¹¹³ *Id.*

¹¹⁴ Ex. 104 at p. 7 (Lennon Direct).

¹¹⁵ Ex. 104 at p. 8 (Lennon Direct).

¹¹⁶ Ex. 104 at p. 8 (Lennon Direct); Ex. 141 at p. 8 (Lennon Supplemental).

¹¹⁷ Ex. 104 at p. 8 (Lennon Direct).

Cedar Mountain, Helena, and Hampton.¹¹⁸ The existing substations are: Brookings County (South Dakota), Lyon County, Minnesota Valley, and Lake Marion.¹¹⁹

86. Applicants' proposed site for the Hazel Creek Substation for the Modified Preferred Route is located at the southeast corner of the intersection of 520th Street (County Road B3) and 260th Avenue.¹²⁰ As this location is also located along the Alternate Route, this is also Applicants' proposed substation site for the Alternate Route.¹²¹ The substation fenced and graded area will be approximately 10 to 12 acres depending on final route selection and final substation design.¹²²

87. Applicants' proposed site for the Cedar Mountain Substation for the Modified Preferred Route is located in Camp Township, Renville County at the northwest corner of the intersection of County Road 3 and 640th Avenue.¹²³ Along the Alternate Route, the Applicants' proposed substation site for the Cedar Mountain Substation is in Birch Cooley Township, Renville County, on the west side of 380th Street, ¼ mile north of County Highway 12.¹²⁴ The new Cedar Mountain Substation will require five to eight acres of fenced and graded area depending on the final route selection and final substation design.¹²⁵

88. Applicants' proposed site for the Helena Substation for the Modified Preferred Route is located on the southeast corner of the intersection of 231st Avenue and 320th Street (County Road 28) in Derrynane Township in Le Sueur County.¹²⁶ For the Alternate Route, Applicants propose a substation site located along West 270th Street between Church Avenue and Aberdeen Avenue in Belle Plaine Township in Scott County.¹²⁷ The new Helena Substation will require approximately five to eight acres of fenced and graded area depending on final route selection and final substation design.¹²⁸

89. Applicants have two possible substation sites for the new Hampton Substation, each of which are located on the west side of Highway 52 near 215th

¹¹⁸ Ex. 2 at § 2.4 (Application); Ex. 102 at p. 20 (Poorker Direct).

¹¹⁹ *Id.*

¹²⁰ Ex. 102 at p. 21 (Poorker Direct).

¹²¹ *Id.*

¹²² *Id.*

¹²³ *Id.*

¹²⁴ Ex. 102 at p. 22 (Poorker Direct).

¹²⁵ *Id.*

¹²⁶ *Id.*

¹²⁷ *Id.*

¹²⁸ Ex. 102 at p. 22 (Poorker Direct).

Street.¹²⁹ One of these substation sites is located on the north side of 215th Street and the other is located on the south side of 215th Street.¹³⁰ Applicants selected these two possible substation sites in coordination with the CapX2020 Hampton – Rochester – La Crosse 345 kV Project team as this new 345 kV line will also connect at the Hampton Substation.¹³¹ These two sites were identified because they are compatible with the Modified Preferred Route and Alternate routes (including Alternative 6P-06) for this Project and are compatible with routes under consideration for the Hampton – Rochester – La Crosse 345 kV Project.¹³² These sites also minimize the length of connection to the existing Prairie Island – Blue Lake 345 kV line while providing road access to the sites.¹³³ The new Hampton Substation will require approximately three to five acres of fenced and graded area depending on final route selection and final substation design.¹³⁴

90. Applicants do not anticipate that additional land will be required to accommodate the equipment additions at the existing Minnesota Valley Substation.¹³⁵ The existing Lyon County Substation will be expanded within the boundaries of the current Xcel Energy substation property by adding four to six acres of fenced and graded substation area.¹³⁶ The substation expansion is proposed to extend north and east of the existing substation area and should not require the acquisition of additional land.¹³⁷ The Project will require an expansion of the existing Lake Marion Substation to the south.¹³⁸ Applicants intend to acquire up to 25 acres of additional land to the south of the existing Lake Marion Substation.¹³⁹ An area of five to eight acres of fenced and graded substation area will be required to accommodate additional equipment.¹⁴⁰

91. The existing Franklin 115 kV Substation will be expanded to the north to accommodate the new 115 kV line from Cedar Mountain Substation.¹⁴¹

¹²⁹ Ex. 102 at p. 23 (Poorker Direct).

¹³⁰ *Id.*

¹³¹ *Id.*

¹³² *Id.*

¹³³ *Id.*

¹³⁴ *Id.*

¹³⁵ Ex. 102 at p. 24 (Poorker Direct).

¹³⁶ *Id.*

¹³⁷ Ex. 102 at p. 24 (Poorker Direct).

¹³⁸ Ex. 102 at p. 25 (Poorker Direct).

¹³⁹ *Id.*

¹⁴⁰ *Id.*

¹⁴¹ Ex. 102 at p. 20 (Poorker Direct).

O. Federal and State Agency Participation

92. Prior to filing the Application, Applicants contacted federal and state agencies and local governmental units to discuss the Project and involvement in the route development process.¹⁴² In response to Applicants' outreach, the USFWS, United States of Army Corps of Engineers ("USACE"), United States Department of Agriculture – Farm Service Agency ("FSA"), United States Coast Guard, Minnesota Board of Water and Soil Resources ("BWSR"), MnDNR, Minnesota Department of Transportation ("Mn/DOT"), Minnesota State Historic Preservation Office ("SHPO"), Minnesota Department of Agriculture ("Mn/Ag."), OES, and numerous county and local governmental units became involved with this regulatory proceeding.¹⁴³

1. Minnesota Department of Agriculture

93. Mn/Ag. raised several concerns regarding the impact of transmission line construction on agricultural land.¹⁴⁴ In response, Mn/Ag. and Applicants developed an Agricultural Impact Mitigation Plan ("AIMP") which addresses mitigation action, where possible, restoration of damaged tiles, removal of construction debris, and restoration of soil to existing pre-construction conditions.¹⁴⁵ The Mn/Ag. approved Applicants' AIMP in September 2009.¹⁴⁶

2. United States Army Corps of Engineers

94. In April 2008, USACE informed Applicants that a USACE permit would be needed for the Project.¹⁴⁷ As part of the USACE permit process, an environmental review is necessary.¹⁴⁸ Applicants and OES entered into a concurrence agreement whereby the USACE will conduct part of its review of the Project in parallel with the routing process.¹⁴⁹

3. Minnesota Department of Transportation

95. Mn/DOT owns or otherwise controls all state trunk highways, including freeways/interstate highways.¹⁵⁰ Mn/DOT shares oversight over a right-of-way with the

¹⁴² Ex. 2 at p. 10-1 (Application).

¹⁴³ Ex. 2 at p. 10-3 (Application).

¹⁴⁴ Ex. 2 at § 10.1.2.6 (Application).

¹⁴⁵ Ex. 102 at p. 26 (Poorker Direct).

¹⁴⁶ Ex. 102 at p. 27 (Poorker Direct).

¹⁴⁷ Ex. 2 at p. 10-5 (Application).

¹⁴⁸ Minn. R. Ch. 8810.3100 - .3600

¹⁴⁹ Minn. R. 8810.3300, subp. 1.

¹⁵⁰ Ex. 102 at p. 29 (Poorker Direct).

Federal Highway Administration to the extent the right-of-way has been acquired by Mn/DOT with federal funding.¹⁵¹

96. Mn/DOT's rules governing use of trunk highway rights-of-way are included in Minnesota Rules 8810.3100-.3600.¹⁵²

97. Minnesota Rule 8810.3300, subp. 1 requires Applicants to obtain a permit from Mn/DOT to occupy state highway right-of-way, including interstate roads (also called freeways), and for crossings and longitudinal installations ("Utility Permit").¹⁵³

98. Mn/DOT follows the standards published in the *Mn/DOT Procedures for Accommodation of Utilities on Highway Right-of-Way, Mn/DOT Position Statement – Highways No. 6.4*, July 27, 1990, revised November 8, 2005 ("Accommodation Policy") when issuing Utility Permits.¹⁵⁴ The Accommodation Policy notes that it is in the public interest for utility facilities to be accommodated on any highway right-of-way when such use or occupancy does not conflict with provisions of federal, state, or local laws or regulations.¹⁵⁵

99. Applicants identified several segments of the proposed routes that could require Utility Permits because they cross or parallel state trunk highways.¹⁵⁶

100. There are also three trunk highways that may be crossed by or run parallel to power lines proposed for this Project, that are not part of the National Highway System or interstate system. These trunk highways are also subject to certain Federal Highway Administration requirements.¹⁵⁷

101. There are three areas where the proposed routes will cross state highways: (1) on the Modified Preferred Route segments parallel to U.S. Highway 169; (2) on the Alternate Route, there is a segment that parallels Interstate I-35 for approximately seven miles between 57th Street West and the Lake Marion Substation; and (3) on the Modified Preferred Route, segments parallel Highway 52 for approximately 2.5 miles, depending on final alignment.¹⁵⁸ The affected sections of Highway 52 and U.S. Highway 169 are not freeways.¹⁵⁹

¹⁵¹ *Id.*

¹⁵² Ex. 102 at pp. 29-30 (Poorker Direct).

¹⁵³ Ex. 102 at p. 27 (Poorker Direct).

¹⁵⁴ Ex. 102 at p. 30 (Poorker Direct).

¹⁵⁵ Ex. 102 at p. 30 (Poorker Direct); Ex. 102 at Schedule 19 (Poorker Direct).

¹⁵⁶ Ex. 102 at pp. 27-28 (Poorker Direct); Applicants February 8, 2010 Letter at Attachments 2-3, filed 02/08/10, Doc. Id. 20102-46898-05.

¹⁵⁷ Ex. 140 at Schedule 47 at pp. 2, 10-11 (Poorker Supplemental).

¹⁵⁸ Ex. 102 at pp. 27-28 (Poorker Direct).

¹⁵⁹ Ex. 102 at p. 27 (Poorker Direct).

102. On April 30, 2009, Mn/DOT filed a comment letter on the scope of the EIS.¹⁶⁰ In this letter, Mn/DOT expressed concerns about alignments that would be situated within 75 feet of trunk highway right-of-way.¹⁶¹ Mn/DOT also stated concerns regarding the proximity of the proposed transmission lines to trunk highway right-of-way and how this may affect Mn/DOT's maintenance, reconstruction, or new construction of roads and interchanges.¹⁶²

103. In its April 30, 2009 letter, Mn/DOT also advised that a Utility Permit would be required for occupancy of any portion of Mn/DOT's road right-of-way.¹⁶³ Mn/DOT indicated this would include any intrusions in the airspace above the right-of-way or "overhang."¹⁶⁴ This includes permanent encroachments, where poles are placed outside but near the right-of-way and have pole arms overhanging into the right-of-way and intermittent encroachments, where the transmission wire intermittently blows into the right-of-way under certain weather conditions (e.g., "blow-out").¹⁶⁵

104. On November 30, 2009, Mn/DOT filed a comment letter on the DEIS.¹⁶⁶ In this letter, Mn/DOT advised that it would be unable to issue a Utility Permit for the proposed alignment in a segment of the Applicants' Modified Preferred Route at Le Sueur.¹⁶⁷ Mn/DOT observed that the Modified Preferred Route would "run through a scenic easement area located near the rest area adjacent to U.S. Highway 169."¹⁶⁸ Mn/DOT stated "that removal of significant mature woodland vegetation would be required to construct the HVTL along the proposed route" and therefore was prohibited by federal requirements.¹⁶⁹ While there are exceptions to these prohibitions, Mn/DOT concluded that it "has not seen a route that would not require extensive tree removal or alteration of trees in the scenic area. Therefore, it believes it would be unable to issue a permit in this location."¹⁷⁰

105. Based on Mn/DOT's November 30, 2009 letter, Applicants reevaluated the alignment of the Modified Preferred Route in the vicinity of the Minnesota River Valley Safety Rest Area to determine if there were any modifications that could alleviate

¹⁶⁰ Ex. 511; Ex. 102 at Schedule 20 (Poorker Direct).

¹⁶¹ Ex. 511; Ex. 102 at p. 31 and Schedule 20 (Poorker Direct).

¹⁶² Ex. 511; Ex. 102 at Schedule 20 (Poorker Direct).

¹⁶³ Ex. 102 at p. 31 and Schedule 20 (Poorker Direct); Seykora Vol. 3 at pp. 183-184.

¹⁶⁴ Ex. 102 at p. 31 and Schedule 20 (Poorker Direct); Seykora Vol. 3 at p. 184.

¹⁶⁵ Ex. 102 at pp. 31-32 and Schedule 20 (Poorker Direct); Seykora Vol. 3 at pp. 183-184.

¹⁶⁶ Ex. 309 (Mn/DOT November 30, 2009 Comment Letter); Ex. 140 at Schedule 47 (Poorker Supplemental).

¹⁶⁷ Ex. 309 at p. 12 (Mn/DOT November 30, 2009 Comment Letter); Seykora Vol. 3 at p. 175.

¹⁶⁸ Ex. 309 at p. 12 (Mn/DOT November 30, 2009 Comment Letter).

¹⁶⁹ Ex. 309 at p. 12 (Mn/DOT November 30, 2009 Comment Letter).

¹⁷⁰ *Id.*

Mn/DOT's concerns.¹⁷¹ On December 14, 2009, Applicants developed a new alignment generally within the 4,700-foot wide route that avoided Mn/DOT's scenic easements ("Myrick Alternative").¹⁷²

106. The Myrick Alternative follows the north side of the U.S. Highway 169 corridor across the Minnesota River.¹⁷³ Approximately 900 feet west of the State Highway 112 exit ramp the centerline heads southeast, crossing U.S. Highway 169.¹⁷⁴ After crossing U.S. Highway 169, the route turns slightly, but remains in the southeast direction for 0.2 miles (approximately 1,250 feet), crossing State Highway 112 and into Mayo Park in the City of Le Sueur.¹⁷⁵ The route continues through Mayo Park, turning east at Forest Prairie Road (County Road 28) paralleling the north side of road, a distance of approximately 0.27 miles (approximately 1,425 feet).¹⁷⁶ The route then crosses Forest Prairie Road, turning in the southeast direction for 1,250 feet, crossing through a woodland bluff area and farm field line for approximately 4,300 feet.¹⁷⁷ The route then follows Myrick Street for 0.4 miles (approximately 2,080 feet), where it heads directly east for 0.3 miles (approximately 1,900 feet) along a field line and narrow woodland, crossing a Minnesota County Biological Survey (MCBS) moderate biodiversity area, connecting with the Applicants' Modified Preferred Route on 320th Street.¹⁷⁸

107. Applicants will need a route width of approximately 4,700 feet for the Modified Preferred Route in the vicinity of the Minnesota River Valley Safety Rest Area to utilize the Myrick Alternative.¹⁷⁹

108. On February 8, 2010, Mn/DOT sent a letter to the ALJ to provide additional comments regarding the Project.¹⁸⁰ In its letter, Mn/DOT reiterated that the Utility Accommodation Policy seeks to allow utilities to occupy portions of the highway rights-of-way where such occupation does not put the safety of the traveling public or highway workers at risk or unduly impair the public's investment in the transportation system.¹⁸¹

¹⁷¹ Ex. 140 at p. 11 (Poorker Supplemental).

¹⁷² *Id.*

¹⁷³ Ex. 140 at p. 12 (Poorker Supplemental).

¹⁷⁴ *Id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Id.*

¹⁷⁸ Ex. 140 at p. 12 (Poorker Supplemental).

¹⁷⁹ Ex. 140 at p. 11 (Poorker Supplemental).

¹⁸⁰ Mn/DOT February 8, 2010 Letter at p. 1, filed 02/08/10, Doc. Id. 20102-46900-07.

¹⁸¹ *Id.*

109. In its February 8, 2010 letter, Mn/DOT supports the designation of wide route widths along and across highway rights-of-way.¹⁸² Mn/DOT wrote: “Mn/DOT respectfully requests that the selected route at these locations be as wide as the full width of the routes proposed in the CapX2020 application. This would be sufficiently wide to enable Mn/DOT and CapX2020 to examine each pole location to determine where the [high voltage transmission line] HVTL can be placed to accommodate the needs of both parties.”¹⁸³

4. United States Fish and Wildlife Service and Minnesota Department of Natural Resources

110. Beginning in December 2008, USFWS began providing comments to Applicants regarding the Project.¹⁸⁴

111. USFWS submitted written comments to Applicants on December 3, 2008.¹⁸⁵

112. In its December 3, 2008 letter, USFWS provided some comments regarding the impacts of aerial obstructions on migratory birds and USFWS’s plans to develop future wildlife habitat resources. USFWS stated that aerial obstructions, such as transmission lines, can adversely affect migratory birds, especially when located in migration corridors, if the lines are not sited or designed to minimize collisions (“bird strikes”) and electrocution.¹⁸⁶ USFWS informed Applicants of its plans to acquire lands and develop habitat resources in the Project corridor.¹⁸⁷

113. In its December 3, 2008 letter, USFWS also expressed a preference for the Project to cross the Minnesota River at Le Sueur instead of Belle Plaine.¹⁸⁸ USFWS stated that Belle Plaine has more continuous native flood plain habitat than Le Sueur.¹⁸⁹ Also, the Belle Plaine crossing location has an existing transmission line, so adding a new transmission line in the same location would result in obstructions occupying a larger 3-dimensional area and would increase the likelihood of bird strikes.¹⁹⁰ USFWS noted that there are records of bald eagles at the Belle Plaine crossing.¹⁹¹

¹⁸² *Id.*

¹⁸³ *Id.*

¹⁸⁴ Ex. 140 at Schedule 42 (Poorker Supplemental).

¹⁸⁵ *Id.*

¹⁸⁶ Ex. 140 at Schedule 42 at p. 1 (Poorker Supplemental).

¹⁸⁷ *Id.*

¹⁸⁸ Ex. 140 at Schedule 42 at p. 2 (Poorker Supplemental).

¹⁸⁹ *Id.*

¹⁹⁰ *Id.*

¹⁹¹ *Id.*

114. On March 5, 2009, USFWS provided comments to OES in which it stated that additional research was being conducted on the environmental impacts resulting from crossing the Minnesota River at Le Sueur and Belle Plaine.¹⁹²

115. On April 30, 2009, USFWS submitted additional comments to the Commission. USFWS identified a large year-round bald eagle population, high concentrations of waterfowl during migratory periods and a heron rookery within the proposed Le Sueur crossing corridor.¹⁹³ Due to the presence of these species, USFWS supported the Le Sueur crossing only if a non-aerial construction method were used.¹⁹⁴ If a non-aerial crossing were not feasible, USFWS recommended the Lower Minnesota River crossing be at Belle Plaine utilizing either a non-aerial method or an aerial method which combined the existing 69 kV line and the Project on the same structures.¹⁹⁵ USFWS proposed “the Preferred Route be followed to a point southwest of the City of Arlington where the transmission line would then be routed north to the Alternate Route...[o]nce the transmission line has been routed to the Alternate Route the line should proceed east and cross the Minnesota River within the existing 69 kV transmission line right-of-way in the vicinity of Belle Plaine.”¹⁹⁶ After the Minnesota River is crossed, USFWS suggested the transmission line follow the Alternate Route to the Helena Substation North Area.¹⁹⁷

116. On November 30, 2009, USFWS provided written comments to OES regarding items in the DEIS that required further clarification.¹⁹⁸ In particular, USFWS sought additional information regarding non-aerial river crossings at Le Sueur and Belle Plaine.¹⁹⁹

117. In response to USFWS, Applicants also evaluated several non-aerial construction methods: connecting the new transmission line to the U.S. Highway 169 bridge, attaching the new transmission line to a stand alone pier that would be constructed next to the U.S. Highway 169 bridge, and undergrounding the new 345 kV transmission line.²⁰⁰

¹⁹² Ex. 140 at Schedule 43 (Poorker Supplemental).

¹⁹³ Ex. 140 at Schedule 44 at p. 1 (Poorker Supplemental).

¹⁹⁴ *Id.*

¹⁹⁵ Ex. 140 at Schedule 44 at pp. 1-2 (Poorker Supplemental).

¹⁹⁶ *Id.*

¹⁹⁷ *Id.*

¹⁹⁸ Ex. 140 at Schedule 46 at pp. 1-3 (Poorker Supplemental).

¹⁹⁹ Ex. 140 at Schedule 46 at pp. 1-2 (Poorker Supplemental).

²⁰⁰ Ex. 140 at pp. 4-5 (Poorker Supplemental).

118. MnDNR also provided written comments to OES on November 30, 2009.²⁰¹

119. In its November 30, 2009 letter, MnDNR opined that a Belle Plaine crossing by way of the USFWS/MnDNR Alternative “appears to be the most protective of the Minnesota River.”²⁰² If the Lower Minnesota River crossing occurs at Le Sueur, MnDNR requested the Modified Preferred Route avoid Buck’s Lake.²⁰³ MnDNR did not state any preferences for the crossings of the Minnesota River.²⁰⁴

120. On February 8, 2010, USFWS sent a letter to Applicants regarding the Minnesota River crossings near Le Sueur and Belle Plaine and how the proposed transmission lines could affect bald and golden eagles populations in these areas.²⁰⁵ In its letter, USFWS concludes that “both the proposed Le Sueur and Belle Plaine crossings will likely disturb nesting, foraging, and winter roosting eagles. Both Bald Eagles and Golden Eagles are present in the Minnesota River Valley. The placement of the power line crossing in an area of such high eagle concentration and in a major movement corridor (the Minnesota River) can reasonably be expected to cause eagle mortality through both line collisions and electrocution.”²⁰⁶ The letter further states that “erecting structures in this high eagle concentration area will encourage eagles to nest on poles and transmission lines, causing electrocution of the eagles and damage to the power lines (electrical shorts, fires, power outages).”²⁰⁷

121. In its letter, USFWS urged Applicants to further analyze both the economic and technological feasibility of a non-aerial line at any Minnesota River crossing.²⁰⁸

122. On February 8, 2010, the MnDNR filed comments regarding the FEIS.²⁰⁹ In these comments MnDNR encouraged the Applicants to coordinate directly with MnDNR “through a pre-application meeting(s) concerning impacts to DNR administered lands, public waters, public water wetlands, and state-listed species prior to application for water permits and utility licenses to cross public lands and public waters. The applicant is encouraged to further develop mitigation plans for impacts related to these resources and review these with the DNR prior to applying for any DNR permits.”²¹⁰

²⁰¹ Ex. 140 at Schedule 49 (Poorker Supplemental).

²⁰² Ex. 140 at Schedule 49 at p. 3 (Poorker Supplemental).

²⁰³ Ex. 140 at Schedule 49 at p. 2 (Poorker Supplemental).

²⁰⁴ Ex. 140 at Schedule 49 at p. 3 (Poorker Supplemental).

²⁰⁵ USFWS February 8, 2010 Letter at p. 1, filed 2/9/10, Doc. Id. 20102-46903-01.

²⁰⁶ USFWS February 8, 2010 Letter at p. 1, filed 2/9/10, Doc. Id. 20102-46903-01.

²⁰⁷ *Id.*

²⁰⁸ *Id.*

²⁰⁹ MnDNR February 8, 2010 Letter at p. 1, filed 2/10/10, Doc. Id. 20102-46952-01.

²¹⁰ *Id.*

123. OES expressed concern that the Applicants have not been sufficiently specific regarding technical aspects of the proposed HVTL, particularly regarding the Minnesota River crossing. The Applicants responded with a recitation of the anticipated impacts of the HVTL, particularly with respect to the Myrick Street Alternative.²¹¹

124. While it is true that there are aspects of the HVTL placement for which detail has not been supplied, there is significant uncertainty as to where the HVTL will be placed, particularly with regard to where the line will be crossing the Minnesota River. That choice is ultimately the Commission's to make and it will affect significant segments of the route on either side of the river. The Applicants have provided adequate information to make the decisions required for the issuance of the route permit requested in this proceeding. The details sought by OES will be forthcoming when the route permit has identified the corridor through which the HVTL will be run. Further, since the Minnesota River crossing is subject to the issuance of permits from other agencies, there is a limit to what commitments the Applicants can reasonably make in this proceeding. The Applicants will need the flexibility to meet the conditions that may be imposed by those other agencies with jurisdiction over aspects of the HVTL.

P. OES Environmental Review

125. Minnesota statutes and rules require OES to prepare an EIS for the Project.²¹²

126. The scoping process is the first step in developing an EIS. OES "shall provide the public with an opportunity to participate in the development of the scope of the environmental impact statement by holding a public meeting and by soliciting public comments."²¹³ During the scoping process, alternative routes may be suggested for evaluation in the environmental impact statement.²¹⁴

127. The scoping process "must be used to reduce the scope and bulk of an environmental impact statement by identifying the potentially significant issues and alternatives requiring analysis and establishing the detail into which the issues will be analyzed."²¹⁵

128. At the conclusion of the scoping process, OES must issue a scoping decision which shall address at least the following: 1) the issues to be addressed in the

²¹¹ Applicants' Reply Brief, at 11-13.

²¹² Minn. R. 7850.2500, subp. 1.

²¹³ Minn. R. 7850.2500, subp. 2.

²¹⁴ Minn. R. 7850.2500, subp. 3.

²¹⁵ Minn. R. 7850.2500, subp. 4.

EIS; 2) the alternative sites and routes to be addressed in the EIS; and 3) the schedule for completion of the EIS.²¹⁶

129. From March 30, 2009 to April 9, 2009, OES held 12 public meetings regarding the scope of the EIS.²¹⁷ OES staff also collected and reviewed comments on the scope of the EIS by convening two advisory task forces (Lake Marion to Hampton Task Force and Minnesota River Crossing to New Prague Task Force).²¹⁸

130. The public suggested over 297 route alternatives to the Applicants' proposed routes during the EIS scoping process.²¹⁹ Of these, 197 expressed either opposition or preference for the Applicants' Preferred Route, or their Alternative Route, or no project at all.²²⁰ Of the remaining 100 route alternatives, several were duplicates, 26 were alignment alternatives and 74 fell outside the requested route width and were categorized as route alternatives.²²¹

131. On June 30, 2009, OES issued its Scoping Decision for the EIS. The Scoping Decision identified the topics to be covered in the Project EIS: Regulatory framework; Project engineering and design; Project construction; and Human and environmental resources impacted by the Project and each proposed route alternative.²²² The Scoping Decision also determined that the EIS would address 47 of the proposed route alternatives.²²³

132. The next step in OES's environmental review required OES to publish the DEIS and to schedule informational meetings, which provide an opportunity for the public to comment on the DEIS.²²⁴

133. On October 21, 2009, OES published the DEIS which included a discussion of all of the alternatives and topics required by the Scoping Decision.²²⁵

134. From November 12, 2009 to November 19, 2009, OES held 10 informational meetings for the public to comment on the DEIS.²²⁶

²¹⁶ Minn. R. 7850.2500, subp. 4.

²¹⁷ Ex. 23 at p. 3-2 (DEIS).

²¹⁸ *Id.*

²¹⁹ Ex. 16 at p. 4 (EIS Scoping Decision).

²²⁰ *Id.*

²²¹ *Id.*

²²² Ex. 16 at p. 4-6 (EIS Scoping Decision).

²²³ Ex. 16 at p. 4-6 (EIS Scoping Decision).

²²⁴ Minn. R. 7850.2500, subps. 6-7.

²²⁵ Ex. 23 (DEIS).

²²⁶ Ex. 24 (October 20, 2009 OES Notice regarding DEIS Public Meetings).

135. Minnesota rules require OES to “respond to timely substantive comments received on the draft environmental impact statement consistent with the scoping decision and prepare the final environmental impact statement.”²²⁷ OES may “attach to the draft environmental impact statement the comments received and its response to comments without preparing a separate document.”²²⁸

136. A total of 272 written and oral comments were received by OES during the DEIS comment period.²²⁹

137. On January 26, 2010, OES published the FEIS.²³⁰

Q. Public Comments

138. On November 24, 2009, the City of Lakeville submitted a letter to the ALJ regarding route alternatives 6P-01, 6P-04, and 6P-05, all of which include a segment along CSAH 70 that runs south of the City of Lakeville. The City of Lakeville letter states that these alternatives are “not reasonable alternatives for the City of Lakeville.” The City of Lakeville letter states there “are 1,330 square feet of industrial buildings that are within the 150 foot right-of-way of 6P-01.” This letter further states that “[c]onstruction of 345 kV transmission lines as shown in alternatives 6P-01/04/05 through Lakeville would be difficult as the corridor is congested with existing public utilities. Additional transmission lines would not only be difficult to locate in this corridor, but the ability to access and maintain all utilities in the ROW would be compromised.”²³¹

139. On December 14, 2009, the City of Farmington submitted a letter to the ALJ regarding route alternatives 6P-01, 6P-04, and 6P-05. The City of Farmington’s letter notes that “there is already an existing HVTL along CSAH 50, which runs south of the City of Farmington, and Denmark Avenue as it relates to 6P-01 and part of 6P-05. Installing another line would create a double row of these structures through the area. These lines would traverse populated areas adjacent to homes, schools, and churches.” CSAH 50 runs south of the City of Farmington.²³²

140. During the public comment period, the City of Hampton submitted a resolution to the ALJ that was adopted by the City Council of the City of Hampton of April 14, 2009. The City of Hampton passed a resolution that stated “if it is determined that the CapX2020 Brookings 345 kV transmission line must be extended to the City of Hampton, then it should be located as far as possible outside the City of Hampton to

²²⁷ Minn. R. 7850.2500, subp. 9.

²²⁸ *Id.*

²²⁹ FEIS at p. 5.

²³⁰ See FEIS.

²³¹ City of Lakeville November 24, 2009 Letter, filed 12/29/09, Doc. Id. 200912-45443-05.

²³² City of Farmington December 14, 2009 Letter, filed 12/29/09, Doc. Id. 200912-45443-05.

mitigate the impacts of the substation and 345 kV transmission line on the City of Hampton, its residents, and business community.”²³³

141. On December 28, 2009, Shannon and Troy Anderson, along with their two children, submitted a letter to the ALJ regarding route Alternatives 6P-06 and 6P-03. The Andersons indicated that along 6P-03 and 6P-06 “[t]here is the Klaus Horse Farm, two boarding Kennels, Ginseng Farm, Hmong gardening, Duff’s honey bees and cattle and many agricultural farmers.”²³⁴

142. On January 5, 2010, the City of Le Sueur submitted a letter to the ALJ regarding comments the City provided regarding the Preferred Route. The City of Le Sueur clarified that its proposal to offer the use of the City of Le Sueur’s “existing transmission corridor/easement was made on the presumption that the stated ‘Preferred Route’ was the inevitable route as it approached the Minnesota River.” The City of Le Sueur clarified that its proposal was “only made with the understanding that IF WE WERE GOING TO BE COMPELLED TO DEAL WITH A TRANSMISSION LINE CROSSING we wished to try to lessen its effect on our citizens, natural resources and neighbors.” The City of Le Sueur stated that its position was to support crossing the Minnesota River Valley along the “northern route in the Belle Plaine area.”²³⁵

143. On January 12, 2009, Eureka Township submitted a letter to the ALJ and attached a resolution adopted by the Town Board on September 8, 2008. The resolution stated that the Township Board preferred a route that followed CSAH 70 to the north of Eureka Township rather than through Eureka Township.²³⁶

144. On January 28, 2010, Bimeda, Inc. (“Bimeda”) submitted a letter to the ALJ regarding the Myrick Street Alignment Alternative. Bimeda is a manufacturer of animal health pharmaceutical dosage forms and one of its manufacturing plants is located in Le Sueur, Minnesota. Bimeda stated that the Myrick Street Alignment Alternative passes near the manufacturing plant and could be between 50-100 feet from Bimeda’s manufacturing plant and 20,000 gallon isopropyl alcohol tank. Additionally, Bimeda suggested that “[t]he Alternate Route through Belle Plaine as the route for the Transmission Line would avoid the dangerous interaction between the Transmission Line and the flammable nature of the isopropyl alcohol that is stored in the tank farm and used for manufacturing products on the property owned by Bimeda.”²³⁷

145. On December 14, 2009, Judy and Francis Maeyaert submitted a letter to the ALJ regarding alternate route 1A-01. In their letter, the Maeyaerts indicated that alternate route 1A-01 does not follow section lines and could split fields. The Maeyaerts

²³³ City of Hampton April 14, 2009 Resolution, filed 12/29/09, Doc. Id. 200912-45443-01.

²³⁴ Pub. Comm., Anderson December 28, 2009 Letter, filed 12/31/09, Doc. Id. 200912-45546-03.

²³⁵ City of Le Sueur January 5, 2010 Letter, filed 01/11/10, Doc. Id. 20101-45824-01.

²³⁶ Eureka Township January 12, 2010 Letter, filed 01/22/10, Doc. Id. 20101-46263-03.

²³⁷ Bimeda Corp. January 28, 2010 Letter, filed 01/29/10, Doc. Id. 20101-46568-02.

stated they “believe that the only practical route for their electric power line is somewhere north of Marshall,” Minnesota.²³⁸

146. On January 15, 2010, Becky and Francis Engels submitted a letter to the ALJ regarding alternate route 1P-02. This particular alternate route crosses through the middle of one of the Engels’ farm fields. The Engels voiced concerns about soil compaction and the loss of a half-mile of trees used as a field windbreak. The Engels stated that “[t]he route preferred by the utility follows roads, which is much more sensible.”²³⁹

147. The foregoing findings reflect a very small sampling of the public comment received in this proceeding. More detailed summaries of the oral and written comment received is attached to this Report.²⁴⁰

CRITERIA FOR A ROUTE PERMIT

148. The PPSA requires that route permit determinations “be guided by the state’s goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state’s electric energy security through efficient, cost-effective power supply and electric transmission infrastructure.”²⁴¹

149. Under the PPSA, the Commission and ALJ must be guided by the following responsibilities, procedures and considerations:

- (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;

²³⁸ Pub. Comm., Maeyaert December 14, 2009 Letter, filed 01/11/10, Doc. Id. 20101-45824-01.

²³⁹ Pub. Comm., Engels January 15, 2010 Letter, filed 01/22/10, Doc. Id. 20101-46263-02.

²⁴⁰ See Attachment 1.

²⁴¹ Minn. Stat. § 216E.03, subd. 7.

- (4) evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants;²⁴²
- (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.²⁴³

150. In addition to the PPSA, Minn. R. 7850.4000 provides that no route permit may be issued in violation of site selection criteria and standards found in Minnesota Statutes or Public Utilities Commission Rules. Power line permits must be consistent with state goals to minimize environmental impacts and conflicts with human settlement and other land use. The Commission and ALJ are governed by Minn. R. 7850.4100, which provides for the following factors to be considered when determining whether to issue a route permit for a high voltage transmission line:

- 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;

²⁴² This evaluation is not required since Applicants have not applied for a route permit for a large electric generating plant.

²⁴³ Minn. Stat. § 216E.03, subd. 7.

- 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;²⁴⁴
- 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.

151. There is sufficient evidence on the record for the Commission to assess the proposed routes and alternatives using the criteria set out above.

APPLICATION OF STATUTORY AND RULE CRITERIA

I. Application of Routing Factors to the 345 kV Transmission Line

A. Effects on Human Settlement

152. Minnesota statutory and rule routing criteria for high voltage transmission lines require consideration of the proposed transmission line route's effect on human settlement, including displacement of residences and businesses; noise created during

²⁴⁴ This criterion is inapplicable since Applicants have not applied for a permit for a large electric generating plant.

construction and by operation of the Project; and impacts to aesthetics, cultural values, recreation and public services.²⁴⁵

1. Displacement

153. For purposes of this proceeding, displacement of a residence or business was defined to occur when a structure is within 75 feet of the proposed route centerline.²⁴⁶

154. Applicants do not anticipate that construction of the 345 kV line along the Modified Preferred Route, Alternate Route, or Crossover Route would result in any displacement of residences or businesses.²⁴⁷ However, accommodating Minnesota Department of Transportation (DOT) right of way may bring some homes within 75 feet of the route centerline on 220th Street (Highway 50) in the Hampton area.

155. For the Modified Preferred Route, the Applicant found there are no homes within 0-75 feet from the route centerline, 30 homes are within 75-150 feet from the route centerline, 140 homes are within 150-300 feet from the route centerline; and 134 homes within 300-500 feet from the route centerline.²⁴⁸ In total, 304 homes are 0-500 feet from the route centerline.²⁴⁹ If the route centerline is sited north of Highway 50, the Grilz home would be within 75 feet of the centerline.

156. For the Alternate Route, there are no homes within 0-75 feet from the route centerline; 28 homes are within 75-150 feet from the route centerline; 136 homes are within 150-300 feet of the route centerline; and 155 homes are within 300-500 feet from the route centerline.²⁵⁰ In total, 319 homes are 0-500 feet from the route centerline.²⁵¹

157. For the Crossover Route, there are no homes within 0-75 feet from the route centerline; 29 homes are 75-150 feet from the route centerline; 147 homes are 150-300 feet from the route centerline; and 148 homes are 300-500 feet from the route centerline.²⁵² In total, 324 homes are 0-500 feet from the route centerline.²⁵³

²⁴⁵ Minn. Stat. § 216E.03, subd. 7(b); Minn. R. 7850.4100(A).

²⁴⁶ Ex. 2 at p. 6-11 (Application).

²⁴⁷ Ex. 2 at p. 4-10, p. 6-11 (Application); Ex. 102 at p. 17 (Poorker Direct).

²⁴⁸ Ex. 2 at p. 6-12 (Application); Ex. 102 at Schedule 3 (Poorker Direct); Ex. 102 at pp. 17-18 (Poorker Direct).

²⁴⁹ Ex. 2 at p. 6-12 (Application); Ex. 102 at Schedule 3 (Poorker Direct); Ex. 102 at pp. 17-18 (Poorker Direct).

²⁵⁰ Ex. 2 at p. 2 (Application, Appendix E1).

²⁵¹ *Id.*

²⁵² Applicants January 19, 2010 Letter at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

²⁵³ *Id.*

158. The record confirms that the Modified Preferred Route has fewer homes within 0-500 feet from the route centerline compared to the Alternate Route and the Crossover Route. If the Modified Preferred Route is modified further to incorporate Alternative 6P-06, even fewer homes would be within 0-500 feet from the centerline compared to the Modified Preferred Route.

2. Noise

159. The Minnesota Pollution Control Agency (“MPCA”) has established standards for the regulation of noise levels.²⁵⁴

160. For residential, commercial and industrial land, the MPCA noise limits are 60-65 A-weighted decibel (“dBA”) during the daytime and 50-55 dBA during the nighttime.²⁵⁵

161. Transmission lines produce noise under certain conditions. The level of noise depends on conductor conditions, voltage level and weather conditions. Generally, activity related noise levels during the operation and maintenance of transmission lines are minimal and do not exceed the MPCA Noise Limits outside the right-of-way.²⁵⁶

162. Assessing the anticipated noise that will be generated by the proposed transmission lines was accomplished using the Bonneville Power Administration CFI8X model to evaluate audible noise from high voltage transmission lines. Where possible, the model utilized a worst-case scenario benchmark, to ensure that noise was not under-predicted.²⁵⁷

163. The audible noise levels for the Modified Preferred Route, Alternate Route, and Crossover Route are not predicted to exceed the MPCA Noise Limits outside the right-of-way.²⁵⁸

3. Aesthetics

164. Construction of the facilities along the Modified Preferred Route, Alternate Route, or Crossover Route will likely affect visual quality and area aesthetics within close proximity of the transmission line.²⁵⁹ Specifically, such effects can occur where the Modified Preferred Route, Alternate Route, and Crossover Route cross the

²⁵⁴ Minn. R. 7030.0050; Ex. 2 at p. 6-13 (Application).

²⁵⁵ Ex. 2 at p. 6-13 (Application).

²⁵⁶ *Id.*

²⁵⁷ Ex. 2 at p. 6-14 (Application).

²⁵⁸ *Id.*

²⁵⁹ Ex. 2 at § 6.2.5 (Application).

Minnesota River, are located near recreational resources, and placed near residences within 0-500 feet from the route centerline.²⁶⁰

165. Applicants recognize the transmission lines will be a contrast to the surrounding land. Applicants pledged to continue working with landowners and public agencies to identify concerns related to the transmission line and aesthetics. Several potential mitigative measures have been identified.²⁶¹

166. Examples of the mitigative measures that have been proposed by Applicants include: using uniform structures to the extent practical; placing structures at the maximum feasible distance away from scenic highways, waterways, and trail crossings; collocating new facilities with existing transmission lines or locating in areas where compatible land uses have been identified by the public and public agencies; conducting construction and operation in a manner that prevents any unnecessary destruction, scarring or defacing of the natural surroundings; and paralleling existing rights-of-way.²⁶² Additionally, Applicants have identified crossing points with the shortest distance for river crossings.²⁶³

167. The aesthetic impacts differ among the Modified Preferred Route, Alternate Route, and Crossover Route. The Modified Preferred Routes will cause the least amount of aesthetic impacts, and fewer still if Alternative 6P-06 is incorporated. The Modified Preferred Route including use of Alternative 6P-06, is shorter in distance than the Alternate Route or Crossover Route.²⁶⁴ As a result, the Modified Preferred Route will use fewer poles. In comparison to the Alternate Route and Crossover Route, there are fewer residences within 500 feet of the Modified Preferred Route, and fewer still if Alternative 6P-06 is accepted.²⁶⁵ Also, the Alternate Route and Crossover Route cross the Minnesota River where it is designated "scenic" whereas the Modified Preferred Route does not cross the Minnesota River where it is designated "scenic".²⁶⁶

168. In light of the factors noted in the preceding Finding, the record confirms that the Modified Preferred Route, and that Route with Alternative 6P-06 included, have fewer aesthetic impacts compared to the Alternate Route and the Crossover Route.

²⁶⁰ Ex. 2 at pp. 6-16-17 (Application).

²⁶¹ Ex. 2 at § 6.2.5.2 (Application).

²⁶² Ex. 2 at §§ 6.2.5, 8.2.5 (Application).

²⁶³ Ex. 2 at p. 6-18 (Application).

²⁶⁴ Ex. 102 at p. 9 (Poorker Direct); Ex. 2 at 5-6 (Application); Ex. 140 at p. 7 (Poorker Supplemental).

²⁶⁵ Ex. 102 at p. 17-18 (Poorker Direct); Ex. 2 at 4-10 (Application); Applicants January 19, 2010 Letter to the ALJ at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

²⁶⁶ Ex. 2 at p. 4-10 (Application).

4. Cultural Values

169. The communities in the vicinity of the Project have cultural values arising out of the prevalence of rural agriculture and family-owned businesses.²⁶⁷

170. The proposed transmission lines will serve the region with a stable power supply for years to come without compromising the area's cultural values. As western and southern Minnesota continue to grow and the economic base there continues to expand, the available power supplied may enhance the economic environment in which to live and work.²⁶⁸

171. There are no anticipated impacts to cultural values by constructing the Project along the Modified Preferred Route if Alternative 6P-06 is adopted (which will avoid the crossing of property occupied by a Buddhist Temple in Hampton), Alternate Route, or Crossover Route.²⁶⁹

5. Recreation

172. There are outdoor recreational opportunities along the Modified Preferred Route, the Alternate Route, and the Crossover Route which include snowmobiling, biking, hiking, canoeing, boating, fishing, camping, swimming, hunting, and nature observation.²⁷⁰

173. The Minnesota River Valley, Wildlife Management Areas ("WMAs"), Scientific Natural Areas ("SNAs"), snowmobile trails, state parks, and the Highway 75 King of Trails are examples of recreation areas along the Modified Preferred Route, the Alternate Route, and the Crossover Route.²⁷¹

174. There are four WMAs along the Modified Preferred Route, resulting in an estimated 220 square feet of permanent impacts. There are 12 snowmobile trails crossed by this route. There is also one SNA, but no Waterfowl Protection Areas ("WPAs") within a mile of the Modified Preferred Route.²⁷²

²⁶⁷ Ex. 2 at p. 6-24 (Application).

²⁶⁸ Ex. 2 at pp. 6-24, 6-25, and 8-13 (Application).

²⁶⁹ Ex. 2 at p. 4-10 (Application).

²⁷⁰ Ex. 2 at pp. 6-26, 8-13 (Application).

²⁷¹ *Id.*

²⁷² Ex. 2 at 6-28 (Application); Ex. 102 at Schedule 3 (Poorker Direct); Ex. 102 at pp. 17-19 (Poorker Direct).

175. There are nine WMAs along the Alternate Route, resulting in an estimated 495 square feet of permanent impacts. There are 16 snowmobile trails crossed by this route. There is also one SNA and two WPAs within a mile of the Alternate Route.²⁷³

176. There are five WMAs along the Crossover Route, resulting in approximately 275 square feet of permanent impacts. There are no state parks, one SNA and one WPA within a mile of this route.²⁷⁴

177. The record confirms that the Modified Preferred Route has fewer impacts to recreation resources compared to the Alternate Route and the Crossover Route.

6. Public Services

178. Public services and facilities are generally defined as services provided by government entities, including hospitals, fire and police departments, schools, public parks, and water supply or wastewater disposal systems.²⁷⁵

179. Construction of the Project along the Modified Preferred Route, Alternate Route, and the Crossover Route is not anticipated to directly or indirectly affect the operation of any existing public services.²⁷⁶

180. No direct long-term impacts to public buildings or infrastructure are expected.²⁷⁷

181. During construction, Applicants will make efforts to minimize any disruption to public services or public utilities.²⁷⁸ To the extent disruptions to public services occur, these would be temporary and the Applicants will work to restore service promptly.²⁷⁹ Where any impacts to utilities have the potential to occur, Applicants will work with both landowners and local agencies to determine the most appropriate pole placement.²⁸⁰

²⁷³ Ex. 2 at pp. 4-10, 8-14, and 8-15 (Application).

²⁷⁴ See Applicants January 19, 2010 Letter, filed 01/19/10, Doc. Id. 20101-46155-01.

²⁷⁵ Ex. 2 at p. 6-28 (Application).

²⁷⁶ Ex. 2 at pp. 6-30, 8-16 (Application).

²⁷⁷ *Id.*

²⁷⁸ *Id.*

²⁷⁹ *Id.*

²⁸⁰ *Id.*

B. Effects on Public Health and Safety

182. Minnesota high voltage transmission line routing criteria require consideration of the Project's effect on health and safety.²⁸¹

183. Applicants will ensure that all safety requirements are met during the construction and operation of the proposed transmission line and Associated Facilities.²⁸²

184. The Project will be designed and constructed according to local, State, and National Electric Safety Code (NESC) standards regarding ground clearance, crossing utilities clearance, and building clearance.²⁸³

185. The proposed transmission lines will be equipped with protective devices (breakers and relays located where transmission lines connect to substations) to safeguard the public in the event of an accident or if the structure or conductor falls to the ground.²⁸⁴

186. In addition, the Associated Facilities will be properly fenced and accessible only by authorized personnel.²⁸⁵

1. Electric and Magnetic Fields

187. Minnesota Statute § 216E.03, subd. 7 requires consideration of the effects of electric and magnetic fields resulting from the Project on public health and welfare.²⁸⁶

188. Electric and magnetic fields ("EMF") are produced by natural sources and by the voltages and currents associated with our society's use of electric power.²⁸⁷ Consequently, each of us every day encounters a wide variety of natural and man-made EMF.²⁸⁸ For example, exposure to these fields happens at home when the television, lamp or fan is on; using the computer to send e-mail; using a washer or dryer, or using an electric or microwave oven.²⁸⁹

²⁸¹ Minn. Stat. § 216E.03, subd. 7(b)(1); Minn. R. 7850.4100(B).

²⁸² Ex. 2 at p. 6-6 (Application).

²⁸³ Ex. 2 at p. 6-4 (Application).

²⁸⁴ *Id.*

²⁸⁵ Ex. 2 at p. 6-4 (Application).

²⁸⁶ Minn. Stat. § 216E.03, subd. 7.

²⁸⁷ Ex. 106 at p. 3 (Rasmussen Direct).

²⁸⁸ Ex. 108 at Schedule 2 at p. 2 (Valberg Direct).

²⁸⁹ Ex. 2 at p. 3-13 (Application); Ex. 108 at Schedule 2 at p. 2 (Valberg Direct).

189. Electric and magnetic fields also exist near wherever electricity is being generated and transmitted.²⁹⁰

190. The amount of electric charge on a metal wire, which is expressed as voltage, creates an electric field on other nearby charges.²⁹¹

191. When electric charges in the conductor are in motion, they produce an electric current, which is measured in amperes, and a wire with an electric current creates a magnetic field ("MF") that exerts forces on other electric currents.²⁹² MF levels become lower farther away from the source.²⁹³

192. The electric and magnetic fields associated with power lines are often designated as extremely-low-frequency EMF ("ELF-EMF").²⁹⁴

193. ELF-EMF are distinct from the high-frequency electric and magnetic fields associated with radio, television, and cell-phone signals.²⁹⁵ Radio and television electric and magnetic fields are meant to propagate away from an antenna and as a result carry radiofrequency energy ("RF") to the receiver.²⁹⁶ The EMF from power lines is too low in frequency to carry energy away, and the electric energy stays on the power lines.²⁹⁷ Therefore, ELF-EMF should not be called "radiation" or "emission" or confused with "ionizing radiation" such as X-rays.²⁹⁸

194. While there is no federal standard for transmission line electric fields, the Commission has imposed a maximum electric field limit of 8 kV/meter measured at one meter above the ground.²⁹⁹

195. The maximum electric field associated with Applicants' proposal, measured at one meter above the ground, is calculated to be 3.73 kV/m.³⁰⁰

²⁹⁰ Ex. 108 at Schedule 2 at p. 1 (Valberg Direct).

²⁹¹ *Id.*

²⁹² Ex. 108 at Schedule 2 at pp. 1-2 (Valberg Direct).

²⁹³ Ex. 108 at Schedule 2 at p. 2 (Valberg Direct); Carpenter Vol. 2B at p. 65.

²⁹⁴ Ex. 108 at Schedule 2 at p. 1 (Valberg Direct).

²⁹⁵ Ex. 108 at Schedule 2 at p. 2 (Valberg Direct).

²⁹⁶ Ex. 108 at Schedule 2 at pp. 2-3 (Valberg Direct).

²⁹⁷ Ex. 108 at Schedule 2 at p. 3 (Valberg Direct).

²⁹⁸ Ex. 108 at Schedule 2 at p. 3 (Valberg Direct).

²⁹⁹ See *In the Matter of the Petitions of Northern States Power Company d/b/a Xcel Energy and Dairyland Cooperative for Permits to Construct a 115 kV and 161 kV Transmission Line from Taylors Falls to Chisago County Substation*, Docket No. E-002/TL-06-1677, Environmental Assessment at p. 45 (Aug. 20, 2007); Ex. 23 at p. 6-5 (DEIS).

³⁰⁰ Ex. 2 at pp. 3-13, 3-14 (Application).

196. There is no federal standard for transmission line magnetic fields.³⁰¹ Presently, Minnesota also does not have any regulations regarding transmission line magnetic fields.³⁰² Other states that do have standards, such as Florida, Massachusetts, and New York, have established MF limits of 200 milligauss (mG) (for transmission lines 230-500 kV), 85 mG, and 200 mG, respectively, measured from the edge of transmission line rights-of-way.³⁰³

197. These established MF limits are far above the highest projected MF level of 42.28 mG at the edge of the right-of-way during peak operation that will be created by the Project.³⁰⁴

198. Applicants proffered an expert witness, Dr. Peter A. Valberg, to provide testimony on public health policy and the state of scientific research on whether exposure to ELF-EMF causes health effects.³⁰⁵

199. Dr. Valberg's background includes physics, physiology, and public health expertise. He holds graduate degrees both in physics and human physiology, and he has served on university faculties in both physics and public health.³⁰⁶ Dr. Valberg is the author of more than 80 peer-reviewed articles on environmental health and cell biology. He advises researchers in the physical phenomena associated with RF EMF, including its impacts on human biology, and epidemiology.³⁰⁷ Dr. Valberg has directed health risk assessments for municipal health departments, utilities, regulatory agencies, and industry on evaluation of potential health effects from exposure to EMF and RF.³⁰⁸

200. Dr. Valberg is of the opinion that there is scientific agreement on the issue of whether electric fields from power-lines cause health effects: "studies of electric fields have not suggested any links to health, and the reviews of public health agencies (e.g., the World Health Organization) have not identified health risk concerns relating to power-line electric field."³⁰⁹

³⁰¹ Ex. 108 at Schedule 2 at p. 16 (Valberg Direct).

³⁰² Ex. 23 at p. 6-6 (DEIS).

³⁰³ Ex. 108 at Schedule 2 at p. 17 (Valberg Direct).

³⁰⁴ Ex. 2 at p. 3-21 (Application).

³⁰⁵ Ex. 108 (Valberg Direct); Ex. 109 (Valberg Rebuttal).

³⁰⁶ Ex. 108 at pp. 1-4 (Valberg Direct).

³⁰⁷ Ex. 108 at Schedule 1 (Valberg Direct).

³⁰⁸ *Id.*

³⁰⁹ Ex. 108 at p. 5 (Valberg Direct); Ex. 108 at Schedule 2 at p. 2 (Valberg Direct).

201. Regarding MF, Dr. Valberg observed that “EMF health-effects research was triggered initially by an association reported between an index of power-line MF and statistics on whether or not a child had leukemia.”³¹⁰

202. The study by Nancy Wertheimer and Ed Leeper, published in a 1979 issue of the *American Journal of Epidemiology*, started the research and interest in the associations between ELF-MF and various health outcomes.³¹¹

203. This initial study was an epidemiological study. Epidemiological studies look for “associations,” which means checking to see whether the frequency of occurrence of two events are correlated.³¹² Epidemiological studies are inherently limited by issues of confounding, measurement error and selection bias. These inherent limitations restrict the value of epidemiological studies and require scientists and researchers to confirm the associations suggested by epidemiological studies with toxicological testing and supportive experimental results.³¹³

204. In light of the suggestive associations made by a few epidemiological studies, laboratory experiments were undertaken to determine “whether or not laboratory evidence does or does not support a MF health risk.”³¹⁴

205. Over the more than 30 years since the first study, however, Dr. Valberg noted that “epidemiology has not yielded more definitive links to MF exposure” even as the studies improved in design and included larger populations of subjects.³¹⁵

206. Dr. Valberg noted that scientists have not been able to establish a laboratory or other model that reliably demonstrates adverse biological changes in response to typical electric-power MF fields.³¹⁶ In fact, “[a] large number of studies with laboratory animals exposed, over their lifetimes, to MF levels a thousand-fold higher than near power lines yielded ‘no effect’....”³¹⁷ Furthermore, “laboratory research with isolated cells and biophysical analyses have not identified plausible mechanisms by which MF at levels encountered near transmission lines...can lead to the creation or stimulation of tumor cells.”³¹⁸

³¹⁰ Ex. 108 at Schedule 2 at p. 4 (Valberg Direct).

³¹¹ Carpenter Vol. 2B at p. 76.

³¹² Ex. 108 at Schedule 2 at p. 4 (Valberg Direct).

³¹³ Ex. 109 at pp. 9-10 (Valberg Rebuttal).

³¹⁴ Ex. 108 at Schedule 2 at p. 4 (Valberg Direct).

³¹⁵ *Id.*

³¹⁶ Ex. 108 at p. 5 (Valberg Direct). Ex 108 at Schedule 2 at p. 5 (Valberg Direct).

³¹⁷ Ex. 108 at Schedule 2 at p. 4 (Valberg Direct).

³¹⁸ *Id.*

207. Dr. Valberg concluded that power line MF is an “implausible source of human health risk.”³¹⁹

208. Dr. Valberg’s conclusions are consistent with the EMF research conducted by reputable international and national health academics.³²⁰ Dr. Valberg’s conclusions are also consistent with the Minnesota Interagency Working Group “White Paper on Electric and Magnetic Field (EMF) Policy and Mitigation Options” published in 2002 by the Minnesota Department of Health.³²¹ This white paper found that “Most researchers [have] concluded that there is insufficient evidence to prove an association between EMF and health effects...”³²²

209. Other than Dr. Valberg, the only witness to provide testimony on EMF during the contested case hearing was the Johnsons’ witness Dr. David Carpenter.³²³

210. Dr. Carpenter contended that exposures to EMF of greater than 4 mG was a risk factor for childhood leukemia and greater than 2 mG for amyotrophic lateral sclerosis (ALS), and Alzheimer’s disease.³²⁴ The information relied upon for these conclusions was derived from a variety of studies, including metastudies, none of which established a causal relationship between EMF-ELF exposure levels and any disease. Further, Dr. Carpenter noted “that exposure to other household sources of magnetic fields also elevate the risk of childhood leukemia.”³²⁵ Dr. Carpenter also noted that “the evidence of risk [of health concerns posed by magnetic fields of 2 mG or greater] is not conclusive.”³²⁶ The lack of a conclusive connection between EMF-ELF exposure and any particular disease is borne out by the studies assessing the impact of occupational exposure on disease discussed by Dr. Carpenter. Varying results were obtained when studying the health history of workers in occupations requiring frequent exposure to high levels of EMF-ELF.³²⁷ There is no animal study model that demonstrates the development of cancer in response to exposure to EMFs.³²⁸

211. A number of commentators cited studies that claimed associations exist between ELF-EMF exposure and childhood leukemia, amyotrophic lateral sclerosis (ALS), and Alzheimer’s disease. These studies relied upon the concept of the

³¹⁹ Ex. 108 at p. 6 (Valberg Direct).

³²⁰ Ex. 108 at Schedule 2 at pp. 19-23 (Valberg Direct).

³²¹ Ex. 147 (White Paper on EMF).

³²² *Id.*

³²³ Ex. 200 (Carpenter Direct).

³²⁴ Ex. 200 at p. 4 (Carpenter Direct).

³²⁵ Ex. 200 at p. 10 (Carpenter Direct).

³²⁶ Ex. 200 at p. 11 (Carpenter Direct).

³²⁷ Ex. 200 at p. 11 (Carpenter Direct).

³²⁸ Ex. 200 at p. 14 (Carpenter Direct); Applicants Reply, at 23-24.

Precautionary Principle to support assertions that ELF/EMF standards are underprotective in the face of the uncertainties of current science. The documented response to very low-level ELF and RF exposures was the observed production of "stress proteins" by cells. This observation is inferred to mean that "the cell recognizes ELF and RF exposures as harmful."³²⁹ There is no description of any mechanism of causation between this protein production and any of the conditions claimed as associated with ELF-EMF exposure.³³⁰

212. The Applicants pointed out that "Several of the studies relate to research on ELF-MF exposures many orders of magnitude higher than the highest peak field calculated for the Project."³³¹ The exceptionally high levels of exposure to EMF-ELF support the conclusion that the studies relied upon by Dr. Carpenter are not probative to assessing the impact of the Project's HVTL on the health and safety of persons living in the vicinity of the route.

213. The DEIS contains significant discussion of the issues of EMF-ELF exposure and a related issue, stray voltage. Regarding the impact of electric fields, the DEIS states:

For the proposed Project the highest calculated electric fields at 100 and 200 feet from transmission centerline would be 0.35 kV/m and 0.12 kV/m, respectively, with the lowest overall field strength of 0.02 kV/m at 300 feet from centerline. These electric field strengths are well within the range of electric fields generated by other common household and business sources. No adverse effects from electric fields on health are expected for persons living or working at locations along or near the proposed Project.³³²

214. As for magnetic fields, the DEIS states:

The results of the various studies conducted over the last three decades, specifically those regarding the relationship between EMF and childhood leukemia and other cancer risks, have been mixed; some have found an association while others have not.

Where there is association suggested in epidemiological studies, it is usually very near the statistical threshold of significance. However, when these studies are repeated in a laboratory, the results have not reproduced or identified a biological mechanism to support a link between

³²⁹ Jeffrey Otto Comment, January 12, 2010 (Doc. Id. 20101-46263-03)(quoting *BioInitiative Report: A Rationale for a Biologically-based Public Exposure Standard for Electromagnetic Fields (ELF and RF)*, at 17 (co-edited by Dr. Carpenter); Ex. 200 at p. 16 (Carpenter Direct).

³³⁰ Johnson Reply Brief, at 1-2.

³³¹ Applicants' Reply Brief, at 20-21.

³³² Ex. 23, DEIS Section 6.2, at 6-4 (Doc. Id. 200910-43110-09).

childhood leukemia and magnetic fields. The replication of field results in a laboratory setting is a basic test of scientific validity. Researchers continue to look at magnetic fields until more certain conclusion can be reached.³³³

215. The DEIS suggests that EMF-ELF impacts, to whatever extent such impacts exist, can be mitigated through distance from the HVTL, compaction between transmission line phases, and phase cancellation along the HVTL.³³⁴

216. The absence of any demonstrated impact by EMF-ELF exposure supports the conclusion that there is no demonstrated impact on human health and safety that is not adequately addressed by the existing State standards for such exposure. The record shows that the current exposure standard for EMF-ELF is adequately protective of human health and safety.

217. Linda Brown, John H. Sullivan and Jan Campe, Secretary of the Le Sueur Saddle Club, expressed concern over the impact of stray voltage on animals.³³⁵ The DEIS describes stray voltage as "a grounding issue that can occur on the electric service entrances to structures from distribution lines—not transmission lines." Based on the experiences arising through the interaction of dairy cattle and electricity, the DEIS proposed resolution of any such issues in the context of this HVTL route proceeding as follows:

Transmission lines do not, by themselves, create stray voltage because they do not connect to businesses or residences. However, transmission lines can induce stray voltage on a distribution circuit that is parallel to and immediately under the transmission line. Proper design and pole placement can reduce or eliminate stray voltage effects from the transmission lines. The applicants would be required to remedy any stray voltage issues as a condition of a route permit.³³⁶

218. Stray voltage that is induced by the proposed HVTL is appropriately remedied by the Applicants. Imposition of a condition by the Commission such as that noted above is supported by the record.

³³³ Ex. 23, DEIS Section 6.2, at 6-8 (Doc. Id. 200910-43110-09).

³³⁴ *Id.*

³³⁵ Sullivan Comment, January 14, 2010 (Doc. Id. 20101-46263-02); Campe Comment, January 12, 2010 (Doc. Id. 20101-46263-02).

³³⁶ Ex. 23, DEIS Section 6.2.2, at 6-9 (Doc. Id. 200910-43110-09).

C. Effects on Land Based Economies

219. Minnesota high voltage transmission line routing criteria require consideration of the proposed route's impacts to land based economies, specifically agriculture, forestry, tourism, and mining.³³⁷

220. The Project will result in permanent and temporary impacts to farmland.³³⁸ Permanent impacts will occur as a result of structure placement along the route centerline. Applicants estimated that the permanent impacts in agricultural fields will be 1,000 square feet per pole.³³⁹ Temporary impacts, such as soil compaction and crop damage, are likely to occur during construction.³⁴⁰ Applicants estimated temporary impacts in agricultural fields to be one acre per pole for construction.³⁴¹

221. There is no evidence in the record indicating that there will be impacts to economically important forestry resources.³⁴²

222. There are tourism activities located within the Modified Preferred Route, Alternate Route, and Crossover Route along with resources within the vicinity that may be indirectly impacted by the Project because of view shed or alteration of the landscape.³⁴³

223. The majority of tourism opportunities are associated with the recreational resources described above.³⁴⁴

224. Applicants have committed to minimizing, to the greatest extent feasible, direct impacts to recreational resources.³⁴⁵

225. There is no evidence in the record indicating that the presence of this Modified Preferred Route, Alternate Route, or Crossover Route will impact tourism.³⁴⁶

226. Mining resources have been identified along the Modified Preferred Route, the Alternate Route, and the Crossover Route.³⁴⁷

³³⁷ Minn. Stat. § 216E.03, subd. 7(b)(5); Minn. R. 7850.4100(C).

³³⁸ Ex. 2 at p. 6-44 (Application).

³³⁹ Ex. 2 at p. 6-44 (Application).

³⁴⁰ *Id.*

³⁴¹ *Id.*

³⁴² Ex. 2 at pp. 6-46, 8-25 (Application).

³⁴³ Ex. 2 at p. 6-46 (Application).

³⁴⁴ *Id.*

³⁴⁵ Ex. 2 at p. 6-27 (Application).

³⁴⁶ Ex. 2 at pp. 6-46, 8-25 (Application).

227. There are three mines within the Modified Preferred Route and one area utilized for kaolin clay extraction.³⁴⁸ Additionally, there are future plans in Eureka Township and along the Minnesota and Redwood River valleys for mining.³⁴⁹

228. There are six mines within the Alternate Route. Additionally, a karst formation was identified near Chub Lake WMA.³⁵⁰

229. The record demonstrates that the Modified Preferred Route, and that Route with Alternative 6P-06 incorporated, will have less of an impact to land-based economies than the Alternate Route and the Crossover Route.

D. Effects on Archaeological and Historic Resources

230. Minnesota high voltage transmission line routing criteria require consideration of the proposed route's effect on archaeological and historic resources.³⁵¹

231. Archaeological and historic resources are those places that represent the visible or otherwise tangible record of human occupation.³⁵² When identifying the archaeological and historic resources along the proposed routes, Applicants included "[i]dentified locations that have special meaning for specific communities along the Project."³⁵³

232. There are 68 archaeological sites within one mile of the Modified Preferred Route; 26 acres of aquatic environments crossed by the right-of-way of the Modified Preferred Route; eight National Register of Historic Places ("NRHP") designated properties within one mile of the Modified Preferred Route; and 212 historical sites within one mile of the Modified Preferred Route.³⁵⁴

233. There are 110 archaeological sites within one mile of the Alternate Route; 44 acres of aquatic environments crossed by the Alternate Route's rights-of-way; 13 NRHP properties within one mile of the Alternate Route; and 199 architectural resources within one mile of the Alternate Route.³⁵⁵

³⁴⁷ Ex. 2 at p. 4-10 (Application); Ex. 102 at pp. 17-19, 57-59 (Poorker Direct); Ex. 140 at p. 7 (Poorker Supplemental).

³⁴⁸ Ex. 2 at p. 6-48 (Application); Ex. 102 at Schedule 3 (Poorker Direct).

³⁴⁹ Ex. 102 at pp. 17-19 (Poorker Direct).

³⁵⁰ Ex. 2 at pp. 4-11, 8-26 (Application).

³⁵¹ Minn. Stat. § 216E.03, subd. 7(b)(1); Minn. R. 7850.4100(D).

³⁵² Ex. 2 at p. 6-48 (Application).

³⁵³ *Id.*

³⁵⁴ Ex. 2 at pp. 6-50-53; Ex. 102 at Schedule 3; Ex. 102 at pp. 17-19 (Poorker Direct).

³⁵⁵ Ex. 2 at § 8.4 (Application).

234. There are 70 archaeological sites within one mile of the Crossover Route; 233 acres of wetlands crossed by the Crossover Route; and 202 historical sites within one mile of the Crossover Route.³⁵⁶

235. Applicants propose to mitigate impacts to locations that are or might be NRHP designated sites by utilizing best management practices developed in coordination with the OES and SHPO. If avoidance or impact minimization are not feasible given the Project engineering requirements, Applicants will develop, in coordination with OES and SHPO, compensatory measures for the losses of those properties. In addition to working with OES and SHPO, Applicants will also work with Native American tribes and other State and federal permitting or land management agencies to assist in the development of avoidance, minimization or treatment measures.³⁵⁷

236. The record demonstrates that there are fewer archaeological and historic sites within the Modified Preferred Route, and on that Route if Alternative 6P-06 is incorporated, than within either the Alternate Route or the Crossover Route.

E. Effects on Natural Environment

237. Minnesota high voltage transmission line routing criteria require consideration of the proposed route's effect on the natural environment, including effects on air and water quality resources and flora and fauna.³⁵⁸

1. Air Quality

238. Construction of the Project will result in temporary air quality impacts caused by, among other things, construction-vehicle emissions and fugitive dust from right-of-way clearing.³⁵⁹

239. Applicants will implement the appropriate dust control measures.³⁶⁰

240. The operation of the Project along either the Modified Preferred Route (with or without adoption of Alternative 6P-06), Alternate Route, or Crossover Route is not anticipated to cause any long-term impacts to air quality.³⁶¹

³⁵⁶ Applicants January 19, 2010 Letter at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

³⁵⁷ Ex. 2 at p. 6-53 (Application).

³⁵⁸ Minn. Stat. §§ 216E.03, subd. 7(b)(1) and (2); Minn. R. 7850.4100(E).

³⁵⁹ Ex. 2 at p. 6-54 (Application).

³⁶⁰ *Id.*

³⁶¹ *Id.*

2. Water Quality and Resources

241. The Project crosses two major hydrologic units (“HUs”) within the Upper Mississippi Drainage Region.³⁶²

242. Several rivers, including the Minnesota River, streams, and ditches will be crossed by the Project or will be within the right-of-way of the Project.³⁶³

243. Applicants will not place any structures within these features and do not anticipate any direct impacts to these features.³⁶⁴ Indirect impacts are expected and will be avoided and minimized using the appropriate construction practices.³⁶⁵

244. Because wetland impacts will be minimized and mitigated, disturbed soil will be restored to previous conditions or better, and the amount of land area converted to an impervious surface will be small, there will be no significant impact on surface water quality once the Project is completed.³⁶⁶

245. Wetlands and floodplains will be crossed by the Project or will be situated within the right-of-way of the Project.³⁶⁷

246. Applicants will avoid major disturbance of individual wetlands and drainage systems during construction.³⁶⁸ This will be done by spanning wetlands and drainage systems, where possible.³⁶⁹ When it is not possible to span such areas, Applicants have proposed other options that will minimize impacts.³⁷⁰

247. Permanent impacts to wetlands would take place where structures must be located within wetland boundaries.³⁷¹

248. The Modified Preferred Route will permanently impact 440 square feet of wetlands, temporarily impact 13.4 acres of wetlands, permanently impact approximately

³⁶² *Id.*

³⁶³ Ex. 2 at pp. 6-54-55 (Application).

³⁶⁴ Ex. 2 at pp. 6-54-55 (Application).

³⁶⁵ Ex. 2 at p. 6-59 (Application).

³⁶⁶ *Id.*

³⁶⁷ *Id.*

³⁶⁸ *Id.*

³⁶⁹ *Id.*

³⁷⁰ *Id.*

³⁷¹ Ex. 2 at p. 6-60 (Application).

seven acres of forested wetland, cross 160 streams, and permanently impact 0.05 acres of floodplains.³⁷²

249. The Alternate Route will permanently impact 1,045 square feet of wetlands, temporarily impact 17.5 acres of wetlands, permanently impact 11 acres of forested wetlands, cross 190 streams, and permanently impact 0.08 acres of floodplains.³⁷³

250. The Crossover Route will cross 233 wetlands, 29 forested wetlands and 168 streams. The Crossover Route will temporarily impact 15.8 acres of wetlands.³⁷⁴

251. The record demonstrates that there are fewer water resources within the Modified Preferred Route (and even fewer still if Alternative 6P-06 is adopted), than within either the Alternate Route or the Crossover Route.

3. Flora

252. The Project crosses two Environmental Classification System ("ECS") units: the Prairie Parkland ecoregion in the western half of the Project area and the Eastern Deciduous Forest in the eastern portion of the Project area.³⁷⁵

253. Throughout the Project area, there are several areas where native vegetation occurs naturally or is managed.³⁷⁶ Designated habitat or conservation areas include managed lands such as DNR WMAs and USFWS WPAs and easements, and unmanaged areas, including DNR-designated Minnesota County Biological Survey ("MCBS") areas of biodiversity significance and rare native habitats and communities.³⁷⁷

254. Applicants will work to minimize long-term impacts to flora by spanning areas containing native species wherever possible.³⁷⁸ When native vegetation communities cannot feasibly be spanned, Applicants will minimize the number of structures within these lands.³⁷⁹

³⁷² Ex. 2 at pp. 6-55-56 (Application); Ex. 102 at Schedule 3; Ex. 102 at pp. 17-19 (Poorker Direct).

³⁷³ Ex. 2 at p. 8-33 (Application).

³⁷⁴ Applicants January 19, 2010 Letter at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

³⁷⁵ Ex. 2 at p. 6-60 (Application).

³⁷⁶ Ex. 2 at p. 6-61 (Application).

³⁷⁷ *Id.*

³⁷⁸ Ex. 2 at p. 6-66 (Application).

³⁷⁹ *Id.*

255. Areas disturbed due to construction activities will be restored to pre-construction contours. These areas will be reseeded with a seed mix recommended by the local DNR management and that is certified to be free of noxious weeds.³⁸⁰

256. The Modified Preferred Route will result in the permanent removal of 275 square feet of WMA land, permanent impacts to 55 square feet of an USFWS easement, and a total of 17 MCBS sites being crossed.³⁸¹

257. The Alternate Route will result in the permanent removal of 440 square feet of WMA land, permanent impacts to 55 square feet of an USFWS easement, and a total of 23 MCBS sites being crossed.³⁸²

258. The Crossover Route will affect flora in that the route, will cross 16 MCBS Biodiversity sites, be within one mile of nine USFWS properties and easements, and will result in the permanent removal of 275 square feet of WMA land.³⁸³

259. The record demonstrates that there is less impact upon flora within the Modified Preferred Route, with or without Adoption of Alternative 6P-06, than within the Alternate Route or the Crossover Route.

4. Fauna

260. Wildlife throughout the Project area consists of birds, mammals, fish, reptiles, amphibians, mussels, and insects, both resident and migratory, which use the area for forage, shelter, breeding, or stopover during migration.³⁸⁴

261. Throughout the Project area, there are several areas where high-quality wildlife habitat occurs naturally or is being managed.³⁸⁵

262. The Minnesota River Valley is recognized as a major flyway for migrating birds; more than 200 species of birds have been recorded in the valley.³⁸⁶

263. There is potential for the displacement of wildlife and loss of habitat from construction of the Project. Wildlife could be impacted in the short-term within the immediate area of construction.³⁸⁷

³⁸⁰ Ex. 2 at p. 6-66 (Application).

³⁸¹ Ex. 2 at 6-66 (Application); Ex. 102 at Schedule 3 (Poorker Direct); Ex. 102 at pp. 17-19 (Poorker Direct).

³⁸² Ex. 2 at p. 8-35 (Application).

³⁸³ Applicants' January 19, 2010 Letter at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

³⁸⁴ Ex. 2 at p. 6-67 (Application).

³⁸⁵ Ex. 2 at p. 6-67 (Application).

³⁸⁶ *Id.*

264. Permanent impacts to wildlife could take place at substation locations.³⁸⁸

265. Raptors, waterfowl, and other bird species may be affected by the construction and placement of transmission lines.³⁸⁹

266. To mitigate possible impacts to wildlife, Applicants will span designated habitat or conservation areas wherever feasible. In areas where complete spanning is not possible, Applicants will minimize the number of structures placed in high quality wildlife habitat and will work with the MnDNR and USFWS to determine appropriate mitigation.³⁹⁰

267. The Modified Preferred Route crosses important bird areas at the Minnesota River Crossings, and the Grassland Bird Conservation Areas for a span of 22 miles.³⁹¹

268. The Alternate Route crosses important bird areas at all three Minnesota River crossings, and the Grassland Bird Conservation Areas for 30 miles.³⁹²

269. The Crossover Route will have a similar impact to fauna as the Alternate Route.³⁹³

270. The evidence demonstrates that neither the Modified Preferred Route, the Modified Preferred Route with Alternative 6P-06 incorporated, the Alternate Route, nor the Crossover Route will have significant impacts on fauna.

F. Effects on Rare and Unique Natural Resources

271. Minnesota high voltage transmission line routing criteria require consideration of the proposed route's effect on rare and unique natural resources.³⁹⁴

272. Threatened and endangered species are often found within high quality rare and unique habitats and features.³⁹⁵

³⁸⁷ Ex. 2 at p. 6-70 (Application).

³⁸⁸ Ex. 2 at p. 6-71 (Application).

³⁸⁹ *Id.*

³⁹⁰ Ex. 2 at pp. 6-71-72 (Application).

³⁹¹ Ex. 102 at Schedule 3 (Poorker Direct); Ex. 102 at pp. 17-19 (Poorker Direct).

³⁹² Ex. 2 at p. 4-12 (Application).

³⁹³ Ex. 103 at p. 4-7 (Poorker Rebuttal); Ex. 140 at p. 7 (Poorker Supplemental)

³⁹⁴ Minn. Stat. § 216E.03, subd. 7(b)(1); Minn. R. 7850.4100(F).

³⁹⁵ Ex. 2 at p. 6-72 (Application).

273. Many of the threatened and endangered species identified in the Project area are associated with remnants of prairie land, which were once abundant in this area of Minnesota. River species of fish and mussels are encountered in major rivers, particularly the Minnesota River. Species associated with rock outcrops and with wetlands are also found in the Project area.³⁹⁶

274. Applicants will span, where possible, rivers, streams and wetlands, and any habitats where prairie remnants and rock outcrops have been recorded or are likely to occur. Wherever it is not feasible to span, a survey will be conducted to determine the presence of special status species or suitability of habitat for such species. Where the survey shows such species or habitat, Applicants will coordinate with the appropriate agencies to avoid and minimize any impact.³⁹⁷

275. A total of 14 records of threatened and endangered species were recorded within one mile of the Modified Preferred Route; and one MCBS outstanding significance area was identified.³⁹⁸

276. A total of 20 records of threatened and endangered species were recorded within one mile of the Alternate Route; and one MCBS outstanding significance area was identified.³⁹⁹

277. A total of 72 records of threatened and endangered species were recorded within one mile of the Crossover Route; and 16 MCBS sites will be crossed by the Crossover Route.⁴⁰⁰

278. The record demonstrates that there are fewer threatened and endangered species within the Modified Preferred Route, whether or not Alternative 6P-06 is incorporated, than within the Alternate Route or the Crossover Route. The record also demonstrates that the Modified Preferred Route, or that Route modified by Alternative 6P-06, and Alternate Route would affect only one MCBS site compared to 16 for the Crossover Route.

G. Application of Various Design Considerations

279. Minnesota high voltage transmission line routing criteria require consideration of applied design options for the Project that maximize energy

³⁹⁶ *Id.*

³⁹⁷ Ex. 2 at pp. 6-74-75 (Application).

³⁹⁸ Ex. 2 at p. 6-74 (Application); Ex. 102 at Schedule 3 (Poorker Direct); Ex. 102 at pp. 17-19 (Poorker Direct).

³⁹⁹ Ex. 102 at pp. 17-19 (Poorker Direct).

⁴⁰⁰ Applicants' January 19, 2010 Letter at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

efficiencies, mitigate adverse environmental effects, and accommodate potential expansion of transmission or generating capacity.⁴⁰¹

280. Approximately 123 to 136 miles of the 345 kV transmission line will be constructed with double circuit capable poles so that a second circuit can be strung when conditions justify expansion. This will allow for maximizing the use of existing right-of-way and minimizing the construction time for a new circuit when circumstances merit expansion.⁴⁰²

281. While the Modified Preferred Route, Alternate Route, and Crossover Route are designed to accommodate the addition of a future circuit, the Modified Preferred Route will require addition of future circuits along fewer miles of line.⁴⁰³

282. For the proposed new substation sites, Applicants will acquire approximately 40 acres to allow for future transmission line interconnections.⁴⁰⁴

283. The new substations planned for the Project are designed to accommodate facility additions in the future.⁴⁰⁵

284. The design options of the facilities along the Modified Preferred Route, and along that Route as modified by Alternative 6P-06, along the Alternate Route, and along the Crossover Route maximize energy efficiencies, mitigate adverse environmental effects, and accommodate future expansion.⁴⁰⁶

H. Use or Paralleling of Existing Right-of-Way, Survey Lines, Natural Division Lines and Agricultural Field Boundaries

285. Minnesota high voltage transmission line routing criteria require consideration of the proposed route's use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries.⁴⁰⁷

286. Approximately 93.4% of the Modified Preferred Route uses or parallels existing right-of-way, survey lines, natural division lines, or agricultural field lines.⁴⁰⁸

⁴⁰¹ Minn. Stat. §§ 216E.03, subd. 7(b)(3) and (10); Minn. R. 7850.4100(G).

⁴⁰² Ex. 2 at p. 3-5 (Application).

⁴⁰³ Ex. 2 at pp. 3-5, 4-12 (Application); Ex. 102 at pp. 17-19 (Poorker Direct).

⁴⁰⁴ Ex. 2 at p. 3-6 (Application).

⁴⁰⁵ *Id.*

⁴⁰⁶ Ex. 2 at pp. 3-5, 3-6 (Application).

⁴⁰⁷ Minn. Stat. § 216E.03, subd. 7(b)(9); Minn. R. 7850.4100(H).

⁴⁰⁸ Ex. 2 at § 3.2 (Application); Ex. 102 at pp. 17-19 (Poorker Direct).

287. Approximately 93.5% of the Alternate Route uses or parallels existing right-of-way, survey lines, natural division lines, or agricultural field lines.⁴⁰⁹

288. Approximately 93.6% of the Crossover Route uses or parallels existing right-of-way, survey lines, natural division lines, or agricultural field lines.⁴¹⁰

289. Several agricultural landowners have raised objections to portions of the routes that propose to cross agricultural fields and not follow the boundary lines. These commentators raised concerns that active HVTLs create interference with global positioning system equipment (GPS).⁴¹¹ They also expressed concern about the impact of HVTLs on overhead irrigation systems. Several commentators noted that they have tile drainage systems that could be impaired by moving heavy equipment over these fields.

290. The record supports those crossings, often to avoid impacts to residences that would arise from following the boundary lines. There has not been a showing that GPS systems would be sufficiently impaired to result in significant harm to these agricultural landowners. These landowners have raised valid concerns regarding the potential impact of construction on existing drain tile and the presence of HVTL near operating irrigation systems. Much of this concern is addressed in the terms of the AIMP. The record supports the Commission adding requirements to the route permit that the Applicant must ensure that drain tile is not impaired through construction and maintenance of the HVTLs. The record supports the Commission adding requirements to the route permit to ensure that existing irrigation systems can coexist with the HVTL crossing agricultural land, or compensate the landowner for any modifications reasonably required to allow for irrigation of a field crossed by the HVTL.

291. The record demonstrates that the Modified Preferred Route (whether or not that Route is modified by Alternative 6P-06), Alternate Route, and Crossover Route nearly equally use or parallel existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries.

I. Use of Existing Transportation, Pipeline, and Electrical Transmission System Right-of-Way

292. Minnesota high voltage transmission line routing criteria require consideration of the proposed route's use of existing transportation, pipeline and electrical transmission system rights-of-way.⁴¹²

⁴⁰⁹ Ex. 2 at § 3.2 (Application).

⁴¹⁰ Applicants January 19, 2010 Letter at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01

⁴¹¹ Swedzinski Comment January 8, 2010.

⁴¹² Minn. Stat. § 216E.03, subd. 7(b)(8); Minn. R. 7850.4100(J).

293. Applicants provided a general explanation regarding co-location of new transmission lines with distribution lines. Applicants' witness Mr. Poorker explained that "we cannot put it on the same pole" because the new transmission lines require longer span lengths compared to existing distribution lines.⁴¹³ Applicants will work with local distribution utilities to offer alternatives, such as carrying the distribution line if it is a single phase (i.e., one line) or undergrounding distribution lines, where appropriate.⁴¹⁴

294. There are generally few locations where the proposed routes follow existing transmission lines. Each potential co-location requires a case-by-case analysis. Applicants pledged to further analyze co-location opportunities after the route is determined.

295. Applicants also analyzed possibilities for co-locating the Project at the Minnesota River crossings.

296. There are five proposed crossing locations of the Minnesota River: 1) Granite Falls, which is common to the Modified Preferred Route and Alternate Route; 2) North Redwood, which will be used only for the Alternate Route; 3) Redwood Falls, Brown County, which will be used only for the Modified Preferred Route; 4) Belle Plaine, which will be used only for the Alternate/Crossover Route; and 5) Le Sueur, which will be used only for the Modified Preferred Route.

297. For the Minnesota River crossing at Granite Falls, Applicants propose to replace the existing Lyon County – Minnesota Valley 115 kV line, which currently crosses the Minnesota River at Granite Falls, with the new 345 kV facilities.⁴¹⁵ The new 345 kV facilities would be constructed generally along the same alignment.⁴¹⁶ Applicants anticipate that there will be some areas where the alignment may be adjusted to minimize impacts to homes.⁴¹⁷

298. For the Minnesota River crossing at North Redwood, Applicants propose to parallel the existing 115 kV transmission line. Applicants propose to use H-frame structures adjacent to the existing 115 kV easement and share right-of-way to the extent possible to reduce amount of new right-of-way required.

299. For the Minnesota River crossing at Redwood Falls, Brown County, Applicants did not propose to co-locate the Project because there are no other transmission facilities in that area. The Modified Preferred route will follow a road/bridge corridor across the Minnesota River at that location.

⁴¹³ Winthrop Dec. 3, 2009 7:00 p.m. at p. 26-30.

⁴¹⁴ Winthrop Dec. 3, 2009 7:00 p.m. at p. 26-30; Poorker Vol. 1B at p. 80.

⁴¹⁵ Ex. 2 at I-3 (Application).

⁴¹⁶ Ex. 23 at pp. 7-47 (DEIS); Ex. 2 at I-56 (Application).

⁴¹⁷ Ex. 2 at Appendix I, Figure 1B (Application).

300. For the Minnesota River crossing at Belle Plaine, Applicants evaluated three feasible options for crossing at this location, including one co-location alternative.⁴¹⁸ The co-location option would use steel H-frame multiple circuit structures that would include the existing 69 kV transmission line with a distribution underbuild.⁴¹⁹ The second option is to use double circuit H-frame structures adjacent to the existing 69 kV right-of-way.⁴²⁰ The third option is a side-by-side H-frame alternative, developed in response to a request by the USFWS to identify the configuration that would keep the conductors as flat (low) as possible at this crossing.⁴²¹ This option would place a single circuit 345 kV line on each H-frame and be located adjacent to the existing 69 kV line. Applicants did not advocate for a specific design due to the concerns expressed by USFWS.⁴²²

301. For the Minnesota River crossing at Le Sueur, Applicants analyzed co-locating the new 345 kV transmission line on the U.S. Highway 169 bridge and constructing a self-supporting pier and attaching the new 345 kV transmission line to the pier. Applicants concluded both co-location opportunities are infeasible for a myriad of reasons.⁴²³ Applicants continue to propose using a new double-circuit H-frame structure to aerially cross the Minnesota River at this location.⁴²⁴

302. Approximately 76.2% of the Modified Preferred Route follows existing transportation, pipeline, and electrical transmission system rights-of-way.⁴²⁵

303. Approximately 70.0% of the Alternate Route follows existing transportation, pipeline and electrical transmission system rights-of-way.⁴²⁶

304. Approximately 74.3% of the Crossover Route follows existing transportation, pipeline and electrical transmission system rights-of-way.⁴²⁷

305. The record demonstrates that the Modified Preferred Route, and that Route as modified by Alternative 6P-06, uses more existing transportation, pipeline, and

⁴¹⁸ Ex. 141 at p. 7 (Lennon Supplemental); Ex. 140 at p. 5 (Poorker Supplemental).

⁴¹⁹ Ex. 2 at p. 3-1 (Application); Ex. 104 at pp. 5-6 (Lennon Direct).

⁴²⁰ Ex. 141 at p. 7 (Lennon Supplemental).

⁴²¹ Lennon Vol. 4 at p. 144.

⁴²² See e.g., USFWS February 8, 2010 Letter at pp. 1-2 filed 02/08/10, e-docket document 20102-46903-01.

⁴²³ Applicants' Initial Post-Hearing Brief at pp. 61-63.

⁴²⁴ Ex. 140 at p. 6 (Poorker Supplemental).

⁴²⁵ Ex. 2 at § 3.2 (Application); Ex. 102 at Schedule 3 (Poorker Direct); Ex. 102 at pp. 16-19 (Poorker Direct).

⁴²⁶ Ex. 2 at § 3.2 (Application).

⁴²⁷ Applicants January 19, 2010 Letter to ALJ at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

electrical transmission system right-of-way than either the Alternate Route or Crossover Route.

J. Electrical System Reliability

306. Minnesota high voltage transmission line routing criteria require consideration of the Project's impact on electrical system reliability.⁴²⁸

307. The record demonstrates the Modified Preferred Route, whether or not modified further by Alternative 6P-06, Alternate Route, and Crossover Route will support the reliable operation of the transmission system.

K. Costs of Constructing, Operating, and Maintaining the Facility

308. Minnesota high voltage transmission line routing criteria require consideration of the each proposed route's cost of construction, operation and maintenance.⁴²⁹

309. The Modified Preferred Route and its Associated Facilities will cost \$705 million (\$2007) to construct and \$300 to \$500 per mile to operate and maintain.⁴³⁰

310. The Alternate Route and its Associated Facilities will cost \$755 million (\$2007) to construct and \$300 to \$500 per mile to operate and maintain.⁴³¹

311. The Crossover Route and its Associated Facilities will cost \$724 million (\$2007) to construct and \$300 to \$500 per mile to operate and maintain.⁴³²

312. The record demonstrates that it will cost less to construct the Modified Preferred Route and its Associated Facilities than the Alternate Route and its Associated Facilities or the Crossover Route and its Associated Facilities.

313. The record also demonstrates that the Modified Preferred Route is the least cost alternative.

L. Adverse Human and Natural Environmental Effects Which Cannot be Avoided

314. Minnesota high voltage transmission line routing criteria require consideration of the adverse human and natural environmental effects, which cannot be avoided, for each proposed route.⁴³³

⁴²⁸ Minn. Stat. § 216E.03, subd. 7(b)(10); Minn. R. 7850.4100(K).

⁴²⁹ Minn. R. 7850.4100(L).

⁴³⁰ Ex. 104 at p. 10 (Lennon Direct); Ex. 2 at § 2.6 (Application).

⁴³¹ Ex. 2 at § 2.6 (Application).

⁴³² Ex. 141 at p. 8 (Lennon Supplemental); Ex. 2 at § 2.6 (Application).

315. Unavoidable adverse impacts include the physical impacts to the land, primarily agricultural land, due to the construction of the Project.⁴³⁴

316. Applicants have identified mitigation measures to address adverse environmental effects during construction of the Project.⁴³⁵

317. Applicants also will work with the public and public agencies to minimize the unavoidable adverse environmental effects that may arise during construction of the Project.⁴³⁶

318. Approximately 25.4 acres of permanent agricultural land impacts are anticipated for the Modified Preferred Route.⁴³⁷

319. Approximately 26.8 acres of permanent agricultural land impacts are anticipated for the Alternate Route.⁴³⁸

320. Approximately 540 acres of prime farmland may be crossed by the Crossover Route right-of-way.⁴³⁹

M. Irreversible and Irretrievable Commitments of Resources

321. Minnesota high voltage transmission line routing criteria require consideration of the irreversible and irretrievable commitments of resources that are necessary for each proposed route.⁴⁴⁰

322. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of those resources have on future generations.⁴⁴¹ Irreversible effects result primarily from the use or destruction of a specific resource that cannot be replaced within a reasonable time frame.⁴⁴² Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored through later actions.⁴⁴³

⁴³³ Minn. Stat. § 216E.03, subd. 7(b)(5) and (6); Minn. R. 7850.4100(M).

⁴³⁴ Ex. 2 at p. 4-13 (Application).

⁴³⁵ Ex. 2 at § 6-9 (Application).

⁴³⁶ *Id.*

⁴³⁷ Ex. 2 at p. 4-13 (Application); Ex. 102 at pp. 16-19 (Poorker Direct).

⁴³⁸ Ex. 2 at p. 4-13(Application); Ex. 2 at § 8.3 (Application).

⁴³⁹ Applicants January 19, 2010 Letter at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

⁴⁴⁰ Minn. Stat. § 216E.03, subd. 7(b)(11); Minn. R. 7850.4100(N).

⁴⁴¹ Ex. 2 at p. 4-14 (Application).

⁴⁴² *Id.*

⁴⁴³ *Id.*

323. There are few commitments of resources associated with this Project that are irreversible and irretrievable, but those few resources primarily relate to construction of the Project.⁴⁴⁴

324. Only construction resources, such as concrete, steel and hydrocarbon fuels, will be irreversibly and irretrievably committed to this Project.⁴⁴⁵

325. The commitment of these resources are similar for both of the Modified Preferred Routes, Alternate Route, and Crossover Route.⁴⁴⁶

326. The overall length of either Modified Preferred Route is less than the Alternate Route or Crossover Route. As a result, fewer poles will be needed for either Modified Preferred Route than for the Alternate Route and the Crossover Route.⁴⁴⁷

N. Consideration of Issues Presented by State and Federal Agencies

327. Minnesota high voltage transmission line routing criteria allows for the consideration of problems raised by state and federal agencies when appropriate.⁴⁴⁸

328. Mn/DOT, USFWS, and MnDNR expressed concern with various aspects of the Modified Preferred Route.⁴⁴⁹

1. Mn/DOT

329. Mn/DOT stated concerns with the proposed route's impacts on Mn/DOT rights-of-way and expressed uncertainty whether Utility Permits could be issued for various portions of the Modified Preferred Route.⁴⁵⁰

330. Mn/DOT did not opine on whether Utility Permits would be issued in each instance where a permit would be required. Mn/DOT will perform such an analysis after it "evaluate[s] each pole location individually in relation to the topography of the land, the geometry of the roadway, the width of the highway right-of-way, the design of the HVTL structures, and other factors."⁴⁵¹

⁴⁴⁴ *Id.*

⁴⁴⁵ *Id.*

⁴⁴⁶ Ex. 2 at p. 4-14 (Application); Ex. 102 at pp. 16-19 (Poorker Direct); Ex. 104 at pp. 8-10 (Lennon Direct); Applicants January 19, 2010 Letter at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

⁴⁴⁷ Ex. 2 at p. 4-14 (Application); Ex. 102 at p. 16-19 (Poorker Direct); Ex. 104 at pp. 8-10 (Lennon Direct).

⁴⁴⁸ Minn. Stat. § 216E.03, subd. 7(b)(12).

⁴⁴⁹ Ex. 102 at Schedule 20 at pp. 27-38 (Poorker Direct); Ex. 103 at pp. 14-16 (Poorker Rebuttal); Ex. 140 at pp. 3-11 and Schedules 42- 47 (Poorker Supplemental).

⁴⁵⁰ Ex. 140 at Schedule 47 (Poorker Supplemental).

⁴⁵¹ Ex. 140 at Schedule 47 at p. 11 (Poorker Supplemental).

331. Mn/DOT did provide substantive comments regarding whether a Utility Permit could be issued for 1) U.S. Highway 169 near the Minnesota River crossing at Le Sueur; 2) Minnesota Highway 52 south of the new Hampton substation; and 3) Interstate 35 near the Lake Marion Substation.⁴⁵²

332. Regarding U.S. Highway 169 near the Minnesota River crossing at Le Sueur, the original proposed alignment for the Modified Preferred Route crosses certain lands on which Mn/DOT holds scenic easements near the Minnesota River Valley Safety Rest Area.⁴⁵³

333. Based on its review of the scenic area, Mn/DOT stated it could not issue a permit for that proposed alignment.⁴⁵⁴

334. Mn/DOT explained “[t]he federal regulation governing scenic easements appears to restrict Mn/DOT’s ability to grant a permit to CapX2020 for this location.”⁴⁵⁵

335. The federal regulation referred to by Mn/DOT is 23 C.F.R. § 645.209(h) which Mn/DOT stated does not allow for new utility installations on “highway right-of-way or other lands which are acquired or improved with Federal-aid or direct Federal highway funds and are located within or adjacent to areas of scenic enhancement and natural beauty.”⁴⁵⁶

336. Exceptions to 23 C.F.R. § 645.209(h) are permitted for aerial installations when “extensive removal or alteration of trees or terrain features” are not required and “(i) other locations are not available or are unusually difficult and costly, or are less desirable from the standpoint of aesthetic beauty; (ii) placement underground is not technically feasible or unreasonably costly; and (iii) the proposed installation will be made at a location, and will employ suitable designs and materials, which give the greatest weight to the aesthetic qualities of the area being traversed.”⁴⁵⁷

337. In response to this concern, Applicants developed the Myrick Alternative, which modifies the proposed alignment of the Modified Preferred Route in a manner so that the transmission line does not run through the Minnesota River Valley Safety Rest Area.⁴⁵⁸

⁴⁵² Ex. 140 at Schedule 47 at pp. 10-14 (Poorker Supplemental).

⁴⁵³ Ex. 140 at Schedule 47 at pp. 11-12 (Poorker Supplemental).

⁴⁵⁴ Ex. 140 at Schedule 47 at p. 12 (Poorker Supplemental); 23 C.F.R. § 645.209(h).

⁴⁵⁵ *Id.*

⁴⁵⁶ Ex. 140 at Schedule 47 at p. 12 (Poorker Supplemental); 23 C.F.R. § 645.209(h).

⁴⁵⁷ Ex. 140 at Schedule 47 at p. 12 (Poorker Supplemental); 23 C.F.R. § 645.209(h).

⁴⁵⁸ Ex. 140 at pp. 11-13 (Poorker Supplemental).

338. At the evidentiary hearing, Mn/DOT's witness David Seykora stated that Mn/DOT did not foresee any difficulties with issuing an Utility Permit for the Modified Preferred Route provided the scenic easement areas were not crossed. When asked if the Applicants' Myrick Alternative alignment satisfied this criteria, Mr. Seykora responded that "it looks to be an alignment that would not fall within the category of being nonpermissible."⁴⁵⁹

339. Mn/DOT expressed concern regarding the permissibility of Applicants' routes near the proposed Hampton Substation site at Highway 52 because of a frontage road/access closure project that is being planned that would convert this segment to a controlled access area. Mn/DOT preferred that any utility crossings or longitudinal placements meet freeway standards to avoid future relocations.⁴⁶⁰

340. Mn/DOT also identified a joint effort with Dakota County to convert a nearby overpass to a full interchange which would possibly necessitate the transmission line poles being placed outside the area of the new interchange.⁴⁶¹

341. At the evidentiary hearing, Mn/DOT's witness Mr. Seykora discussed Mn/DOT's permitting concerns with Highway 52 and stated that Mn/DOT could likely issue a permit for the proposed alignments along Highway 52.⁴⁶²

342. Mn/DOT also questioned the permissibility of the area near the Lake Marion Substation on I-35.⁴⁶³

343. The terrain near the Lake Marion Substation has rolling hills, and in many locations the ground is higher than the roadway surface.⁴⁶⁴

344. In circumstances where the ground at the right-of-way is lower than the roadway surface, Mn/DOT explained the utility poles would need to be located some distance away from the right-of-way boundary. Also to the extent the Modified Preferred Route traverses the New Market Safety Rest Area or runs through the interchange at 260th Street, Mn/DOT would not be able to grant a Utility Permit.⁴⁶⁵

⁴⁵⁹ Seykora Vol. 4 at pp. 37-38.

⁴⁶⁰ Ex. 140 at Schedule 47 at p. 13 (Poorker Supplemental).

⁴⁶¹ *Id.*

⁴⁶² Seykora Vol. 3 at p. 177.

⁴⁶³ Ex. 140 at Schedule 47 at pp. 13-14 (Poorker Supplemental).

⁴⁶⁴ *Id.*

⁴⁶⁵ *Id.*

345. During the Evidentiary Hearing, Mn/DOT acknowledged that Applicants' proposed alignment was on the opposite side of the road from the New Market Rest Area and that Mn/DOT could permit such an alignment.⁴⁶⁶

346. During the Evidentiary Hearing, Mn/DOT's witness Mr. Seykora discussed the segment of I-35 near the Lake Marion Substation, and stated the Mn/DOT anticipated being able to accommodate the placement of transmission poles within a few feet of the right-of-way boundary.⁴⁶⁷

347. While Mn/DOT did not provide comments regarding Minnesota Highway 50/220th Street prior to the Evidentiary Hearing, Mn/DOT's witness Mr. Seykora stated at the Evidentiary Hearing that the Modified Preferred Route segments that parallel Minnesota Highway 50/220th Street appeared to be permissible.⁴⁶⁸

2. USFWS and MnDNR

348. USFWS and MnDNR expressed concern about the "high concentrations of waterfowl during migration periods, and a heron rookery...within the proposed Le Sueur/US 169 project corridor at the Minnesota River Valley."⁴⁶⁹

349. USFWS and MnDNR did not request that non-aerial options be considered for the Granite Falls and the Upper Minnesota River crossings because new impacts to the resources in those areas will be limited.⁴⁷⁰

350. Due to the concern regarding migratory birds within the proposed Le Sueur/U.S. Highway 169 project corridor, USFWS and MnDNR did not prefer the Le Sueur crossing, recommended consideration of crossing the Minnesota River at Belle Plaine, and inquired about the feasibility of using a non-aerial design for the Lower Minnesota River crossing.⁴⁷¹

351. In response, Applicants developed the Crossover Route for consideration and requested flexibility to work with USFWS and MnDNR to develop structures and spans that will minimize bird impacts if a Belle Plaine crossing is selected.⁴⁷²

352. The Modified Preferred Route with a Lower Minnesota River crossing at Le Sueur would minimize impacts to the Minnesota River Valley because 1) the land use near the point of crossing the Minnesota River at Le Sueur features industrial uses,

⁴⁶⁶ Seykora Vol. 3 at pp. 178-179.

⁴⁶⁷ *Id.*

⁴⁶⁸ Seykora 3 Vol. at pp. 182-183.

⁴⁶⁹ Ex. 140 at Schedule 44 at p. 1 (Poorker Supplemental).

⁴⁷⁰ Ex. 102 at p. 52-54 (Poorker Direct).

⁴⁷¹ Ex. 140 at Schedules 42-46 (Poorker Supplemental).

⁴⁷² Ex. 140 at p. 3-7 (Poorker Supplemental).

thereby reducing impacts to homes and sensitive environmental features; and 2) greater opportunities for sharing existing corridors exist at Le Sueur.

353. Crossing the Minnesota River at Belle Plaine was not supported by the Belle Plaine City Council because it “will potentially cause long-term negative impacts due to its close proximity to the Minnesota River Valley and its scenic beauty, wildlife and natural environment.”⁴⁷³ The Belle Plaine City Council further found the Belle Plaine crossing “creates an undue hardship on future private development and impedes the City’s ability to provide logical extensions of roads and other public infrastructure to serve the development.”⁴⁷⁴

354. The record also demonstrates USFWS has concerns regarding potential avian impacts at both proposed crossings, Le Sueur and Belle Plaine.⁴⁷⁵

355. On February 8, 2010, USFWS provided additional comments regarding the Minnesota River crossing alternatives near Le Sueur and Belle Plaine. USFWS informed Applicants that it had concluded that “both the proposed Le Sueur and Belle Plaine crossings will likely disturb nesting, foraging, and winter roosting eagles” and such disturbances, among others, “are a violation of the Bald and Golden Eagle Protection Act.”⁴⁷⁶ USFWS has permits available for activities that impact eagles but such a permit would not be available unless a permit applicant “has first taken all practicable steps to avoid take of eagles.”⁴⁷⁷ USFWS urged Applicants to further analyze non-aerial crossings of the Minnesota River at Le Sueur and Belle Plaine.⁴⁷⁸

356. On February 8, 2010, Mn/DNR stated that it had not identified any new issues with the Le Sueur and Belle Plaine crossings.⁴⁷⁹ Mn/DNR did not ask Applicants to analyze undergrounding of the proposed HVTL.

3. Undergrounding

357. For both Le Sueur and Belle Plaine, Applicants analyzed undergrounding alternatives. Applicants also analyzed co-locating on an existing bridge and co-locating on a newly constructed stand-alone pier for the Le Sueur crossing; and analyzed co-locating on an existing transmission structure for the Belle Plaine crossing.⁴⁸⁰

⁴⁷³ Ex. 402.

⁴⁷⁴ *Id.*

⁴⁷⁵ Ex. 140 at Schedules 42-46 (Poorker Supplemental).

⁴⁷⁶ USFWS February 8, 2010 Letter at p. 1, filed 2/9/10, Doc. Id. 20102-46903-01.

⁴⁷⁷ *Id.*

⁴⁷⁸ *Id.*

⁴⁷⁹ MnDNR February 8, 2010 Letter, filed 2/10/10, Doc. Id. 20102-46952-01.

⁴⁸⁰ Ex. 104 at pp. 1-9 (Lennon Direct).

358. Applicants also studied undergrounding for the Minnesota River crossings at Granite Falls (which is common to the Modified Preferred Route and Alternate Route), North Redwood (needed only for the Alternate Route), and Redwood Falls, Brown County (needed only for the Modified Preferred Route). Applicants evaluated the Cross Linked Polyethylene ("XLPE") technology for the undergrounding process.⁴⁸¹ This construction method involves a casing that would be directionally bored beneath the Minnesota River at each river crossing and the conductor would be installed in the casing.⁴⁸²

359. Applicants' witness Mr. Kevin Lennon identified some of the difficulties with directionally boring under the river, including the possibility of encountering unknown bedrock or boulders during the drilling phase, which could result in damage to drilling equipment.⁴⁸³

360. Applicants' witness Mr. Poorker also explained that undergrounding does not alleviate visual impacts, as large transition structures are needed on both sides of the river crossing;⁴⁸⁴ and presents several environmental impacts, such as: i) significant excavation and relatively large work areas, ii) risk that drilling mud could escape into the river environment as the result of a spill, and iii) disturbance to riverbed and aquatic vegetation.⁴⁸⁵

361. Applicants evaluated two different underground construction methods: 1) a hydro-plowing procedure that partially imbeds the new transmission line, referred to as submarine cables, in the bottom of the river; and 2) a horizontal directional drilling ("HDD") method that directionally bores a casing beneath the Minnesota River with conductors installed in the casing.⁴⁸⁶

362. Either approach is likely possible from a technical perspective but presents significant environmental and construction concerns.⁴⁸⁷

363. If undergrounding is selected, it would be the first such installation in the State. There are no 345 kV transmission facilities undergrounded in Minnesota.⁴⁸⁸

364. Submarine cables are susceptible to damage from floods, river debris and boat anchors.⁴⁸⁹

⁴⁸¹ Ex. 104 at p. 12 (Lennon Direct).

⁴⁸² *Id.*

⁴⁸³ *Id.*

⁴⁸⁴ Ex. 102 at p. 55 (Poorker Direct).

⁴⁸⁵ Ex. 102 at p. 56 (Poorker Direct); Ex. 141 at pp. 2-4.

⁴⁸⁶ Ex. 141 at p. 2 (Lennon Supplemental); Lennon Vol. 4 at p. 97.

⁴⁸⁷ Ex. 141 at p. 2 (Lennon Supplemental); Lennon Vol. 4 at p. 97.

⁴⁸⁸ Ex. 105 at p. 4 (Lennon Rebuttal); Lennon Vol. 4 at p. 99.

365. Submarine cables require significant additional materials to protect from the ingress of water.⁴⁹⁰

366. Submarine cables will disturb the riverbed and aquatic vegetation and could impact water quality and aquatic organisms.⁴⁹¹

367. HDD can encounter unknown bedrock or boulders resulting in damage to equipment or the use of new boring paths.⁴⁹²

368. HDD will require significant excavation and relatively large work areas.⁴⁹³

369. HDD drilling mud could escape into the river environment as the result of a spill, tunnel collapse or rupture of the mud surface.⁴⁹⁴

370. Both HDD and submarine cable methods will require transition stations wherever the new transmission line would go from overhead to underground and vice versa. Given the limited space near the river, these transition structures would need to be located at the top of each bluff.⁴⁹⁵

371. Placing the new transmission lines along or beneath the Minnesota River will cause inspections of conductors to be cumbersome and repairs to be time intensive.⁴⁹⁶

372. The cost for both of these undergrounding construction techniques would be approximately \$400 million more than the proposed overhead construction option.⁴⁹⁷

373. Due to the significant environmental impacts, construction challenges and costs, undergrounding at Le Sueur or Belle Plaine is not a superior alternative to a traditional aerial crossing.

374. For the remaining Minnesota River crossings at Granite Falls, North Redwood, and Redwood Falls, Brown County, Applicants eliminated undergrounding due to the significant cost and environmental and construction challenges.

⁴⁸⁹ Ex. 141 at pp. 2-3 (Lennon Supplemental).

⁴⁹⁰ Lennon Vol. 4 at p. 89-92.

⁴⁹¹ Ex. 141 at p. 3 (Lennon Supplemental); Ex. 102 at p. 56 (Poorker Direct).

⁴⁹² Ex. 104 at pp. 12-13 (Lennon Direct); Ex. 141 at p. 3 (Lennon Supplemental).

⁴⁹³ Ex. 102 at p. 56 (Poorker Direct).

⁴⁹⁴ Ex. 102 at p. 56 (Poorker Direct).

⁴⁹⁵ Ex. 104 at pp. 12-13 (Lennon Direct); Ex. 141 at p. 3 (Lennon Supplemental).

⁴⁹⁶ Ex. 104 at pp. 13-14 (Lennon Direct).

⁴⁹⁷ Ex. 104 at p. 14 (Lennon Direct); Ex. 141 at p. 4 (Lennon Supplemental); Lennon Vol. 4 at p. 96-98.

375. The record does not support an underground design at any of the river crossings.

4. Le Sueur: Co-locating on U.S. Highway 169 Bridge

376. Applicants analyzed co-locating the new 345 kV transmission line on the U.S. Highway 169 bridge through Le Sueur.⁴⁹⁸

377. For the new 345 kV transmission line, the U.S. Highway 169 bridge would need to be able to support the weight of cables, protective pipes and other supporting materials, which amount to approximately 1,200 pounds per foot. Typically, bridges such as the U.S. Highway 169 bridge are not designed to carry the extra weight associated with transmission facilities and are generally restricted from doing so due to design limits.⁴⁹⁹

378. Co-locating a new transmission line on the U.S. Highway 169 bridge would impact traffic during construction and maintenance because the bridge must be closed to traffic to ensure the safety of the crew and the public during these periods.⁵⁰⁰

379. Mn/DOT advised that co-locating the Project on the U.S. Highway 169 bridge would require a Utility Permit and that Mn/DOT's Accommodation Policy does not allow attaching a high voltage transmission line to bridge structures.⁵⁰¹ Mn/DOT also expressed concern⁵⁰² about the safety of attaching high voltage transmission lines to the bridge structure.

380. The cost for co-locating the new 345 kV transmission line on the U.S. Highway 169 bridge near Le Sueur would be approximately \$400 million more than proposed overhead construction option.⁵⁰³

381. Due to the significant environmental impacts, permitting concerns, construction challenges and costs, co-locating on an existing bridge in Le Sueur is not feasible.

5. Le Sueur: Co-locating on Newly Constructed Self-Supporting Pier

382. Applicants evaluated constructing a self-supporting pier and attaching the new 345 kV transmission line to the pier.⁵⁰⁴

⁴⁹⁸ Ex. 141 at p. 4 (Lennon Supplemental).

⁴⁹⁹ Ex. 141 at p. 5 (Lennon Supplemental).

⁵⁰⁰ *Id.*

⁵⁰¹ Ex. 140 at Schedule 47 at p. 16 (Poorker Supplemental)

⁵⁰² Ex. 140 at p. 16 (Poorker Supplemental); Ex. 141 at p. 5 (Lennon Supplemental).

⁵⁰³ Ex. 141 at p. 6 (Lennon Supplemental).

383. The self-supporting pier structures would present several significant design challenges to accommodate the weight of the cables, the span required to cross the Minnesota River, and the heat dissipation needed for the cables.⁵⁰⁵

384. Transition stations are needed close to a river where there is a transition of an HTVL line from overhead to underground. Due to flooding concerns in the vicinity of the Minnesota River, there is concern that insufficient area is available to put in place the required transition structures.⁵⁰⁶

385. Mn/DOT also observed that the stand-alone pier would have to be constructed far enough away from the U.S. Highway 169 bridge to allow workers on bridge inspection units to perform their jobs safely.⁵⁰⁷

386. Due to the significant environmental impacts, permitting concerns, construction challenges and costs, co-locating on a newly constructed self-supporting pier in Le Sueur is not feasible.

6. Belle Plaine: Installation Including an Existing Transmission Line

387. Applicants evaluated two overhead alternatives for crossing the Minnesota River at Belle Plaine.⁵⁰⁸

388. Applicants identified two types of structures that could be used in conjunction with the existing 69 kV transmission line with distribution line underbuild and its 60 foot right-of-way.⁵⁰⁹

389. The first is a triple circuit H-frame structure with underbuild which would allow the new double circuit 345 kV line to be co-located on the same structure as the existing 69 kV line and associated distribution line. The total right-of-way would be approximately 180 feet in width and the structures would be approximately 180 feet tall. A triple circuit H-frame structure costs approximately \$280,000.⁵¹⁰

390. In Applicants' February 8, 2010 letter to the ALJ, Applicants referred to the triple circuit H-frame structure as a "four circuit H-frame structure." The reference to a "four circuit H-frame structure" is the same as triple circuit H-frame structure but also

⁵⁰⁴ Ex. 141 at p. 6 (Lennon Supplemental); Ex. 140 at p. 4 (Poorker Supplemental).

⁵⁰⁵ Ex. 141 at p. 6 (Lennon Supplemental).

⁵⁰⁶ Ex. 140 at pp. 4-5 (Poorker Supplemental).

⁵⁰⁷ Ex. 140 at Schedule 47 at p. 13 (Poorker Supplemental).

⁵⁰⁸ Ex. 141 at p. 7 (Lennon Supplemental); Ex. 140 at p. 5 (Poorker Supplemental).

⁵⁰⁹ Ex. 141 at p. 7 (Lennon Supplemental); Ex. 140 at p. 5 (Poorker Supplemental).

⁵¹⁰ Ex. 141 at p. 7 (Lennon Supplemental); Ex. 140 at p. 5 (Poorker Supplemental).

denotes that the structure would contain a distribution underbuild. With either structure there will be three transmission lines: two 345 kV circuits and one 69 kV circuit.⁵¹¹

391. The other alternative is a double circuit H-frame structure which would be placed adjacent to the existing 69 kV line on a new right-of-way. The expected right-of-way width is 180 feet and the structures would be approximately 170 feet tall. The cost for this structure is approximately \$260,000.⁵¹²

392. Both alternatives present environmental concerns. The triple circuit H-frame is taller and may have greater avian impacts than the shorter double circuit H-frame. Either structure will increase the needed right-of-way and "require significant tree clearing and would also impact wetlands, including forested wetlands."⁵¹³

393. Using either structure to cross the Minnesota River at Belle Plaine will cost approximately \$3.6 to \$3.7 million.⁵¹⁴

394. Applicants have expressed a preference for the double circuit H-frame structure.⁵¹⁵

395. If a Belle Plaine crossing is selected, Applicants requested flexibility to work with USFWS and MnDNR to identify the final structure type for the Lower Minnesota River crossing.⁵¹⁶

O. Evaluation of Alternatives

396. Minnesota high voltage transmission line routing criteria allows for the consideration of alternatives to the proposed route.⁵¹⁷

397. Approximately 47 segment alternatives and 21 alignment alternatives were studied by the OES in the draft EIS.⁵¹⁸

398. Regarding the alignment alternatives, the majority are appropriate. Applicants have asked for flexibility to work with affected landowners and develop the most appropriate alignment.⁵¹⁹

⁵¹¹ Applicants February 8, 2010 Letter at p. 1, filed 02/08/10, Doc. Id. 20102-46898-05.

⁵¹² Ex. 141 at p. 7 (Lennon Supplemental); Ex. 140 at p. 5 (Poorker Supplemental).

⁵¹³ Ex. 140 at pp. 5-6 (Poorker Supplemental).

⁵¹⁴ Ex. 141 at p. 7 (Lennon Supplemental).

⁵¹⁵ Applicants February 8, 2010 Letter at pp. 4-5, filed 02/08/10, Doc. Id. 20102-46898-05.

⁵¹⁶ Ex. 141 at p. 8 (Lennon Supplemental); Ex. 140 at pp. 5-6 (Poorker Supplemental).

⁵¹⁷ Minn. Stat. § 216E.03, subd. 7(b)(7).

⁵¹⁸ Ex. 16 at pp. 6, 13 (EIS Scoping Decision); Ex. 102 at p. 39 (Poorker Direct).

⁵¹⁹ Ex. 103 at p. 9 (Poorker Rebuttal).

399. Applicants performed a screening analysis on each segment alternative, compared them to the comparable segment of the Modified Preferred Route, and concluded the Modified Preferred Route best meets the State's route selection criteria.⁵²⁰

400. Applicants conducted a screening analysis for the segment alternatives. These analyses were discussed at the public hearings. Applicants described the results as set out the following Findings.

401. Segment alternative 1A-03 was found to be inferior because it impacts more forested wetlands; impacts two more homes within 75-150 of the route right-of-way; would be closer to housing developments on south side of Marshall; crosses more streams; impacts more acres of prime farmland; impacts more WMAs; and is closer to the Southwest Minnesota Regional Airport.⁵²¹

402. Segment alternative 1P-01 was found to be inferior because it does not use as much existing road rights-of-way.⁵²²

403. Segment alternative 1P-02 was found to be inferior because it has more permanent wetland impacts; impacts more WMAs; and is closer to the city of Ghent and as a result limits expansion to the south and east.⁵²³

404. Segment alternative 2B-01 was found to be inferior because it will impact more wetlands than the Modified Preferred Route; presents difficulties near the Granite Falls Municipal Airport since the route is about 1,000 feet from the end of the runway; increases the potential for impacting more homes; does not utilize existing electrical system rights-of-way; and requires significant coordination with the Burlington Northern-Santa Fe Railway Company (BNSF) to share existing railway right-of-way.⁵²⁴

405. Segment alternative 4B-04 was found to be inferior because it does not support the reliable operation of the transmission system by paralleling an existing 345 kV line; impacts more agricultural lands; increases small forest impacts; and increases impacts to wetlands.⁵²⁵

⁵²⁰ Ex. 102 at p. 39 (Poorker Direct); Ex. 104 at p. 10 (Lennon Direct).

⁵²¹ Ex. 23 at Figures 7.1.4.1-1, 7.1.4.8-1 and 7.1.4.10-1 (DEIS).

⁵²² Ex. 23 at Figure 7.1.4.9-1 (DEIS).

⁵²³ Ex. 23 at Figures 7.1.4.11-2, 7.1.4.10-1 (DEIS).

⁵²⁴ Ex. 23 at Figure 7.2.4.11-2 (DEIS).

⁵²⁵ Ex. 23 at Figures 7.4.4.1-1, 7.4.4.11-2 (DEIS); Poorker 1A Vol. at pp. 66-67.

406. Segment alternative 4B-05 was found to be inferior because it is longer and requires more corner structures; and impacts more homes and even displaces several residences.⁵²⁶

407. Segment alternative 5A-01 was found to be inferior because it may potentially displace several residences; does not maximize the use or paralleling of natural division lines; and increases impacts to woodlots, agriculture, archaeological sites, and architectural sites.⁵²⁷

408. Segment alternative 5A-02 was found to be inferior because it adds more distance and corner structures; impacts more wetlands; impacts more agricultural fields; and may cost more to maintain due to a lack of field lines and roads.⁵²⁸

409. Segment alternative 5A-03 was found to be inferior because it impacts more forests; may displace several residences; increases impacts to agricultural land; increases the number of homes within 75-150 feet of the right-of-way; and may cost more to maintain due to a lack of roads.⁵²⁹

410. Segment alternative 5A-04 was found to be inferior because it may displace a home; increases the acreage of WPAs in close proximity to the route; and presents FAA concerns since the route is within one mile of the Sky Harbor Airpark.⁵³⁰

411. Segment alternative 5B-02 was found to be inferior because it impacts significantly more homes; and will run through the Town of Heidelberg.⁵³¹

412. Segment alternative 5P-03 was found to be inferior because it goes through the center of Elko New Market and would disrupt future commercial area and development plans; increases impacts to residences in Elko New Market; and would be within one-half mile of Eagle View School.⁵³²

413. Segment alternative 6A-02 was found to be inferior because it impacts more residences; and requires more distance to reach the proposed substation sites.⁵³³

⁵²⁶ Ex. 23 at Figure 7.4.4.1-1 (DEIS).

⁵²⁷ Ex. 23 at Figures 7.5.4.1-1, 7.5.4.1-2, 7.5.4.6-1, 7.5.4.6-2, 7.5.4.11-2, 7.5.4.12-2 (DEIS).

⁵²⁸ Ex. 23 at Figure 7.5.4.11-2 (DEIS).

⁵²⁹ Ex. 23 at Figure 7.5.4.1-1 (DEIS); Poorker Vol. 1A at pp. 85-86.

⁵³⁰ Ex. 23 at Figures 7.5.4.1-1, 7.5.4.12-2 (DEIS); Poorker Vol. 1A at pp. 87-88.

⁵³¹ Ex. 23 at Figure 7.5.4.1-1 (DEIS).

⁵³² *Id.*

⁵³³ Ex. 23 at Figure 7.6.4.1-1 (DEIS).

414. Segment alternative 6A-03 was found to be inferior because it impacts more residences; requires more angle structures; and requires more distance to reach the proposed substation sites.⁵³⁴

415. Segment alternative 6P-07 was found to be inferior because it increases the number of homes within 150 feet of the right-of-way.⁵³⁵

416. Segment alternative 6P-08 was found to be inferior because it impacts more wetlands; increases impacts to agricultural lands; impacts more rare and unique natural resources; increases the length of the line; and does not connect to the Lake Marion Substation.⁵³⁶

417. Applicants conducted additional analysis of the route width and alignment adjustments needed to accommodate RES Pyrotechnics in Derrynane Township of Le Sueur County to better understand the impacts on neighboring landowners; of the Johnsons' route Alternatives 6P-03 and 6P-06 at Hampton because they were the only alternatives offered by a party to the proceeding; and of the CSAH 70 route Alternatives near Lakeville because there was support for these alternatives from Eureka Township of Dakota County and its residents.

418. Applicants also analyzed the Myrick Alternative because it addressed concerns about the Modified Preferred Route crossing Mn/DOT's scenic easements; and addressed suggestions made at public hearings to relocate the Lake Marion Substation from its present site in New Market Township, Scott County.

1. Route width and alignment adjustments for RES

419. After the Application had been filed, Applicants and OES received a letter from RES, a company that manufactures pyrotechnics and fireworks displays in the Belle Plaine Area.⁵³⁷

420. RES expressed concern that its facilities are located along a common segment of the Preferred and Alternate routes which may "impact safe manufacturing and storage of RES's pyrotechnics and fireworks displays and associated explosive materials" and requested the transmission line be located at least 1,000 feet east from the proposed centerline alignment or be placed along a different route entirely.⁵³⁸

⁵³⁴ *Id.*

⁵³⁵ Ex. 23 at Figure 7.6.4.9-1 (DEIS).

⁵³⁶ Ex. 23 at Figure 7.6.4.11-2, 7.6.4.1-1 (DEIS).

⁵³⁷ Ex. 102 at p. 40 (Poorker Direct).

⁵³⁸ Ex. 102 at pp. 40-41 (Poorker Direct).

421. In response to RES's concerns, Applicants initially identified two segment alternatives and proposed these alternatives during the scoping process.⁵³⁹

422. Applicants analyzed the two segment alternatives and found neither of them to be clearly superior to the comparable segment of the Modified Preferred Route. One of these route alternatives is on the west side ("West Route") and the other is on the east side ("East Route") of RES's facilities. The West Route segment is approximately 1.25 miles wide running from the west of RES property to the west of County Road 32, between the Helena South and Helena North Substation areas. The East Route is approximately 0.5 miles wide running from RES property east to County Road 121, then running from 296th Avenue north to the Helena North Substation area.⁵⁴⁰

423. Subsequent research by Applicants revealed a guide published by the Institute of Makers of Explosives ("IME"), which stated "[m]agazines should be located from overhead transmission lines at a distance greater than the distance between the poles and towers supporting the lines. Service lines of all types should, except for telephone connections and similar low-voltage intercom or alarm systems, be run underground from a point at least 50 feet away from the explosive storage magazine."⁵⁴¹

424. Applicants determined the closest explosive storage magazine would be located approximately 60 feet from the centerline of the segment of the Preferred and Alternate routes east of the RES property.⁵⁴²

425. Based on this information and the IME guideline, Applicants reevaluated the route segment alternatives proposed near the RES facilities, and also developed an alignment adjustment to the Modified Preferred Route ("RES 1,000 feet").⁵⁴³

426. Applicants are now requesting a Route Permit for the Modified Preferred Route with the RES 1,000 feet alignment adjustment.

427. Construction on the RES 1,000 feet alignment would cause impacts to adjacent property owners near the RES facility. The RES 1,000 feet alignment has 16,860 square feet or 0.4 acres of permanent pole impacts to agricultural lands.⁵⁴⁴

428. A significant portion of those permanent pole impacts will be borne by Theresa Ruhland. Mrs. Ruhland explained the placement of transmission poles on her

⁵³⁹ Ex. 102 at p. 41 (Poorker Direct).

⁵⁴⁰ Ex. 102 at p. 41 (Poorker Direct).

⁵⁴¹ Ex. 105 at p. 2 (Lennon Rebuttal); Ex. 103 at pp. 17-18 (Poorker Rebuttal).

⁵⁴² Ex. 105 at p. 3 (Lennon Rebuttal); Ex. 103 at pp. 18-19 (Poorker Rebuttal).

⁵⁴³ Ex. 105 at p. 3 (Lennon Rebuttal); Ex. 103 at pp. 18-19 (Poorker Rebuttal).

⁵⁴⁴ Ex. 103 at pp. 19-20 (Poorker Rebuttal).

farm fields would make farming more difficult as well as impact the landowner to the south.⁵⁴⁵ She testified that “[a]s proposed, I would have the CapX line about 800 feet to the south, 400 feet to the west, 5,000 feet to the north and the existing Xcel 345 line 5,200 feet to the east. We will be totally encompassed by either a double 345 or single 345 lines.”⁵⁴⁶

429. The RES 1,000 feet alignment has fewer environmental impacts, is shorter, and has fewer temporary and permanent impacts to agricultural land than the other route segment and alignment alternatives on the record.⁵⁴⁷

430. In comments filed March 8, 2010, OES staff implies that the Project’s line could be safely sited closer to the RES facility, thus minimizing further the impacts to the Ruhlands’ farmland. It is noted that the comment’s text implies that the RES site is located on the section line between Sections 2 and 3 in Derrynane Township, whereas it is actually on a line that bisects Section 3 into east and west halves.

2. Johnsons’ Segment Alternatives 6P-06

431. The Applicants find Route Alternative 6P-06 at Hampton to be inferior to the Modified Preferred Route Segment along Highway 50 (220th Street), and extending east after the road ends, in great part because Alternative 6P-06 has a greater impact on agricultural land (e.g., five irrigation pivots would be displaced).

432. The Johnsons submitted an alternative route segment in the Hampton area, between the Lake Marion substation and the proposed Hampton substation to minimize impacts on human settlement, land use and the environment. This route was carried forward in the Final Scoping Decision and the DEIS as Route Alternative 6P-06.⁵⁴⁸

433. Applying the State routing factors contained in Minnesota Statutes §216E.03, Subd. 7 and in Minnesota Rules, 7850.4000 and 7850.4100, Alternative 6P-06 minimizes impacts on human settlement, cultural values, unique land uses and the natural environment. This alternative may have more impacts on agriculture than the Modified Preferred Route Segment in the Hampton vicinity, along Highway 50 and beyond.

434. Applicants agree that, at every distance, Alternative 6P-06 affects fewer homes than the Applicants’ Preferred Route in the Hampton area. Alternative 6P-06 affects fewer homes within 500 feet of the centerline, fewer homes within 300 feet of the

⁵⁴⁵ Lakeville Public Hearing, 12/10/09 at 1 p.m. at pp. 181-2; Ex. 358.

⁵⁴⁶ Lakeville Public Hearing, 12/10/09 at 7 p.m. at p. 36.

⁵⁴⁷ Ex. 103 at pp. 19-20 (Poorker Rebuttal).

⁵⁴⁸ Tr. V. 3, p. 103, ll.5-12 (MacDonagh).

centerline and fewer homes within 150 feet of the centerline.⁵⁴⁹ The DEIS reflects that Alternative 6P-06 would reduce the number of homes from 75 to 150 feet of the route centerline by two and would reduce the number of homes within 500 feet of the route centerline by 15.⁵⁵⁰

435. In the local Hampton area, Alternative 6P-06 would reduce the number of homes in proximity to the high voltage power line. Focusing on the Hampton area reflected in Attachment 4A and 4B⁵⁵¹ and measuring distances using detailed GIS maps, comparative proximity of homes to the centerline is as follows:⁵⁵²

	Homes 75'-150' from centerline	Homes 150'-300' from centerline	Homes 300'-500' from centerline	Total Homes within 500' from centerline	Homes 500'-1000' from centerline	Total Homes within 1000' from centerline
6P-Applicants Preferred	3	14	11	28	12	40
Alternative 6P-06	1	7	5	13	7	20
Increase if Applicants' Route is Selected	200%	100%	140%	115%	71%	100%

436. Many individuals provided testimony and public comment regarding adverse impacts on their homes and families resulting from the Applicants' Preferred Route. A summary of those comments is provided in this Report.

437. Alternative Route 6P-06 would eliminate adverse impacts on religious and cultural land uses in the Project segment from Lake Marion to Hampton. The Watt Munisotaram Buddhist Temple is the only religious institution of any kind affected by the Lake Marion to Hampton segment of the Brookings Project, and no churches or temples or other religious land uses are located along the 6P-06 Alternate Route.⁵⁵³

438. Applicants agree that the Watt Munisotaram Buddhist Temple has religious and cultural significance to Buddhists in Minnesota and across the United States and that its architectural and aesthetic values are part of its cultural significance:

⁵⁴⁹ Tr. V. 1B, p. 22, ll. 2-9, p. 23, ll. 19-23 (Poorker)

⁵⁵⁰ Ex. 23, Appendix E (DEIS).

⁵⁵¹ Attachment 4A is Ex. 202 (Route Alternatives Map); Attachment 4B is Ex. 202, annotated to identify the locations contained in public comment received after the hearing opposing Applicants' Preferred Route in the Hampton area.

⁵⁵² Tr. V. 3, p. 94, l.25 – p. 95, l.4, p. 96, ll.8-20 (MacDonagh), Ex. 222 (Aerial Photo); Ex. 203 (Route Comparison).

⁵⁵³ Tr. V. 1B (Poorker), p. 28 ll. 4-16; Ex. 202 (Route Alternatives Map).

(Ms. Maccabee)

Q. After public testimony, are applicants aware of the cultural and religious significance of the Watt Munisutaram Buddhist Temple to Buddhists throughout Minnesota?

(Mr. Poorker)

A. Yes, I am.

Q. And aware of the significance of this temple to Buddhists throughout the United States?

A. Yes.

Q. And possibly even to Buddhists throughout the world?

A. Yes.

Q. And after public testimony, are you also aware that the architectural beauty of this temple is an important part of its cultural significance?

A. Yes.⁵⁵⁴

439. Applicants have admitted that if there is an alternative route available, it would be appropriate to avoid the impacts of Applicants' preferred route on the Watt Munisotaram Temple:

(Ms. Maccabee)

Q. Would you agree that if there is an alternative route available, it would be appropriate to avoid the impacts on this unique religious and cultural resource?

(Mr. Poorker)

A. I would agree that an alternate route as suggested would remove the impact, possible impact to the temple.

Q. And would you agree that it would be appropriate, if an alternate route were available, to avoid the impacts on this unique religious and cultural resource?

A. Yes.⁵⁵⁵

440. The Applicant's Preferred Route would run on 220th Street in Hampton. A portion of the property along that Route is planned for use by Douglas Kruger, as a landing strip for ultralight planes. Mr. Kruger maintained that take offs and landings would be rendered unsafe if the Applicants' Preferred Route on 220th Street were selected.⁵⁵⁶

441. Percy Scherbenske's Castle Rock Thoroughbred stud farm and the *Picture This* photography business on the Rice property are land uses that would be impacted by the Applicants' Preferred Route.

442. The Johnsons' expert witness, Peter MacDonagh, is a landscape architect, certified arborist and trained wetland delineator, who teaches courses at the

⁵⁵⁴ Tr. V. 1B, p. 53, l. 20 – p. 54, l.8 (Poorker)

⁵⁵⁵ Tr. V. 1B, p. 55, l. 16 - p. 56, l.2 (Poorker)

⁵⁵⁶ Kruger Comment (Doc. Id. 20101-46433-03, pp. 4-5).

University of Minnesota in ecology and ecological planning and has received awards for ecological design.⁵⁵⁷ Mr. MacDonagh compared the impacts of the Applicants' Preferred Route and Alternative 6P-06 in terms of water crossings, wetlands and rare and unique natural resources, concluding, in each of these areas, that Alternative 6P-06 substantially reduced the impacts on the natural environment as compared to the Applicants' Preferred Route in the Hampton Segment.⁵⁵⁸

443. The South Branch Vermillion River trout stream is considered by the Trout Unlimited as the best urban trout fishery in the United States. As compared with Alternative 6P-06, Applicants' Preferred Route would increase the number of trout stream crossings from three to five and increase the power line frontage along the Vermillion River from 2,800 feet to 3,600 feet.⁵⁵⁹

444. Impacts of the Applicants' Preferred Route on wooded wetlands would be particularly significant because the wetlands impacted drain into the Vermillion River South Branch, a cold water trout fishery fed by groundwater.⁵⁶⁰ Applicants' Preferred Route would run for more than 1,000 linear feet through wooded wetlands draining into the Vermillion River South Branch, and if Applicants decided not to put a power line pole on property occupied by the Buddhist Temple, Applicants would need to have at least two poles in these wooded wetlands east of the Temple.⁵⁶¹

445. Applicants acknowledge that Alternative 6P-06 affects fewer acres of wetlands within 100 feet of the power line's centerline than their Preferred Route and fewer acres of wetlands within 500 feet of the centerline.⁵⁶²

446. The Hampton Woods contains oak mesic woodland of outstanding significance and is the largest natural area within Dakota County that is not associated with the Minnesota or Mississippi River corridors.⁵⁶³ Applicants agree that Hampton Woods is an area of outstanding biodiversity that contains several endangered species and that the Alternative 6P-06 centerline would be considerably farther away from the Hampton Woods than the Applicants' Preferred Route.⁵⁶⁴ The route width requested by Applicants could extend south of 220th Street to the edge of the Hampton Woods.⁵⁶⁵

⁵⁵⁷ Tr. V. 3, pp. 87-88, p. 121, ll.1-8 (MacDonagh); Ex. 201, Sched. 1 (MacDonagh Direct).

⁵⁵⁸ Ex. 201, p. 14, ll. 7-10 (MacDonagh Direct).

⁵⁵⁹ Tr. V. 3, p. 106, l. 20 –p. 107, l. 6 (MacDonagh); Ex. 203 (Route Comparison); Tr. V. 1B, p. 27, ll. 13-20 (Poorker).

⁵⁶⁰ Tr. V. 3, p. 117, l. 18 –p.118, l. 9 (MacDonagh).

⁵⁶¹ Tr. V. 3, p. 115, ll. 6-12, p. 119, ll. 1-9 (MacDonagh); Ex. 223 (Aerial Photo).

⁵⁶² Tr. V. 1B, p. 27, ll. 3-12 (Poorker).

⁵⁶³ Tr. V. 3, p. 109, ll.6-15, p. 110, l. 19 – p. 111, l. 5 (MacDonagh).

⁵⁶⁴ Tr. V. 1B, p. 30, l. 25-p. 31, l. 9 (Poorker)

⁵⁶⁵ Craig Poorker stated that Applicants would be willing to commit to limit their route to the north side of 220th where it parallels Hampton Woods. Tr. V. 1B, p. 87, ll. 7-10 (Poorker).

447. Even if the power line were routed on the north side of 220th Street, Applicants' Preferred Route would require clearing trees along the 150-foot right-of-way through woods extending from the Hampton Woods to the north side of 220th Street.⁵⁶⁶

448. Applicants' Preferred Route would create edge impacts to the Hampton Woods due to the height of support poles and wires, allowing predatory birds to pick off specialist bird species. Such predatory birds perching on the wires could bring back invasive seedlings, creating plant incursions to interior woodlands.⁵⁶⁷ From a landscape ecology point of view, distance to the disturbance is an important consideration and Alternative 6P-06 would reduce impacts on the Hampton Woods.⁵⁶⁸

449. Applicants' Preferred Route and Alternative 6P-06 both include some portions of the Route that extend cross-country in the Hampton Area.⁵⁶⁹

450. Applicants' Preferred Route and Alternative 6P-06 create impacts to farmland and crops, some of which are permanent.⁵⁷⁰ Some farmers could be adversely affected by either potential route.⁵⁷¹ Farmers along both routes have raised concerns about use of pivot irrigation systems near HVTLs. Based on comments received, Applicants estimate that Alternative 6P-06 will impact one more pivot irrigation system than their Preferred Route.⁵⁷²

451. Routing of a 345 kV power line can be accomplished around a pivot irrigation system, and the existing Prairie Island to Blue Lake 345 kV power line in the Hampton area is located in proximity to several pivot irrigation systems.⁵⁷³ Standards for accommodating pivot irrigation systems are specifically set forth in the Agricultural

⁵⁶⁶ Tr. V. 1B, p. 30, ll. 15-24 (Poorker); see also Ex. 109, Sched. 41, Map 1 (Poorker Rebuttal) and Ex. 222 (Aerial Photo) showing extension of Hampton Woods north of 220th Street.

⁵⁶⁷ Tr. V. 3, p. 112, ll.7-18; p. 123, ll. 6-24; p. 128, ll.6-20, (MacDonagh).

⁵⁶⁸ Ex. 201, p. 14, l. 12- p. 16, l. 5(MacDonagh Direct); Tr. V. 3, p. 112, ll.20-23 (MacDonagh).

⁵⁶⁹ See Ex. 23, Appendix E (DEIS); Pub. Com. of Tom Rother Pub. Com. (Doc. Id. 20102-46701-01, p. 27).

⁵⁷⁰ Tr. V. 1B, p. 39, ll. 15-19 (Poorker); Pub. Com. of Larissa and Brian Foss (Doc. Id. 20101-46701-01, pp. 11-12); Pub. Com. of Tom Rother (Doc. Id. 20102-46701-01, pp. 27-28); Pub. Com. of Ardis Bengtson/Monna Bergdall/ Vida Kollath (Doc. Id. 20101-46593-01, p. 6); Ex. 382B (Klaus Statement); Ex. 382A (Perry Statement); Ex. 390 (Duff Statement).

⁵⁷¹ Test. of Jon Juenke, Tr. Pub. H. 12/29/09, pp. 113-114 (New Prague); Ex 389 (C. Louis Statement); Pub. Com. of Jennifer Gerster (Doc. Id. 20101-46593-01, p. 2); Pub Com. of Richard Gerster (Doc. Id. 20101-46485-01, p. 2).

⁵⁷² Ex. 389, p. 2 (C. Louis Statement); Pub. Com. of Jennifer Gerster (Doc. Id. 20101-46593-01, p. 2); Pub. Com. of Richard Gerster (Doc. Id. 20101-46485-01, p. 2); Tr. V. 1B, p. 52, ll.1-9 (Poorker).

⁵⁷³ Tr. V. 1B, p. 51, ll. 6-15 (Poorker); Test. of Robert Johnson, Tr. Pub. H. 12/10/09, p. 108, ll. 4-25 (Lakeville 7:00 pm); Ex. 213, 214, 215, 216 (Irrigation Photos).

Impact Mitigation Plan,⁵⁷⁴ and farmers will be compensated for adverse impacts to pivot irrigation.⁵⁷⁵ Any adverse impacts to pivot irrigation will be mitigated.

452. There are no significant differences in engineering factors associated with Alternative 6P-06 and Applicants' Preferred Route.⁵⁷⁶

453. If the Hampton North Substation were selected, construction of Alternative 6P-06 would cost \$192,000 more than Applicants' Preferred Route. If the Hampton South Substation were to be selected, construction of alternative route 6P-06 would cost approximately \$2.8 to \$3.1 million more,⁵⁷⁷ out of a project cost of \$700 million to \$755 million.⁵⁷⁸ Public testimony suggests that right-of-way acquisition costs are likely to be higher for the Applicants' Preferred Route due to proximity of homes and residents' choices to sell their property to the utilities.⁵⁷⁹

454. Selection of Alternative 6P-06 is appropriate. The avoidance of impacts by the Modified Preferred Route on a Buddhist Temple, the Vermillion River and its tributaries, and avoiding a greater number of residences and businesses outweighs the impacts on agricultural land and the Vermillion River and its tributaries that will occur if Alternative 6P-06 is selected.

3. CSAH 70 Segment Alternatives

455. As Applicants were developing the Application, Eureka Township and Eureka Township residents submitted comments recommending that the Project be routed along CSAH 70.⁵⁸⁰

456. Applicants evaluated five CSAH 70 alternatives: (1) the CSAH 70 Alternative, (2) 6P-01, (3) 6P-08, (4) 6P-05 and (5) the FAA CSAH 70 Segment Alternative.⁵⁸¹

457. The "CSAH 70 Alternative" is an approximately 12-mile long alternative that follows I-35 and existing transmission lines north from the Lake Marion Substation and then heads east at the southern side of Lakeville along CSAH 70 (215th Street West), and then north along Hamburg Avenue for 0.5 miles, and east on CSAH 50 (212th Street West/Lakeville Boulevard). The CSAH 70 Alternative turns south on

⁵⁷⁴ Ex. 108, Sched. 17, p. 7 of 15 (Poorker Direct).

⁵⁷⁵ Test. of Craig Poorker, Tr. Pub. H. 12/29/09, p. 178, l.25 – p. 179, l. 11 (New Prague).

⁵⁷⁶ Tr. V. 1B, p. 56, ll. 12-15 (Poorker).

⁵⁷⁷ Ex. 109, Sched. 40, p. 4 (Poorker Rebuttal).

⁵⁷⁸ Ex. 104, p. 8 (Lennon Rebuttal).

⁵⁷⁹ Pub. Com. of Matt Grilz (Doc. Id. 20101-46295-01, p. 5); Pub. Com. of Eric Johnson (Doc. Id. 20101-46433-02, pp. 1-2); Pub. Com. of Bruce Lamp (Doc. Id. 20102-46900-03, p. 17).

⁵⁸⁰ Ex. 102 at p. 43 (Poorker Direct); Ex. 104 at p. 15 (Lennon Direct).

⁵⁸¹ Ex. 102 at pp. 44-45 (Poorker Direct); Ex. 104 at p. 15 (Lennon Direct).

CSAH 31 (Denmark Avenue) west of Farmington to reconnect with the Preferred Route.⁵⁸²

458. 6P-01 is a segment alternative that follows Interstate 35 north from where the Preferred and Alternate Routes meet, crossing Interstate 35 east to 215th Street West. It proceeds east along 215th Street to Hamburg Avenue and follows it north to Lakeville Boulevard. It then precedes east on Lakeville Boulevard, then south on Denmark Avenue to 225th Street West, where it heads southeast cross-country 0.5 miles, and then north-northwest 0.3 miles, connecting with the Preferred Route.⁵⁸³

459. 6P-08 is a segment alternative that starts at the Alternate Route at I-35 and 57th Street West and heads east cross-country approximately three miles to 307th Street West. The segment then continues along 307th Street to Eveleth Avenue and east cross-country approximately one mile, then northeast following along an existing rail line and 69 kV transmission line for approximately seven miles, to 240th Street West. At this point, the segment connects with the Preferred Route.⁵⁸⁴

460. 6P-05 is a route segment alternative that begins at the Preferred Route at Lake Marion Substation and follows Pillsbury Avenue north to 215th Street West. The route then heads east along 215th Street to Cedar Avenue and then continues east cross-country for approximately 0.5 miles. The route then proceeds southeast 1.8 miles, and then east approximately one mile to 220th Street West. From there, the route segment proceeds south down 220th Street to Denmark Avenue, and heads south along Denmark Avenue, veering southeast cross-country at 225th Street West to reconnect with the Preferred Route.⁵⁸⁵

461. The FAA CSAH 70 Segment Alternative is a Plan and Profile developed by Applicants to obtain permitability input from the FAA.⁵⁸⁶ The FAA CSAH 70 Segment Alternative is based on the CSAH 70 Alternative, with two revisions. First, the FAA CSAH 70 Segment Alternative continues along CSAH 70 further east, until Cedar Avenue.⁵⁸⁷ Second, the route goes north on Cedar Avenue to CSAH 50, instead of heading north on Hamburg Avenue.⁵⁸⁸

⁵⁸² Ex. 102 at p. 44 (Poorker Direct).

⁵⁸³ Ex. 102 at p. 45 (Poorker Direct).

⁵⁸⁴ *Id.*

⁵⁸⁵ *Id.*

⁵⁸⁶ Ex. 104 pp. 27-29 (Lennon Direct).

⁵⁸⁷ Ex. 104 at p. 28 (Lennon Direct).

⁵⁸⁸ *Id.*

462. All of the CSAH 70 segment alternatives use the same approximately 2.4-mile stretch of the south side of CSAH 70 between 215th Street and Hamburg Avenue.⁵⁸⁹

463. Applicants' witness Mr. Kevin Lennon identified the engineering issues presented by the CSAH 70 Segment Alternatives.⁵⁹⁰

464. The CSAH 70 segment alternatives will have a greater impact to residences and businesses because the 2.4-mile segment along CSAH 70 east of the Lake Marion Substation is an area that is congested with residences and commercial buildings.⁵⁹¹

465. Portions of CSAH 70 are within the flight path clearance zones and the secondary avoidance area of the Airlake Airport south of Lakeville. Also, the Airlake Airport plans to expand the primary runway to 5,000 feet off the south end of the airport, which will expand the secondary avoidance area.⁵⁹² The FAA and Mn/DOT height restrictions in this area would preclude the use of the single pole structures proposed for the Project.⁵⁹³

466. Even if the facilities could be designed to meet FAA requirements, the conductors would need to be hung over the tops of existing buildings.⁵⁹⁴

467. Due to FAA maximum height restrictions and the National Electrical Safety Code ("NESC") minimum height restrictions, there is a very limited space for structures and conductors.⁵⁹⁵

468. Side-by-side low profile H-frame structures are the only structure that could accommodate the FAA and NESC restrictions.⁵⁹⁶

469. Side-by-side low profile H-frame structures result in conductors spread approximately 250 feet across and traversing over the tops of the buildings along CSAH 70.⁵⁹⁷

⁵⁸⁹ Ex. 102 at p. 45 (Poorker Direct).

⁵⁹⁰ Ex. 104 at pp. 15-30 (Lennon Direct).

⁵⁹¹ Ex. 104 at pp. 16-17 (Lennon Direct); Poorker Vol. 1A at p. 91.

⁵⁹² Ex. 104 at pp. 16-17 (Lennon Direct).

⁵⁹³ Ex. 104 at pp. 16-17 (Lennon Direct); Poorker Vol. 1A at p. 91.

⁵⁹⁴ Ex. 104 at pp. 16-17 (Lennon Direct).

⁵⁹⁵ *Id.*

⁵⁹⁶ *Id.*

⁵⁹⁷ *Id.*

470. Traversing the tops of buildings creates safety concerns for people working on roof top heating and ventilation units, roofers, and any others working on the roof tops.⁵⁹⁸

471. The low profile designs required by the CSAH 70 Alternatives result in placement of structures in parking lots, access roads, and other areas typically containing underground services such as telephone, sewer, water, and gas.⁵⁹⁹

472. Hanging conductors over the top of existing buildings does not comport with Applicants' standard practice, which is to acquire right-of-way free of any structures.⁶⁰⁰

473. The use of specialty structures to accommodate the CSAH 70 segment alternatives will increase costs between \$25.6 to \$29.0 million.⁶⁰¹

474. Applicants submitted a Notice of Proposed Construction or Alteration to the FAA and the FAA confirmed that the FAA CSAH 70 Segment Alternative with structures located on the north side of CSAH 70 near Airlake Airport presents a hazard to air navigation and cannot be constructed. The FAA CSAH 70 Segment Alternative is technically infeasible.⁶⁰²

475. Applicants also evaluated an underground option that would extend 7.1 miles along CSAH 70 and CSAH 50 between I-35W and the City of Farmington.⁶⁰³

476. Undergrounding transmission lines presents engineering challenges. Underground conductors generally operate at higher temperatures than overhead transmission lines which results in reduced efficiency, an increased risk of outages, and a shorter life span for the conductor.⁶⁰⁴ An underground transmission line is also expected to require earlier replacement than an overhead transmission line.⁶⁰⁵

477. Construction of the proposed underground facilities along CSAH 70 and CSAH 50 is estimated to cost \$416 million.⁶⁰⁶ This is approximately \$402 million more than the overhead construction option for this segment.⁶⁰⁷

⁵⁹⁸ *Id.*

⁵⁹⁹ *Id.*

⁶⁰⁰ Ex. 104 at pp. 17 (Lennon Direct).

⁶⁰¹ Ex. 104 at p. 25 (Lennon Direct).

⁶⁰² Ex. 104 at pp. 28-29 (Lennon Direct).

⁶⁰³ Ex. 104 at pp. 26-27 (Lennon Direct).

⁶⁰⁴ Ex. 104 at p. 26 (Lennon Direct).

⁶⁰⁵ *Id.*

⁶⁰⁶ Ex. 104 at p. 27 (Lennon Direct).

478. The CSAH 70 segment alternatives create additional environmental impacts not present in Applicants' proposed routes. Applicants' witness Mr. Poorker provided an abbreviated list of these complications in his pre-filed Direct Testimony:

[T]he Modified Preferred Route has no homes or businesses in the anticipated right-of-way for the facilities. The chart shows that the FAA CSAH 70 Segment Alternative would require displacement of 12 houses in the right-of-way along County Road 50. In addition, I believe there would be numerous homes affected once a side of the road were selected for the three D-PAK alternatives. All four of the CSAH 70 alternatives have businesses within the right-of-way, whereas the Applicants' Modified Preferred Route has none. Similarly, the Modified Preferred Route affects fewer center pivot irrigation systems. The Modified Preferred Route also has fewer homes within 500 feet of the line and the fewest Vermillion River crossings (one crossing). Further, the Modified Preferred Route is farther away from the Airlake Airport and Very High Frequency Omnidirectional Radio Range.⁶⁰⁸

479. The record demonstrates that none of the CSAH 70 segment alternatives are technically feasible, and even if constructible, these alternatives would present significant engineering challenges and environmental impacts.

480. It is appropriate to reject the CSAH 70 Segment Alternatives.

4. Myrick Alternative Alignment

481. Applicants' Myrick Alternative was developed to address concerns about the Modified Preferred Route crossing Mn/DOT scenic easements.⁶⁰⁹

482. Applicants' Myrick Alternative has impacts on human settlement and land based economies similar to the other alignments of the Modified Preferred Route corridor in the Le Sueur area.⁶¹⁰

483. The Modified Preferred Route with the Myrick Alternative alignment affects the same landowners as the Modified Preferred Route with the original alignment. There are five homes (two at 150-300 feet and three at 300-500 feet) within 0-500 feet

⁶⁰⁷ *Id.*

⁶⁰⁸ Ex. 102 at p. 49 (Poorker Direct).

⁶⁰⁹ Ex. 140 at pp. 10-12 (Poorker Supplemental).

⁶¹⁰ Applicants' January 19, 2010 Letter to ALJ at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

of the Myrick Alternative right-of-way. In comparison, there are three homes (three at 150-300 feet) within 0-500 feet of the Modified Preferred Route right-of-way.⁶¹¹

484. Regarding land-based economies, the Modified Preferred Route with the Myrick Alternative alignment will impact 31 acres of prime farmland, prime farmland if drained and farmland of statewide importance whereas the Modified Preferred Route with the original alignment will impact 23 acres.⁶¹²

485. The Modified Preferred Route with the Myrick Alternative alignment will impact 35 acres of cropland and grassland whereas the Modified Preferred Route with the original alignment will impact 37 acres.⁶¹³

486. Applicants also applied several other of the State's routing factors to assess the Myrick Alternative's impact to the immediate environment.⁶¹⁴

487. The Modified Preferred Route with the Myrick Alternative alignment will share 53% of its corridor with existing rights-of-way.⁶¹⁵

488. There are four streams and rivers, one wetland and one MCBS biodiversity site that will be crossed by the Modified Preferred Route with the Myrick Alternative alignment.⁶¹⁶

489. The Modified Preferred Route with the Myrick Alternative alignment does not cross any forested wetlands.⁶¹⁷

490. There are 10 threatened and endangered species, five archaeological sites and three historical sites within one mile of the Modified Preferred Route with the Myrick Alternative alignment's centerline.⁶¹⁸

491. The City of Le Sueur offered Mayo Park to enable a possible modification to the Modified Preferred Route.⁶¹⁹ On January 5, 2010, the City of Le Sueur clarified that its proposal to offer the use of Mayo Park's "existing transmission corridor/easement was made on the presumption that the stated 'Preferred Route' was

⁶¹¹ *Id.*

⁶¹² *Id.*

⁶¹³ *Id.*

⁶¹⁴ *Id.*

⁶¹⁵ *Id.*

⁶¹⁶ *Id.*

⁶¹⁷ Applicants' January 19, 2010 Letter to ALJ at Route Impact Table, filed 01/19/10, Doc. Id. 20101-46155-01.

⁶¹⁸ *Id.*

⁶¹⁹ Ex. 327; Henderson Public Hearing, 12/7/09 at 7 p.m. at pp. 23-24.

the inevitable route as it approached the Minnesota River.”⁶²⁰ The City of Le Sueur clarified that its proposal was “only made with the understanding that IF WE WERE GOING TO BE COMPELLED TO DEAL WITH A TRANSMISSION LINE CROSSING we wished to try to lessen its effect on our citizens, natural resources and neighbors.”⁶²¹

492. During the public hearing at New Prague, Bimeda, Inc., an animal pharmaceutical manufacturing company, expressed concern about the proximity of the Myrick Alternative to the company’s facilities.⁶²² Bimeda is located at 291 Forest Prairie Road in Le Sueur and believes the Myrick Alternative will cause the line to be located too close to its proposed storage tanks which will contain isopropyl alcohol.⁶²³ Isopropyl alcohol is a flammable product that is produced by combining water and propane.⁶²⁴

493. Bimeda filed a comment letter dated January 28, 2010, asserting that the proposed lines should be located at least 750 feet from the proposed tanks. Bimeda did not, however, cite any statute or regulation that requires a specific distance between transmission lines and isopropyl alcohol tanks.⁶²⁵

494. There is no standard or rule that requires transmission lines to be a particular set distance from isopropyl alcohol tanks.⁶²⁶

495. Applicants have experience constructing and operating transmission lines near other types of tanks storing flammable materials and have safely built and operated these facilities.⁶²⁷

496. If the Modified Preferred Route is selected, Applicants will design the line to ensure that the tanks are outside the right-of-way and will work with Bimeda on the final alignment of the line.⁶²⁸

497. No CAPX contends that the Myrick Alternative is not available for consideration as it was not part of the EIS review and it was withdrawn by its proposer, Duane Kamrath. No CAPX maintains that “foundational information” regarding the Myrick Alternative should have been a part of the routing docket immediately upon filing, and the agency concerns should have been acknowledged and addressed as part of Applicants’ case. No CAPX also contends that the OES failure to forward information

⁶²⁰ City of Le Sueur January 5, 2010 Letter, filed 01/11/10, Doc. Id. 20101-45824-01.

⁶²¹ *Id.* (Emphasis in original.)

⁶²² New Prague Afternoon Transcript, 12/28/09 at pp. 191-197.

⁶²³ *Id.*

⁶²⁴ *Id.*

⁶²⁵ Bimeda January 29, 2010 Letter to ALJ at p. 4-5, filed 01/29/10 (Doc. Id. 20101-46568-02).

⁶²⁶ Applicants February 8, 2010 Letter at p. 2, filed 02/08/10 (Doc. Id. 20102-46898-05).

⁶²⁷ Applicants February 8, 2010 Letter at pp. 2-3, filed 02/08/10 (Doc. Id. 20102-46898-05).

⁶²⁸ Applicants February 8, 2010 Letter at p. 3, filed 02/08/10 (Doc. Id. 20102-46898-05).

and important communications to the administrative side of this proceeding and post it for the public immediately upon receipt puts all the parties at a disadvantage.⁶²⁹

498. Applicants responded that they have provided notice to the persons affected by the Myrick Alternative because those persons were within the area for which property owners were required to be notified. Additionally, Applicants note that the pervasive knowledge of this proceeding throughout the community has afforded actual knowledge to property owners affected by this alternative.⁶³⁰

499. Applicants have included the lists of those given notice on December 30, 2008, in the record of this proceeding. Examination of these lists shows a number of addresses along the Myrick Alternative.⁶³¹ Several of the persons who provided public comment on the Myrick Alternative appear on the lists. There has been no failure of notice to potentially affected landowners so as to preclude consideration of the Myrick Alternative.

500. Numerous landowners testified that they did not receive the notice mailed by OES on September 18, 2009, advising them of the possibility that the route segment proposals included in the Draft EIS could affect their property. OES noted that these landowners primarily were present in Marshall during the December 1, 2009 public hearings.⁶³² The affidavit of service for that notice listed approximately 4,100 landowners as having been notified individually by a mailing handled by ImageWerks, a company retained by Applicants to handle the mass mailing to all those individuals listed.⁶³³ OES suggested that there may have been a mishap involving the postal service since these landowners seemed to be all in one general area near Marshall. The proximity of the landowners who complained of a lack of notice suggests a failure at some point in the bulk mailing process.

501. Despite the lack of individual mailed notice, these landowners did have actual notice of the proceeding and many of them were able to participate in the hearings and comment process. The Minnesota Court of Appeals held that individual notice in such circumstances where the route segment is not identified in the initial application is not necessary to meet constitutional and Commission rule notice requirements.⁶³⁴ The notice provided in this proceeding, including the Marshall area

⁶²⁹ No CAPX Reply Brief, at 4-6.

⁶³⁰ Applicants' Reply Brief, at 27-28.

⁶³¹ Ex. 8, (Doc. Id. 5722823).

⁶³² See Tr. Vols. Dec. 1, 2009.

⁶³³ Ex. 21A.

⁶³⁴ *ITMO the Application of Minnesota Pipe Line Company for a Certificate of Need for a Crude Oil Pipeline and ITMO the Application to the Minnesota Public Utilities Commission for a Pipeline Routing Permit for a Crude Oil Pipeline and Associated Aboveground Facilities*, A07-1318 (Minn.Ct.App. June 10, 2008)("MinnCan").

and Myrick Street segment is adequate to inform the potentially affected landowners of the proposed HVTL and provide an opportunity for them to participate.

502. Applicants' Myrick Alternative is mostly within the originally requested route in this area. This modification would entail adding a polygon approximately 4,700 feet in length and 600 feet at its widest point for which no assessment was conducted in the DEIS.⁶³⁵

503. The additional polygon was outside the formally requested route width as submitted to the Commission. This area was not included in the scoping of the route nor evaluated in the DEIS. For these reasons, OES contended that the Myrick Alternative requires further evaluation as to the potential environmental impacts from this transmission facility. OES cited, as an example, moving the preferred route alignment along U.S. 169 to the proposed Myrick Alternative as potentially creating new and unevaluated problems for new residents, Mayo Park, and the Bimeda facility. While OES acknowledged that the Myrick Alternative alleviates the problems associated with MnDOT's rest area and scenic easements, OES expressed concern about the potential for undiscovered problems.⁶³⁶

504. The proposed Myrick Alternative arose from Applicants' need to accommodate Mn/DNR's scenic easements. The polygon outside of the area scoped and assessed for impacts is of modest size and is immediately adjacent to the area that was scoped and assessed. The evidence presented through this proceeding regarding residential impacts, the effects on Mayo Park, and the potential for impact to Bimeda do not show that the Myrick Alternative should be foreclosed. The concerns raised by OES can be met by requiring that the FEIS be supplemented by assessing the polygon not previously included in the FEIS. Should the Commission determine that a supplement is needed for the FEIS to be deemed adequate, such a supplement to the FEIS is appropriately limited to the specific impacts raised by routing the HVTL through the Myrick Alternative over the limited area that was not already assessed. A supplement of such limited scope imposes a modest burden on the OES EFP staff and can provide reassurance that no further impediment exists to the HVTL crossing the Minnesota River at Le Sueur and proceeding along Myrick Street to connect the line to points east.

505. It is appropriate to select the Applicants' Myrick Alternative Route within the Modified Preferred Route Segment in the Le Sueur area.

5. Lake Marion Substation

506. The Project consists of a 345 kV double-circuit compatible segment from the Helena Substation to Lake Marion Substation.⁶³⁷

⁶³⁵ Ex. 140, Sch. 51 (Poorker Supplemental Testimony).

⁶³⁶ OES Comments, at 12.

⁶³⁷ Ex. 2 at pp. 5-6, 5-12 (Application).

507. Applicants plan to expand the Lake Marion Substation by adding 12 to 16 acres of fenced and graded substation area, install new equipment and construct associated line switches, foundations, steel structures, and control panels.⁶³⁸

508. At the Lakeville Public Hearing, a proposal was raised that sought to move the Lake Marion Substation to the south instead of expanding it.⁶³⁹

509. The Applicants contended that this proposal is not a valid alternative because the Certificate of Need for the Project requires an interconnection at the existing Lake Marion Substation.⁶⁴⁰

510. A proposal to move the Lake Marion Substation is not a valid alternative because the location of the Lake Marion Substation interconnection is outside the scope of this Route Permit proceeding.⁶⁴¹

II. Application of Routing Criteria to the 115 kV Line Between Franklin Substation and Cedar Mountain Substation

511. The Brookings Project includes construction of a new Cedar Mountain Substation, which is designed to interconnect with the existing Wilmarth – Franklin 115 kV line.⁶⁴²

512. To accomplish this interconnection, Applicants propose to construct a new 115 kV transmission line between the Cedar Mountain Substation and the Franklin Substation.⁶⁴³

513. Applicants propose the Revised Cedar Mountain South 115 kV Route and the Cedar Mountain North 115 kV Route as alternatives.⁶⁴⁴

514. Applicants are requesting a Route Permit for the Revised Cedar Mountain South 115 kV Route as part of the Modified Preferred Route.⁶⁴⁵

515. The route for the Revised Cedar Mountain South 115 kV Route is described as follows: from the Cedar Mountain Substation South Area the Revised Cedar Mountain South 115 kV Route heads west toward the City of Franklin and the

⁶³⁸ Ex. 2 at pp. 2-7, 2-8 (Application).

⁶³⁹ Lakeville Public Hearing, 12/11/09 at 9:30 a.m. at pp. 39-40.

⁶⁴⁰ Certificate of Need Order at pp. 14-16, 30-32, 42.

⁶⁴¹ See Minn. Stat. § 216E.02, subd. 2.

⁶⁴² Ex. 2 at § 7.3 (Application).

⁶⁴³ Ex. 2 at §§ 7.3 and 9.3 (Application).

⁶⁴⁴ *Id.*

⁶⁴⁵ Ex. 102 at p. 10 (Poorker Direct).

Franklin Substation. The route length is approximately 0.8 miles. The southern edge is located 150 feet south of an existing Franklin-Winthrop 69 kV transmission line while the northern edge of the route is approximately 300 feet north of 660th Avenue. The western edge extends approximately 250 feet west of the Wilmarth-Franklin existing 115 kV transmission line at which point the route narrows to approximately 0.5 miles in width (from 4225 feet) for approximately 0.9 miles. For this 0.5 mile segment, the southern edge of the route follows just south of the existing Wilmarth-Franklin 115 kV transmission line.⁶⁴⁶

516. The record confirms that the Revised Cedar Mountain South 115 kV Route meets the State routing criteria.⁶⁴⁷

517. Regarding impacts to human settlement, the Revised Cedar Mountain South 115 kV Route will be designed to avoid displacement of existing homes and businesses. The record demonstrates that there will be no impacts associated with noise, cultural values, and public services.⁶⁴⁸ Applicants will implement the appropriate safeguards during construction and operation to avoid any impacts to human health and safety.⁶⁴⁹

518. Regarding impacts to land based economies, 27.0% of the Revised Cedar Mountain South 115 kV Route will cross prime farmland.⁶⁵⁰ There are no anticipated impacts to any economic or forest resources, tourism, or mining.⁶⁵¹

519. Regarding impacts to archaeological and historical resources, there are no archaeological sites, architectural sites, or historical landscapes within one mile of the Revised Cedar Mountain South 115 kV Route.⁶⁵²

520. Regarding impacts to the natural environment, the Revised Cedar Mountain South 115 kV Route is not anticipated to impact air quality. The Revised Cedar Mountain South 115 kV Route will cross four wetlands and one MCBS Biodiversity site. Impacts will be minimized or avoided by strategic pole placement.⁶⁵³

⁶⁴⁶ Ex. 102 at Schedule 2 (Poorker Direct).

⁶⁴⁷ *Id.*

⁶⁴⁸ *Id.*

⁶⁴⁹ Ex. 102 at Schedule 2 (Poorker Direct); Ex. 2 at § 7.3 (Application).

⁶⁵⁰ *Id.*

⁶⁵¹ *Id.*

⁶⁵² Ex. 102 at Schedule 2 (Poorker Direct); Ex. 2 at § 7.3 (Application).

⁶⁵³ *Id.*

521. As to impacts to rare and unique resources, the record identifies one protected or rare species or habitats in the Revised Cedar Mountain South 115 kV Route area. Impacts will be minimized or avoided by strategic pole placement.⁶⁵⁴

522. No party submitted post-hearing comments contesting the appropriateness of issuing a Route Permit for the Revised Cedar Mountain South 115 kV Route for the proposed 115 kV transmission line between the Franklin and Cedar Mountain Substations.

III. Route Width Flexibility

523. The PPSA directs the Commission to locate transmission lines in a manner that “minimize[s] adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring that electric energy needs are met and fulfilled in an orderly and timely fashion.”⁶⁵⁵

524. The PPSA further authorizes the Commission to meet its routing responsibility by designating a “route” with a “variable width of up to 1.25 miles.”⁶⁵⁶

525. Applicants requested originally a route width of 1,000 feet for the 345 kV transmission line, and where necessary, flexibility to increase the width up to 1.25 miles, centered on the proposed alignment for the majority of the Modified Preferred Route.⁶⁵⁷

526. In their Reply Brief, Applicants agreed to narrow the route width to 600 feet except for locations identified in Attachment 2 to Applicants’ Proposed Findings, where they request a width of 1,000 feet to 1.25 miles.⁶⁵⁸

527. The proposed route width is consistent with prior Route Permits issued by the Commission.⁶⁵⁹

528. In its February 8, 2010 letter, Mn/DOT indicated its support for designation of wide route widths along and across highway rights-of-way.⁶⁶⁰ Mn/DOT stated, “Mn/DOT respectfully requests that the selected route at these locations be as wide as the full width of the routes proposed in the CapX2020 application. This would be

⁶⁵⁴ *Id.*

⁶⁵⁵ Minn. Stat. § 216E.02, subd. 1.

⁶⁵⁶ Minn. Stat. § 216E.02, subd. 1.

⁶⁵⁷ Ex. 2 at § 2.3 (Application).

⁶⁵⁸ Applicants’ Reply Brief, at 8.

⁶⁵⁹ See *In the Matter of the Application for a HVTL Route Permit for the Badoura Transmission Line Project*, Docket No. ET-2, ET015/TL-07-76 Findings of Fact, Conclusions of Law and Order Issuing A Route Permit to Minnesota Power and Great River Energy For the Badoura Transmission Line Project And Associated Facilities (Oct. 31, 2007).

⁶⁶⁰ Mn/DOT February 8, 2010 Letter, filed 02/08/10, Doc. Id. 20102-46900-07.

sufficiently wide to enable Mn/DOT and CapX2020 to examine each pole location to determine where the [high voltage transmission line] HVTL can be placed to accommodate the needs of both parties.”⁶⁶¹

529. Applicants indicate that while a narrowed route may be workable in some areas, a wide route width will also be necessary in certain circumstances. In particular, if the Le Sueur Minnesota River crossing is approved, a wide corridor will be necessary for a crossing of the Minnesota River at Le Sueur to enable further coordination with landowners, Mn/DOT, MnDNR, USFWS, and the OES to develop a final alignment and design.⁶⁶²

530. Applicants are also requesting a wider route width for the 115 kV line between the Franklin Substation and Cedar Mountain Substation. Specifically, Applicants are requesting a route width of 4,225 feet for the Revised Cedar Mountain South 115 kV Route; and 1.25 miles for the Cedar Mountain North 115 kV Route.⁶⁶³

531. Attachment 2 to Applicants’ Proposed Findings of Fact, Conclusions and Recommendation illustrates the areas where Applicants are seeking a route width up to 1.25 miles for the Modified Preferred Route.⁶⁶⁴

532. At the request of OES, Applicants analyzed a route width of 600 feet in certain locations of the Modified Preferred Route.⁶⁶⁵

533. Applicants’ request for a route width of 1,000 feet and where necessary up to 1.25 miles for the Modified Preferred Route is consistent with the PPSA and appropriate given the circumstances of this Project to allow coordination with landowners and state and federal agencies to develop a final alignment and design.⁶⁶⁶

534. Applicants’ Amended Request for a 600 foot-wide route width, except for those areas where they continue to request a width of 1,000 feet to 1.25 miles, for the Modified Preferred Route, whether or not modified by Alternate 6P-06, also is consistent with the PPSA.⁶⁶⁷

⁶⁶¹ *Id.*

⁶⁶² See Seykora Vol. 4 at p. 31 (testifying that “a 1,000 foot wide corridor along the highway appears to be sufficient to accommodate” Mn/DOT’s general permitting concerns).

⁶⁶³ Ex. 102 at Schedule 2 (Poorker Direct).

⁶⁶⁴ Applicants are providing Attachment 2 for the purpose of demonstrating those portions of the Modified Preferred Route where Applicants are requesting a route width of up to 1.25 miles. Applicants request a route width of 600 feet for the remainder of the route.

⁶⁶⁵ Applicants February 8, 2010 Letter at p. 2, filed 02/08/10, Doc. Id.20102-46898-05.

⁶⁶⁶ Minn. Stat. § 216E.02, subd. 1.

⁶⁶⁷ *Id.*

IV. Notice

535. Minnesota statute and rules require Applicants to provide certain notice to the public and local governments before and during the Application for a Route Permit process.⁶⁶⁸

536. Applicants provided notice to the public and local governments in satisfaction of Minnesota statutory and rule requirements.

537. In August 2008, Applicants mailed a letter to officials of local governments within the Project Area in accordance with Minn. Stat. § 216E.03, subd. 3a.⁶⁶⁹

538. On December 30, 2008, Applicants mailed a notice to landowners whose property was within or adjacent to proposed or alternate routes and substation sites, the original list of citizens on the Certificate of Need mailing lists and to 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).⁶⁷⁰ All of the persons who will be affected by Applicants' Myrick Street Alternative received this notice.⁶⁷¹

539. The affected Myrick Street landowners received specific notice that their property could be affected by Applicants' Myrick Street Alternative subsequent to the filing of the proposal on December 14, 2009.⁶⁷²

540. Between December 31, 2008, and January 1, 2009, Applicants published notice of the submission of the Route Permit Application in sixteen newspapers throughout the Project Area in accordance with Minn. R. 7850.2100, subp. 4.⁶⁷³

541. On January 5, 2010, Applicants mailed a notice and a CD-ROM copy of the Application to all officials of Local Government Units within the proposed and alternate routes in accordance with Minn. Stat. § 216E.03, subd. 4 and Minn. R. 7850.2100, subp. 2(B).⁶⁷⁴

⁶⁶⁸ Minn. Stat. § 216E.03, subd. 3a; Minn. Stat. § 216E.03, subd. 4; Minn. R. 7850.2100, subp. 2; Minn. R. 7850.2100, subp. 4.

⁶⁶⁹ Ex. 2 at p. 10-9 and Appendix J (Application).

⁶⁷⁰ Ex. 8 at pp. 2-102 (Applicant Mailed and Published Notices of Application Filing).

⁶⁷¹ *Id.*

⁶⁷² Under the Minnesota Court of Appeals holding in *MinnCan, supra*, individual notice when a route segment is not identified in the initial application is not necessary to meet constitutional and PUC rule requirements.

⁶⁷³ Ex. 8 at pp. 144-63 (Applicant Mailed and Published Notices of Application Filing).

⁶⁷⁴ Ex. 8 at pp. 103-43 (Applicant Mailed and Published Notices of Application Filing).

542. On January 5, 2010, Applicants mailed a copy of the Application to seventeen public libraries within the Project Area in accordance with Minn. Stat. § 216E.03, subd. 4.⁶⁷⁵

543. In addition to notice requirements imposed by Minnesota Statutes and Minnesota Rules, the Applicants also provided notice to the public as follows during the Route Permitting Process:

- On March 17, 2009, Applicants mailed a notice of the EIS Scoping Meetings scheduled by OES to all landowners within the Project Area.
- On May 1, 2009, Applicants mailed a notice of additional routes proposed by the Applicants for inclusion in the EIS Scoping Document.⁶⁷⁶
- On October 16, 2009, Applicants mailed a combined notice of DEIS availability, public meeting, and potential effect to all landowners along the Cedar Mountain 115 kV route alternative and the USFWS/DNR Alternative.⁶⁷⁷
- On December 22, 2009, Applicants mailed all landowners on the Project notice of the rescheduled New Prague Public Hearing.⁶⁷⁸

544. Minnesota statutes and rules also require OES to provide certain notice to the public throughout the Route Permit process.⁶⁷⁹ OES provided this notice in satisfaction of Minnesota statutes and rules.

545. On March 9, 2009, and March 11, 2009, OES mailed the Notice of Public Information/Scoping Meetings in accordance with Minn. R. 7850.2300, subp. 2 and Minn. R. 7850.2500, subp. 2.⁶⁸⁰ From March 16, 2009 through March 27, 2009, OES published the Notice of Public Scoping Meetings in newspapers throughout the Project Area in accordance with Minn. R. 7850.2300, subp. 2.⁶⁸¹

⁶⁷⁵ Ex. 8 at pp. 164-66 (Applicant Mailed and Published Notices of Application Filing).

⁶⁷⁶ Ex. 137 (Applicants' Notice to Landowners and Applicants' April 30, 2009 EIS Scoping Comments).

⁶⁷⁷ Ex. 27 (Applicants' Oct. 16, 2009 Notice to Landowners).

⁶⁷⁸ Ex. 160 (Affidavit of Service New Prague Public Hearing Postcard Mailing).

⁶⁷⁹ Minn. Stat. § 216E.03, subd. 6; Minn. R. 7850.2300, subp. 2; Minn. R. 7850.2500, subp. 2; Minn. R. 7850.2500, subp. 7; Minn. R. 7850.2500, subp. 8; and Minn. R. 7850.2500, subp. 9.

⁶⁸⁰ Ex. 11 (OES Notice of EIS Scoping Meetings); Ex. 12 (OES Revised Notice of EIS Scoping Meetings).

⁶⁸¹ Ex. 37 (OES Scoping Meeting Newspaper Notices and Affidavits).

546. On July 1, 2009, and July 2, 2009, OES mailed the Notice of Environmental Impact Statement Scoping Decision in accordance with Minn. R. 7850.2500, subp. 2.⁶⁸²

547. On October 20, 2009, OES mailed the Notice of DEIS Availability and Public Information Meetings in accordance with Minn. R. 7850.2500, subp. 7 and Minn. R. 7850.2500, subp. 8.⁶⁸³

548. On October 22, 2009, OES mailed paper copies of the DEIS to public libraries in each county where the proposed project may be located in accordance with Minn. R. 7850.2500, subp. 7.⁶⁸⁴

549. On November 2, 2009, OES published the Notice of DEIS Availability and Public Information Meetings in the EQB Monitor in accordance with Minn. R. 7850.2500, subp. 7.⁶⁸⁵

550. On November 6, 2009, OES mailed the Notice of Public Hearings in accordance with Minn. Stat. § 216E.03, subd. 6.⁶⁸⁶

551. Over a period from November 18, 2009 through November 20, 2009, OES published the Notice of Public Hearings in newspapers of general circulation in each county where the proposed project may be located in accordance with Minn. Stat. § 216E.03, subd. 6.⁶⁸⁷

552. On February 8, 2010, OES published the Notice of FEIS Availability in the EQB Monitor in accordance with Minn. R. 7850.2500, subp. 9.

553. OES published the Notice of FEIS availability in at least one newspaper of general circulation in the counties where the proposed routes are located in accordance with Minn. R. 7850.2500, subp. 9.

554. In addition to notice requirements imposed by Minnesota Statutes and Rules, OES also provided notice to the public as follows during the Route Permit process:

⁶⁸² Ex. 19 (OES Notice of Scoping Decision).

⁶⁸³ Ex. 24 (OES Notice of DEIS and Public Information Meetings 10/20/09); Ex. 25 (OES Notice of DEIS and Public Information Meetings 10/20/09); Ex. 26 (OES Notice of DEIS and Public Information Meetings 10/22/09).

⁶⁸⁴ Ex. 29 (OES Certificate of Service of DEIS to Libraries).

⁶⁸⁵ Ex. 36 (OES Scoping Meeting Newspaper Notices and Affidavits).

⁶⁸⁶ Ex. 30 (OES Notice of Public Hearing 11/06/09); Ex. 31 (OES Notice of Public Hearing 11/06/09); Ex. 32 (OES Notice of Public Hearing 11/06/09); Ex. 33 (OES Notice of Public Hearing 11/09/09).

⁶⁸⁷ OES Affidavit of Public Hearing Notice Publication, filed 12/21/09, Doc. Id. 200912-45252-01.

- On September 18, 2009, OES mailed a notice to landowners affected by one or more of the route alternatives proposed for evaluation in the EIS.⁶⁸⁸
- On October 14, 2009, the OES mailed a project update to those Minnesota State Representatives and Senators where the Project may be located within their district.⁶⁸⁹
- On October 23, 2009, OES mailed paper copies of the DEIS to the Administrative Law Judge, state and federal agencies with permitting authority for the Project, and the parties to the proceeding.⁶⁹⁰
- Over a period from November 4, 2009 through November 6, 2009, OES published the Notice of DEIS Availability and Public Information Meetings in newspapers throughout the Project Area.⁶⁹¹
- On November 6, 2009, OES mailed the Notice of DEIS Availability, Public Information Meetings, and Public Hearings to landowners with property on or adjacent to the north-south connector routes.⁶⁹²
- On November 16, 2009, OES published a Notice of Public Hearing in the EQB Monitor.⁶⁹³
- On January 28, 2010, OES mailed the Notice of Availability of the FEIS to the project mailing list.⁶⁹⁴
- On January 28, 2010, OES mailed copies of the FEIS to public libraries in the areas where the proposed routes are located.⁶⁹⁵

V. Adequacy of FEIS

555. The Commission is required to determine the adequacy of the FEIS.⁶⁹⁶ An FEIS is adequate if it: (A) addresses the issues and alternatives raised in scoping to a reasonable extent considering the availability of information and the time limitations

⁶⁸⁸ Ex. 21 (OES New Landowner Notification Letter 09/18/09).

⁶⁸⁹ Ex. 22 (OES Notice to Legislators 10/14/09).

⁶⁹⁰ Ex. 28 (OES Certificate of Service for DEIS 10/28/09).

⁶⁹¹ Ex. 38 (OES DEIS Newspaper Notices and Affidavits).

⁶⁹² Ex. 34 (OES Landowner Notice of North-South Connector Routes 11/06/09).

⁶⁹³ Ex. 35 (EQB Monitor Notice of Public Hearing).

⁶⁹⁴ OES Mailed Notice of FEIS Availability, filed 01/28/10, Doc. Id. 20101-46510-01.

⁶⁹⁵ OES Affidavit of Mailing of FEIS to Libraries, filed 02/05/10, Doc. Id. 20102-46797-01.

⁶⁹⁶ Minn. R. 7850.2500, subp. 10.