MPUC Docket No. E002, E017, ET2, E015, ET10/TL-23-159
OAH Docket No. 25-2500-39723

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

IN THE MATTER OF THE APPLICATION FOR A ROUTE PERMIT FOR THE ALEXANDRIA TO BIG OAKS 345-KV TRANSMISSION PROJECT IN CENTRAL MINNESOTA

PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND RECOMMENDATIONS

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PROPOSED FINDINGS OF FACT, CONCLUSIONS OF LAW AND RECOMMENDATIONS

Public hearings were held before Administrative Law Judge (ALJ) Megan J. McKenzie on June 13, 17, and 18, 2024, in the above-captioned matter. The June 13, 2024 public hearings were held at Ally Cat, 620 US Highway 75, Ortonville, Minnesota 56278, and Benson Northside Elementary, 1800 Nevada Avenue, Benson, Minnesota 56215. The June 17, 2024 public hearings were held at the Broadway Ballroom, 115 30th Avenue East, Alexandria, Minnesota 56308, and the Monticello Community Center, 505 Walnut Street, Monticello, Minnesota 55362. The June 18, 2024 public hearing was held at the College of St. Benedict, Gorecki Hall, Room 204, 37 South College Avenue South, St. Joseph, Minnesota 56374, and virtually via conference call and WebEx. Written public comments were received until July 8, 2024.

The following appearances were made:

Lauren Steinhaeuser, Northern States Power Company d/b/a Xcel Energy, and Valerie T. Herring, Taft Stettinius & Hollister, LLP, appeared on behalf of Northern States Power Company, d/b/a Xcel Energy (Xcel Energy).

David Moeller appeared on behalf of Minnesota Power.

Brian Meloy appeared on behalf of Great River Energy.

Christina Brusven, Fredrikson & Byron, P.A., appeared on behalf of Otter Tail Power Company (Otter Tail) and Missouri River Energy Services, on behalf of Western Minnesota Municipal Power Agency (Western Minnesota).

Derek Bertsch, Missouri River Energy Services, appeared on behalf of Western Minnesota.

Amelia Vohs and Abigail Hencheck, Minnesota Center for Environmental Advocacy, appeared for the Clean Energy Organizations (CEOs).

Richard Dornfeld, Office of the Attorney General, appeared for the Minnesota Department of Commerce (Department).

Scott Ek appeared on behalf of staff for the Minnesota Public Utilities Commission (Commission).

Jenna Ness appeared on behalf of staff for the Department of Commerce, Energy Environmental Review and Analysis (DOC-EERA)

STATEMENT OF ISSUE

Have Xcel Energy, along with Great River Energy, Minnesota Power, Otter Tail, and Western Minnesota, (collectively, the Applicants) satisfied the factors set forth in Minn. Stat. § 216E.03 and Minn. R. Ch. 7850 for a Route Permit for the Alexandria to Big Oaks 345 kilovolt (kV) Transmission Project (Project or Alexandria to Big Oaks Project) in Douglas, Todd, Stearns, Sherburne, and Wright counties?

SUMMARY OF RECOMMENDATIONS

The ALJ concludes that the Applicants have satisfied the criteria in Minnesota law for a Route Permit and recommends that the Commission GRANT the Applicants a Route Permit for the Applicants' proposed route (Proposed Route) as identified in the Application for a Route Permit (Application or Route Permit Application) with the Western Crossing Option B (Double-Circuit) of the Mississippi River as identified in the Direct Testimony of Matthew Langan.

Based on the information in the Application, Environmental Assessment (EA), testimony at the public hearings, written comments, exhibits received in this proceeding, and other evidence in the record, the ALJ makes the following:

FINDINGS OF FACT

I. APPLICANTS AND OTHER PARTIES

1. Xcel Energy is a Minnesota corporation headquartered in Minneapolis.[1] Xcel Energy is a wholly owned subsidiary of Xcel Energy Inc., a utility holding company with its headquarters in Minneapolis. Northern States Power Company is a member of the Midcontinent Independent System Operator, Inc. (MISO).[2]

[1] Ex. APP-14 at 2 (Route Permit Application).

[2] Ex. APP-14 at 2 (Route Permit Application).

2. Great River Energy is a not-for-profit wholesale electric power cooperative based in Maple Grove, Minnesota and is a member MISO.[3]

3. Minnesota Power is an investor-owned public utility headquartered in Duluth, Minnesota and is a member of MISO.[4]

4. Otter Tail is an investor-owned electric utility headquartered in Fergus Falls, Minnesota, and is a member of MISO.[5]

5. Western Minnesota is a municipal corporation and political subdivision of the State of Minnesota, headquartered in Ortonville, Minnesota.[6]

6. DOC-EERA is statutorily obligated to conduct an environmental review of a Route Permit Application for a high voltage transmission line and to prepare an EA for the proposed Project under the alternative permitting process.[7]

II. PROCEDURAL HISTORY

7. On September 1, 2023, Applicants notified the Commission that they intended to submit a Route Permit Application for the Project pursuant to the alternative permitting process.[8]

8. On September 29, 2023, Applicants submitted their Route Permit Application for the Project.[9] The Project is one segment, the Eastern Segment, of the larger Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project. On September 29, 2023, the Applicants also submitted their Application for a Certificate of Need (Certificate of Need Application) for the Big Stone South—Alexandria – Big Oaks 345 kV Transmission Project.[10] A separate Route Permit application will be filed for the Big Stone South – Alexandria 345 kV Transmission Project, also known as the Western Segment, in the fourth quarter of 2024.

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[3] Ex. APP-14 at 3 (Route Permit Application).

[4] Ex. APP-14 at 3 (Route Permit Application).

[5] Ex. APP-14 at 3 (Route Permit Application).

[6] Ex. APP-14 at 3 (Route Permit Application).

[7] Minn. Stat. § 216E.04, subd. 5.

[8] Ex. APP-9 (Notice of Intent to File a Route Permit Application).

[9] Ex. APP-14 (Route Permit Application); Ex. APP-15 (Route Permit Application, Appendix H) (Trade Secret).

[10] Ex. APP-13 (Certificate of Need Application).

9. On October 4, 2023, the Commission issued a Notice of Comment Period for the Certificate of Need and Route Permit,[11] revised on October 10, 2023,[12] regarding completeness of the Certificate of Need and Route Permit Applications and other procedural matters.

10. On October 18, 2023, DOC-EERA filed comments related to Applicants' Certificate of Need and Route Permit Applications. In its comments, DOC-EERA recommended that the Commission: 1) accept the Route Permit Application as substantially complete and require Applicants to submit a formal Natural Heritage Review with Department of Natural Resources (MnDNR) concurrence and the Minnesota State Historic Preservation Office's (SHPO) formal response to Applicants' database request prior to the public hearing for the Project; 2) take no action on an advisory task force; 3) request a full ALJ report with recommendations; and 4) process the Route Permit Application jointly with the Project's Certificate of Need Application, including joint environmental review.[13] Comments were also submitted by LIUNA Minnesota and North Dakota, Carol A. Overland, the International Union of Operating Engineers Local 49 and the North Central States Regional Council of Carpenters, and the Citizens Utility Board of Minnesota.[14]

11. On October 25, 2023, Applicants submitted reply comments agreeing with DOC-EERA's recommendations in its comments.[15]

12. On November 3, 2023, the Commission issued a Notice of Commission Agenda Meeting regarding completeness of the Certificate of Need and Route Permit Applications and other procedural matters for November 16, 2023.[16]

13. On November 8, 2023, Commission staff filed Briefing Papers for the November 16, 2023 Commission meeting,[17] revised on November 15, 2023.[18]

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[11] Ex. PUC-3 (Notice of Comment Period for Certificate of Need and Route Permit).

[12] Ex. PUC-4 (Revised Notice of Comment Period for Certificate of Need and Route Permit).

[13] Ex. EERA-1 (Comments and Recommendations on Application Completeness).

[14] Comments from LiUNA! Minnesota & North Dakota (October 18, 2023) (eDocket No. 202310-199727-01); Comments from Overland Legalectric (October 18, 2023) (eDocket No. 202310-199713-01); Comments from Operating Engineers Local 49 and North Central States Regional Council of Carpenters (October 18, 2023) (eDocket No. 202310-199712-01); Comments from Citizens Utility Board of Minnesota (October 18, 2023) (eDocket No. 202310-199683-04).

[15] Ex. APP-17 (Reply Comments on Certificate of Need and Route Permit Applications Completeness and Procedural Matters).

[16] Notice of Commission Agenda Meeting (November 3, 2023) (eDocket No. 202311-200205-06).

[17] Staff Briefing Papers (November 8, 2023) (eDocket No. 202311-200361-01).

[18] Staff Revised Commission Decision Options (November 15, 2023) (eDocket No. 202311-200544-02).

Commission staff recommended that the Commission: 1) accept the Certificate of Need Application as substantially complete and direct that the Certificate of Need Application be reviewed using the informal review process; 2) accept the Route Permit Application as substantially complete and authorize review under the alternative permitting process; 3) refer this matter to an ALJ to preside over a public hearing under the Commission's Summary Proceeding process, direct that intervention as a party is not required, establish the types of filings necessary to facilitate proper record development and a schedule for submitting those filings through a prehearing conference, and prepare a report setting forth findings of fact, conclusions of law, and recommendations; 4) approve joint public meetings, joint public hearings, and combined environmental review of the Certificate of Need and Route Permit Applications; 5) request DOC-EERA to prepare an environmental assessment in lieu of an environmental report; 6) take no action on an advisory task force; 7) authorize the Executive Secretary to issue an authorization to the Applicants to initiate consultation with SHPO; and 8) require the Applicants to file a formal Natural Heritage Review with DNR concurrence and SHPO's formal response to the Applicants' database request prior to the public hearing.[19]

14. On November 21, 2023, the Commission filed a Sample High-Voltage Transmission Line Route Permit.[20] The Commission also filed a letter authorizing the Applicants to initiate consultation with SHPO.[21]

15. On November 28 and 29, 2023, the Commission and DOC-EERA issued a Notice of Public Information and Environmental Assessment Scoping Meetings, requesting responses to five questions regarding the Project: 1) Are there other ways to meet the stated need for the Project, for example, a different size project or a different type of facility? 2) What potential human and environmental impacts of the proposed Project should be considered in the EA? 3) Are there any methods to minimize, mitigate, or avoid potential impacts of the proposed Project that should be considered in the EA? 4) Are there any alternative routes or route segments that should be considered to address or mitigate potential impacts associated with the proposed Project? 5) Are there any unique characteristics of the proposed route or the Project that should be considered?[22]

[19] Staff Briefing Papers (November 8, 2023) (eDocket No. 202311-200361-01).

[20] Ex. PUC-5 (Sample High-Voltage Transmission Line Route Permit).

[21] Ex. PUC-6 (State Historic Preservation Office (SHPO) Authorization to Initiate Consultation Letter).

[22] Ex. PUC-7 (Notice of Public Information and Environmental Assessment Scoping Meetings).

16. On November 29, 2023, the Commission published a Notice in the *EQB Monitor*[23] informing that the Commission and DOC-EERA will hold public information and EA scoping meetings for the Project, including meeting times and locations.[24]

17. On December 5, 2023, the Commission issued an Order: 1) accepting the Certificate of Need Application as substantially complete and directing that the Certificate of Need Application be reviewed using the informal review process; 2) accepting the Route Permit Application as substantially complete and directing that the Route Permit Application be reviewed under the alternative permitting process; 3) authorizing joint hearings and combined environmental review of the Certificate of Need and Route Permit proceedings; 4) requesting that DOC-EERA prepare an EA in lieu of an environmental report; 5) requesting that an ALJ be assigned to act as the hearing examiner for the public hearing and that the ALJ establish the types of filings necessary to facilitate proper record development and a schedule for submitting those filings through a prehearing conference as well as prepare a full report, including findings of fact, conclusions of law, and recommendations; 6) delegating certain authority to the Executive Secretary regarding the Certificate of Need and Route Permit proceedings; and 7) requiring the Applicants to file before the public hearing a formal Natural Heritage Review with DNR concurrence and a compliance filing informing the Commission of the status of consultation with SHPO, including SHPO's formal response to the Applicants' database request.[25]

18. On December 11, 2023, Applicants filed the formal Natural Heritage Review and DNR concurrence and an update informing the Commission of the status of the Applicants' consultation with SHPO, including SHPO's formal response to the Applicants' database request.[26]

19. In-person public information and EA scoping meetings were held from December 12, 2023 to December 14, 2023 in Alexandria, Monticello, Ortonville, Benson, and St. Joseph, Minnesota.[27] A virtual public information and EA scoping meeting was held on December 14, 2023 starting at 6 p.m.[28]

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[23] EQB is the Environmental Quality Board.

[24] Ex. PUC-8 (Notice of Public Information and Environmental Assessment Scoping Meetings (EQB Monitor)).

[25] Ex. PUC-9 (Order Accepting Applications as Complete and Establishing Procedural Requirements).

[26] Ex. APP-19 (Compliance Filing-Response to Commission Dec. 5 Order); Ex. APP-20 (Compliance Filing-Response to Commission Dec. 5 Order Part 1 of 2; Compliance Filing-Response to Commission Dec. 5 Order Part 2 of 2) (Trade Secret).

[27] Ex. PUC-7 (Notice of Public Information and Environmental Assessment Scoping Meetings).

[28] Ex. PUC-7 (Notice of Public Information and Environmental Assessment Scoping Meetings).

20. On December 18, 2023, DOC-EERA filed handouts referenced in the public information and EA scoping meetings and made available on the DOC-EERA webpage regarding the Project.[29] The Commission also filed a PowerPoint presentation presented at the public information and EA scoping meetings for the Project.[30]

21. On January 8, 2024, the MnDNR filed comments on the scope of the EA.[31] In these comments, the MnDNR recommended that the EA consider certain potential environmental impacts of the Project including potential impacts on ecologically significant areas and the calcareous fen. The MnDNR also recommended that the EA evaluate three new route alternatives for the Project's crossing of the Mississippi River: (1) MnDNR Option 1; (2) MnDNR Option 2; and (3) MnDNR Option 3.[32]

22. Also on January 8, 2024, the Minnesota Department of Transportation (MnDOT) filed comments on the scope of the EA.[33] MnDOT noted that the proposed route for the Project parallels Interstate 94 (I-94) in several locations and is designated as a controlled access interstate. Given this status, MnDOT recommended that the Applicants continue to coordinate with MnDOT regarding the Project.

23. On January 9, 2024, DOC-EERA filed comments received on the scope of the EA from a Swift County Commissioner, the International Brotherhood of Electrical Workers Local Union 160, Carol A. Overland, Curtis Linz, Brian Severson, Jason Stowe, Ron and Deb Schabel, and Mead Klavetter.[34]

24. The ALJ issued a Notice of Prehearing Conference on January 16, 2024.[35]

25. On January 17, 2024, Applicants filed affidavits of mailing and publication in compliance with Minn. Stat. § 216E.03, subd. 4 and Minn. R. 7850.2100, subp. 5, confirming that the Applicants have provided all notices related to the filing of a Route Permit Application as required under the statute and rule.[36]

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[29] Ex. EERA-2 (Other–EERA Handouts - Public Info and Scoping Meetings).

[30] Other-Public Meeting PowerPoint Presentation (December 18, 2023) (eDocket No. 202312-201286-02).

[31] MnDNR Comments on Scope of EA (January 8, 2024) (eDocket No. 20241-201967-01).

[32] MnDNR Comments on Scope of EA (January 8, 2024) (eDocket No. 20241-201967-01).

[33] MnDOT Comments on Scope of EA (January 8, 2024) (eDocket No. 20241-201935-01).

[34] Ex. EERA-3 (Comments–Combined Public Comments); Ex. EERA-4 (Comments–Updated - Combined Public Comments on Scope of the EA); EERA-5 (Comments).

[35] Notice of Prehearing Conference (January 16, 2024) (eDocket No. 20241-202224-02).

[36] Ex. APP-22 (Compliance Filing-Notice Compliance for Route Permit Application).

26. On January 19, 2024, Applicants responded to the comments submitted on the scope of the EA being prepared by DOC-EERA.[37] The Applicants stated that they do not object to the MnDNR's three new route alternatives for the Project's crossing of the Mississippi River being evaluated in the EA but proposed refinements to the MnDNR's proposed alignments to ensure that these three route alternatives can feasibly be constructed, operated, and maintained.

27. On January 23, 2024, DOC-EERA submitted comments on the scoping process, including a summary of public comments received during the scoping process, and provided recommendations regarding alternative routes or modifications to be evaluated in the EA.[38] DOC-EERA recommended studying all three of the MnDNR's route alternatives for the Mississippi River crossing, with the Applicants' refinements, in the EA.

28. On January 24, 2024, MnDNR submitted additional comments on the scope of the EA.[39] The MnDNR stated that it was amenable to the Applicants' recommended refinements to the MnDNR's three route alternatives for the Mississippi River crossing.

29. On February 6, 2024, DOC-EERA filed comments received on the scope of the EA from the University of Minnesota.[40] The University of Minnesota stated concern with MnDNR's Option 1, as proposed by the MnDNR, as it would severely impact the University of Minnesota's Sand Plain Research Farm's operation and facilities. The University of Minnesota also commented that the route refinement proposed by the Applicants would be a more agreeable route alternative as it would avoid the main building site for the Sand Plain Research Farm. The University of Minnesota stated that the other four river crossing alternatives would have no impact on the Sand Plains Research Farm and would be preferred by the University of Minnesota.

30. On February 6, 2024, the Commission issued an Order adopting DOC-EERA's recommendations on the scope of the EA.[41]

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[37] Ex. APP-23 (Environmental Assessment Scoping Response Letter).

[38] Ex. EERA-6 (Other-EERA Scoping Recommendations).

[39] MnDNR Comment Letter (January 24, 2024) (eDocket No. 20241-202613-01).

[40] Ex. EERA-7 (Comments-Scoping Comment - University of Minnesota).

[41] Ex. PUC-11 (Order on Environmental Assessment Scope).

31. On February 21, 2024, DOC-EERA filed its EA Scoping Decision for the Project.[42]

32. On February 27, 2024, DOC-EERA filed its notice of EA Scoping Decision for the Project.[43]

33. On February 28, 2024, the ALJ issued a Second Prehearing Order that included the following events and deadlines:[44]

Milestone	Date
EA Issued	05/29/24
In-Person Public Hearings - Day 1	06/13/24
In-Person Public Hearings - Day 2	06/17/24
In-Person and Online Public Hearings - Day 3	06/18/24
Close of Public Hearing Comment Period	07/08/24
Applicant's Proposed Findings and Responses to Hearing Comments	07/15/24
DOC's Responses to Public Comments and Reply to Applicant Proposed Findings	07/29/24
Administrative Law Judge (ALJ) Files Report	08/29/24
Exceptions to ALJ Report	09/13/24
Commission Meeting: Certificate of Need and Route Permit (Tentative Date)	10/03/24

34. On February 29, 2024, DOC-EERA filed documentation confirming that it had provided mailed notice to those landowners who own property on or near one of the three new route alternatives included for study in the EA.[45]

[42] Ex. EERA-8 (Decision–EA Scoping Decision).

[43] Ex. EERA-9 (Notice–Notice of Scoping Decision Availability).

[44] Ex. PUC-13 (Second Prehearing Order).

[45] Ex. EERA-11 (Letter–To Landowners and Notice of EAS Decision).

35. On March 5, 2024, DOC-EERA filed documentation confirming that notice of the EA Scoping Decision was published in the *EQB Monitor* on March 5, 2024.[46]

36. On May 28, 2024, the Commission issued a Notice of Public Hearings and Availability of Environmental Assessment. This notice stated that public hearings on Applicants' Certificate of Need and Route Permit applications for the Project would be held on June 13, 2024 (in person), June 17, 2024 (in person), and June 18, 2024 (in person and virtually). The notice also stated that a written comment period would be open until July 8, 2024 at 4:30 p.m.[47] The notice stated that written comments should focus on:

- Should the Commission grant a Certificate of Need for the proposed Big Stone South— Alexandria—Big Oaks 345 kV Transmission Project?
- If granted, what additional conditions or requirements, if any, should be included in the Certificate of Need?
- Should the Commission grant a Route Permit for the proposed Alexandria to Big Oaks 345 kV Transmission Project (Eastern Segment)?
- If granted, what additional conditions or requirements, if any, should be included in the Route Permit?

37. On May 28, 2024, the Commission published a notice in the *EQB Monitor* informing that the Commission will hold public hearings on the Project.[48]

38. On May 29, 2024, DOC-EERA filed the EA for the Project.[49]

39. On May 30, 2024, Applicants filed direct testimony of Matthew Langan.[50]

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[46] Ex. EERA-12 (Notice–Notice of Environmental Assessment Scoping Decision).

[47] Ex. PUC-22 (Notice of Public Hearings and Availability of Environmental Assessment).

[48] Ex. PUC-23 (Notice of Public Hearings and Availability of Environmental Assessment in EQB Monitor).

[49] Ex. EERA-22 (Other–Environmental Assessment); Ex. EERA-14 (Other–Environmental Assessment - Appendix A); Ex. EERA-15 (Other–Environmental Assessment - Appendix B); Ex. EERA-16 (Other–Environmental Assessment - Appendix C); Ex. EERA-17 (Other–Environmental Assessment - Appendix D); Ex. EERA-18 (Other–Environmental Assessment - Appendix E); Ex. EERA-19 (Other–Environmental Assessment - Appendix F); Ex. EERA-20 (Other–Environmental Assessment - Appendix G); Ex. EERA-21 (Other–Environmental Assessment - Appendix H).

[50] Ex. APP-28 (Direct Testimony and Schedules of Matthew Langan).

40. On June 10, 2024, DOC-EERA filed an addendum to the EA.[51]

41. On June 11, 2024, the Commission filed affidavits of publication for the Notice of Public Hearings and Availability of Environmental Assessment.[52]

42. On July 8, 2024, the Applicants filed a comment letter clarifying one item in the EA, proposing minor modifications to several proposed special route permit conditions, and requesting a small expansion of the route width near the Big Oaks Substation site. Regarding the EA, the Applicants clarified that the Big Oaks Substation is not converter station to convert alternating current (AC) electricity to direct current (DC) electricity but rather is composed solely of AC facilities since the Big Stone South – Alexandria – Big Oaks 345 kV transmission circuit is an AC transmission circuit. Regarding the special Route Permit conditions, the Applicants asked that the condition related to downward, shielded lighting only apply to new lighting installed at Project substations rather than requiring the Applicants to retrofit all existing lighting. The Applicants also requested that the proposed condition requiring the filing of a Calcareous Fen Management Plan be modified to allow this plan to be filed concurrently with the plan and profile rather than 30 days prior. Regarding the expanded route width near the Big Oaks Substation Site, the Applicants asked for additional route width of approximately 40 acres north of the Big Oaks Substation site if one of the double-circuit design options is selected for the Mississippi River crossing to allow the 115 kV transmission line to reconnect to the existing 115 kV line north of the Big Oaks Substation.[53]

43. Public hearings were held before ALJ on June 13, 17, and 18, 2024. The June 13, 2024 public hearings were held at Ally Cat, 620 US Highway 75, Ortonville, Minnesota 56278, and Benson Northside Elementary, 1800 Nevada Avenue, Benson, Minnesota 56215. The June 17, 2024 public hearings were held at the Broadway Ballroom, 115 30th Avenue East, Alexandria, Minnesota 56308, and the Monticello Community Center, 505 Walnut Street, Monticello, Minnesota 55362. The June 18, 2024 public hearing was held at the College of St. Benedict, Gorecki Hall, Room 204, 37 South College Avenue South, St. Joseph, Minnesota 56374, and virtually via conference call and WebEx.

44. Public comments on the Project were accepted by the ALJ until July 8, 2024.

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[51] Ex. EERA-23 (Other–Environmental Assessment Addendum).

[52] Ex. PUC-25 (Notice of Public Hearings and Availability of Environmental Assessment in Newspapers).

[53] Applicants' Comments (July 8, 2024) (eDocket No. 20247-208401-01).

III. PROJECT DESCRIPTION

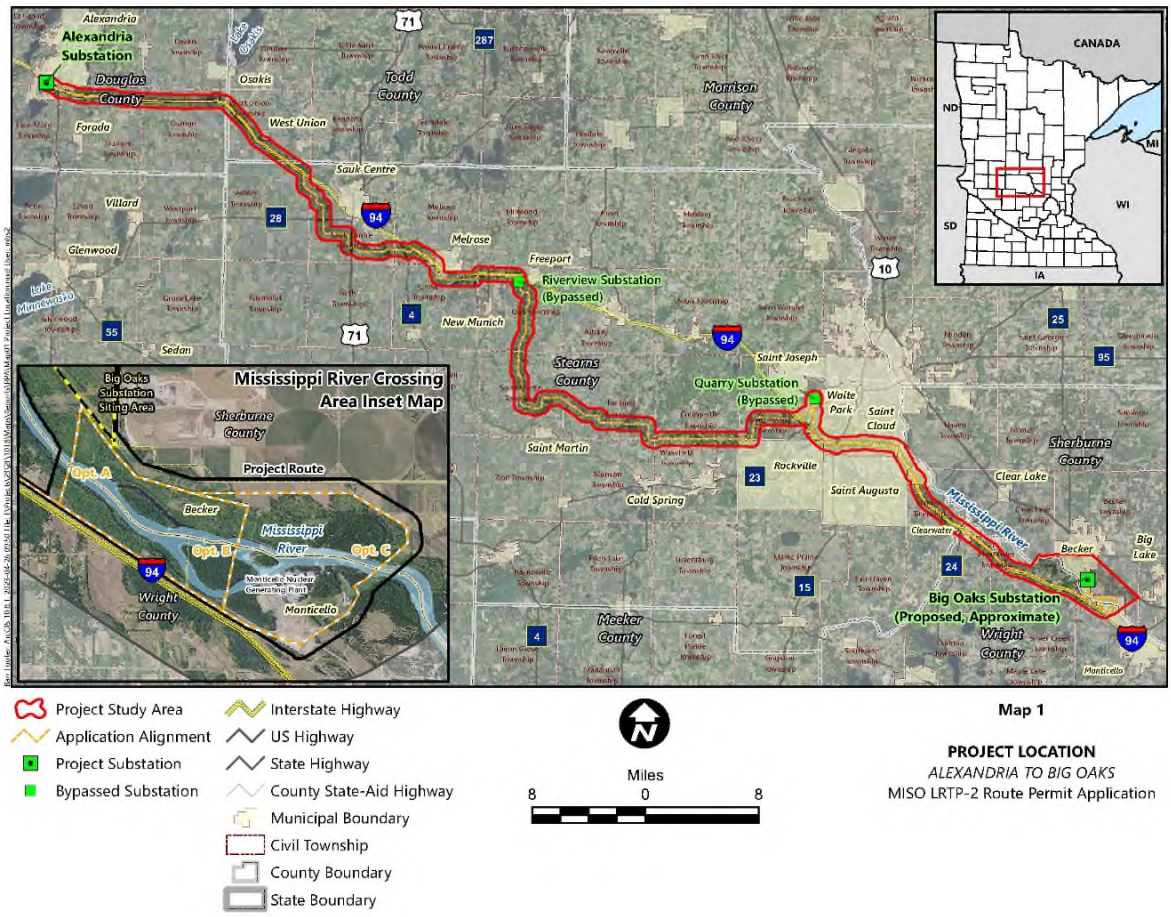
45. The Project comprises the Eastern Segment of the larger Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project.[54] The Project involves construction of an approximately 105 to 108-mile long, new 345 kV transmission line on existing infrastructure from the existing Alexandria Substation located in Alexandria, Douglas County to the new Big Oaks Substation that will be constructed on the north side of the Mississippi River in Becker, Sherburne County.[55] The locations of these substations, as well as the general Project location, is shown in Figure 1 below.[56] A separate Route Permit application for the Big Stone South – Alexandria portion, also known as the Western Segment, will be filed in the fourth quarter of 2024.

[54] A separate Route Permit application for the Big Stone South – Alexandria portion, also known as the Western Segment, will be filed in the fourth quarter of 2024.

[55] Ex. APP-14 at 2 (Route Permit Application).

[56] Ex. APP-14 at 1 (Route Permit Application).

Figure 1. Project Location



46. The Project involves placing this new 345 kV transmission circuit on existing CapX2020 transmission line structures that were previously permitted and constructed as double-circuit capable as part of the Monticello to St. Cloud 345 kV Transmission Project (E002, ET2/TL-09-246) and the Fargo to St. Cloud 345 kV Transmission Project (E002, ET2/TL-09-1056).[57]

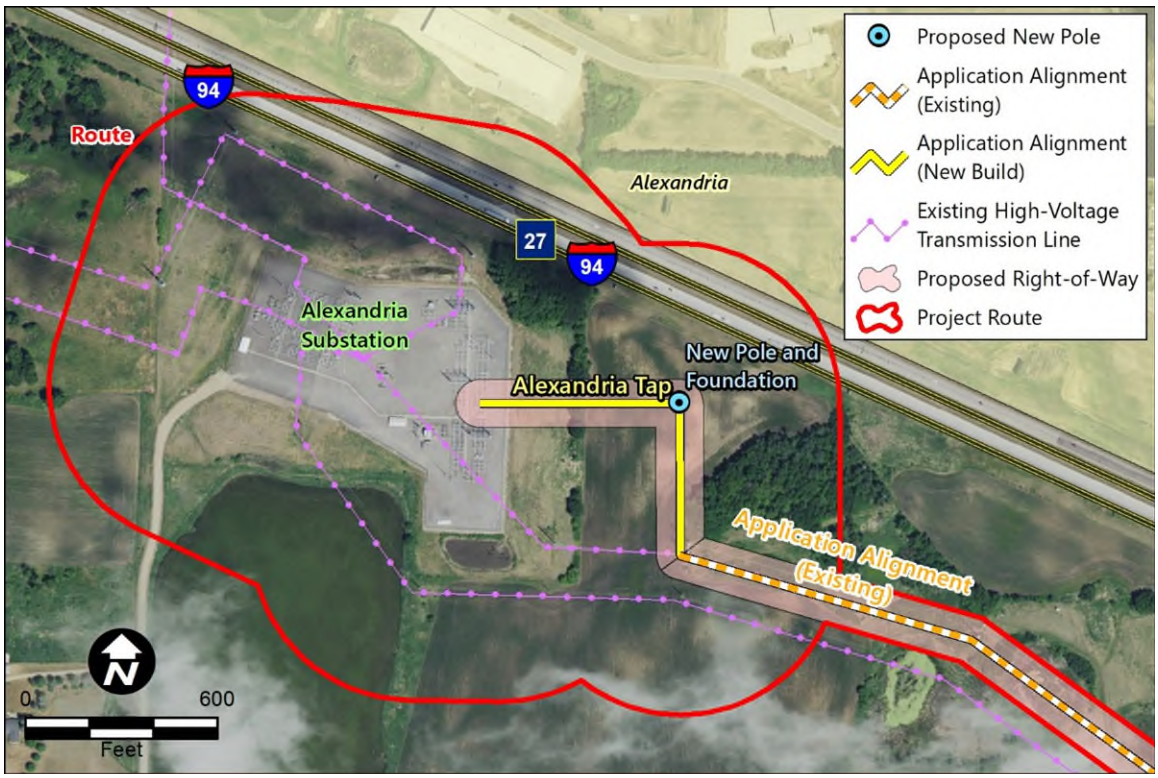
47. At four locations along the Project, the new transmission line is proposed to deviate from existing infrastructure. These locations are the Alexandria Substation Tap, Riverview Substation, Quarry Substation, and the Mississippi River. The alignments proposed by the Applicants for each of these locations along the Project are intended to minimize the overall potential impacts of the Project.[58]

[57] Ex. APP-14 at 13 (Route Permit Application).

[58] Ex. APP-14 at 13 (Route Permit Application).

48. The existing Alexandria Substation is on the southern edge of the City of Alexandria just south of Interstate 94. The Proposed Route will follow the existing right-of-way to the Alexandria Substation, at which point it would deviate from the existing right-of-way and require the installation of approximately 0.2 miles of new transmission right-of-way to "tap" into the Alexandria Substation. This anticipated alignment is shown in Figure 2 below.[59]

Figure 2. Alexandria Substation Tap

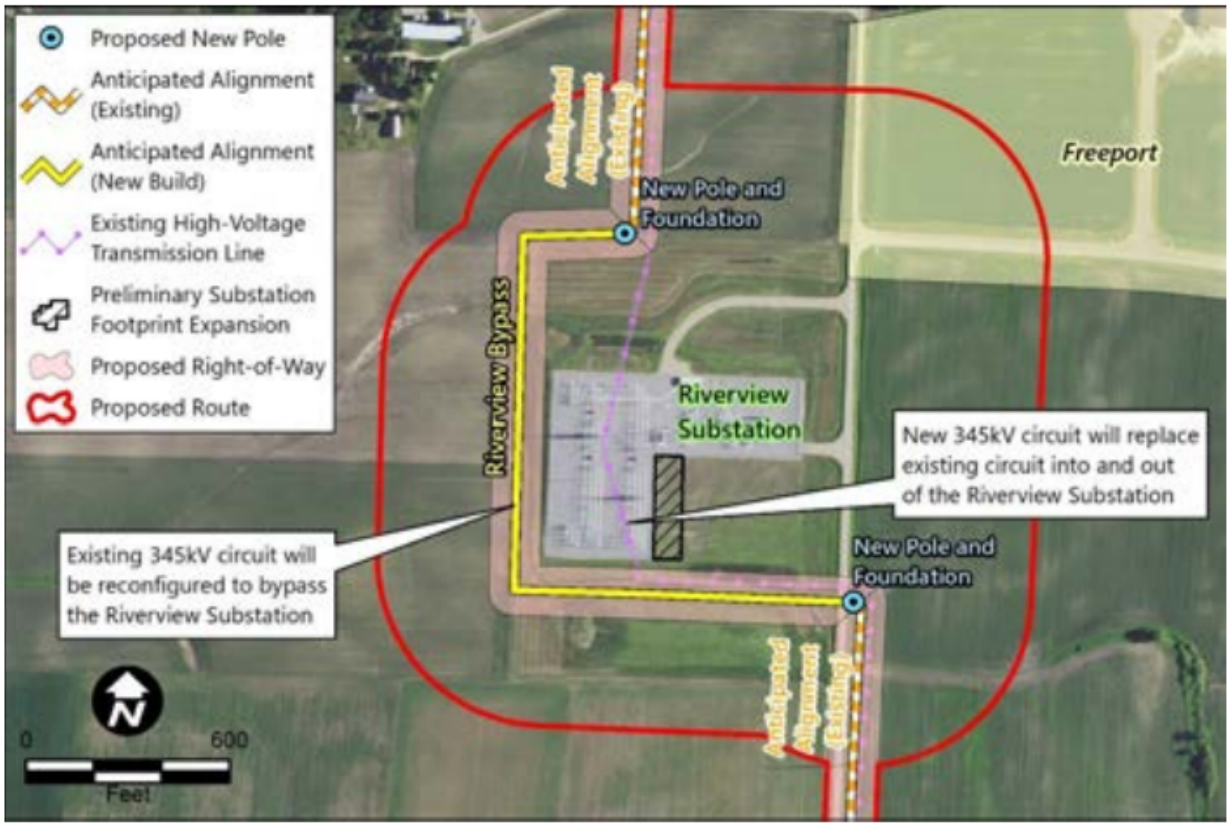


49. The existing Riverview Substation is in Stearns County, Minnesota. The Proposed Route will follow the existing right-of-way to the Riverview Substation. The existing circuit into the Riverview Substation will be reconfigured to bypass the Riverview Substation and the new circuit from the Alexandria Substation will connect to the Riverview Substation before its ultimate destination to the Big Oaks Substation. The bypass is required because if both circuits are brought into the Riverview Substation, an outage of both circuits south of the substation causes increased overloads to the underlying 69 kV system. For this reason, one circuit will bypass the substation. This bypass would result in approximately 0.5 miles of new transmission right-of-way around the Riverview Substation, which will also allow for sufficient

[59] Ex. APP-14 at 13–14 (Route Permit Application).

separation of the two 345 kV transmission lines to avoid unnecessary line crossings. This anticipated alignment is shown in Figure 3 below.[60]

Figure 3. Riverview Substation Bypass

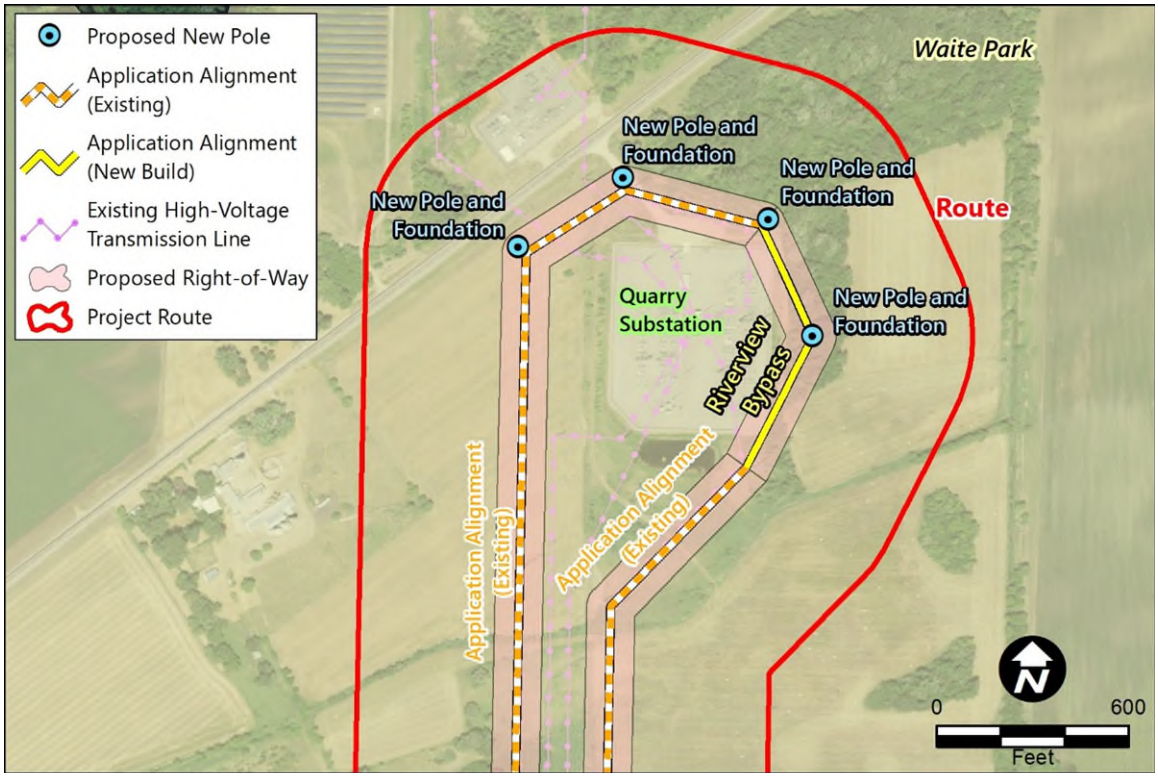


50. The Proposed Route will follow the existing infrastructure from the Riverview Substation to the Quarry Substation, where it will then bypass the Quarry Substation. The bypass is required because if both circuits are brought into the Quarry Substation, an outage of both circuits south of the substation causes increased overloads to the underlying 69 kV system. For this reason, one circuit will bypass the substation. This bypass would result in approximately 0.2 miles of new transmission right-of-way around the Quarry Substation, which will also allow for sufficient separation of the two 345 kV transmission lines to avoid unnecessary line crossings. This anticipated alignment is shown in Figure 4 below.[61]

[60] Ex. APP-14 at 14–15 (Route Permit Application).

[61] Ex. APP-14 at 15–16 (Route Permit Application).

Figure 4. Quarry Substation Bypass



51. At the Project's easternmost point, where it crosses the Mississippi River, new right-of-way will be required. A new crossing over the Mississippi River near the city of Monticello will be constructed to connect to the new Big Oaks Substation located northwest of the Monticello Nuclear Generating Plant in Becker.[62] Five route options were considered for the Mississippi River crossing. Two of these route options include a double-circuit design option. These route and design options are discussed in more detail below.[63]

IV. ROUTES EVALUATED FOR PROJECT

A. Applicants' Proposed Route

52. The Applicants conducted a route selection process beginning in late 2022 and extending through the middle of 2023. This process included consideration of statutory and rule requirements, information gathering, public outreach and input, and comparison of route alignment options around the Project substations. The main consideration during the route selection process was maximizing the use of the existing

[62] Ex. APP-14 at 16–17 (Route Permit Application).

[63] Ex. APP-28 at 3–5 (Direct Testimony and Schedules of Matthew Langan); Ex. EERA-22 at 29–32 (EA).

right-of-way between the Alexandria and Monticello substations. Because the majority of the new 345 kV transmission circuit will be placed on existing transmission line structures, the Proposed Route will follow existing transmission line right-of-way for over 95 percent of its length. As a result, the Proposed Route was already well defined for most of the Project. The focus of the route selection process centered on areas around the Big Oaks Substation Siting Area and the Mississippi River, as well as Project substation taps and bypasses.[64]

53. The Applicants met with federal, state, and local agencies as part of the outreach program for the Project. The Applicants developed a Geographic Information System (GIS) database that contained information gathered from publicly available data resources as well as input from the public and agencies. This process resulted in the identification of a single route, and two options for the Mississippi River crossing.[65]

B. Other Routes Evaluated and Rejected by the Applicants

54. Prior to submitting the Route Permit Application, the Applicants analyzed a third Mississippi River crossing option east of the Monticello Nuclear Generating Plant. The Applicants received a comment from the University of Minnesota Sand Plain Research Farm with concerns that this alignment would bisect and disrupt long-standing research at the University of Minnesota Sand Plain Research Farm. In addition, this alignment was rejected based on evaluation against the guiding factors including effects on human settlement, recreation, tourism and costs of constructing, operating, and maintaining the facility. The rejected alignment is longer than the other two options, has greater linear impacts on the Mississippi Wild & Scenic River District, and is more expensive. Additionally, challenges and costs related to the construction, operation and maintenance of the alignment associated with crossing up to seven different existing transmission lines near the Monticello Substation and Monticello Nuclear Generating Plant led the Applicants to reject this Mississippi River crossing option.[66]

C. Routes Analyzed in the Environmental Assessment

55. The EA analyzed the Proposed Route as well as route options for the Mississippi River crossing.

56. Five route options were considered for the Mississippi River crossing portion of the Project's Proposed Route. Two route options were proposed by the Applicants in the Application and three additional options were proposed by MnDNR

[64] Ex. APP-14 at 28 (Route Permit Application).

[65] Ex. APP-14 at 28 (Route Permit Application).

[66] Ex. APP-14 at 31 (Route Permit Application).

during the EA scoping process. Two of the route options for the Mississippi River crossing include a double-circuit design option.[67]

57. The two Mississippi River crossing options proposed by the Applicants in the Application were the Eastern Crossing Option and the Western Crossing Option.[68]

58. The Western Crossing Option would construct a new crossing of the Mississippi River directly south of the proposed Big Oaks Substation and would be approximately 0.7 miles long. This alignment would include new right-of-way located entirely on Xcel Energy-owned land.[69] The Applicants identified two design options for the Western Crossing option. The first option would construct the new 345 kV transmission line as a single-circuit line across the Mississippi River (Western Crossing Single-Circuit Option), while the second option would be to double-circuit the new 345 kV line with an existing 115 kV transmission line (Western Crossing Option B (Double-Circuit)).[70]

59. The Eastern Crossing Option would construct a new crossing of the Mississippi River just west of the Monticello Nuclear Generating Plant. This option would be approximately 3.4 miles and would parallel an existing 115 kV transmission line. This option would include 2.1 miles of new transmission line right-of-way and be located entirely on Xcel Energy-owned land; it would require two separate structures be placed on an island in the Mississippi River.[71]

60. The three Mississippi River crossing alternatives proposed by MnDNR during the routing process are referred to as MnDNR Option 1, MnDNR Option 2, and MnDNR Option 3.[72]

61. MnDNR Option 1 would rebuild the existing 115 kV transmission line directly west of the Monticello Plant so that these structures can accommodate a new double-circuit 345/115 kV line across the Mississippi River. This option would include 2.2 miles of new transmission line right-of-way, plus one mile of existing right-of-way that would require expansion from 75 feet in width to 150 feet in width.[73]

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[67] Ex. APP-28 at 3–5 (Direct Testimony and Schedules of Matthew Langan); Ex. EERA-22 at 29–32 (EA).

[68] Ex. APP-14 at 16–17 (Route Permit Application).

[69] Ex. APP-14 at 16 (Route Permit Application).

[70] Ex. APP-28 at 4 (Direct Testimony and Schedules of Matthew Langan).

[71] Ex. APP-14 at 16–17 (Route Permit Application).

[72] Ex. APP-28 at 5 (Direct Testimony and Schedules of Matthew Langan); Ex. EERA-22 at 30–32 (EA).

[73] Ex. APP-28 at 5 (Direct Testimony and Schedules of Matthew Langan); Ex. EERA-22 at 30–31 (EA).

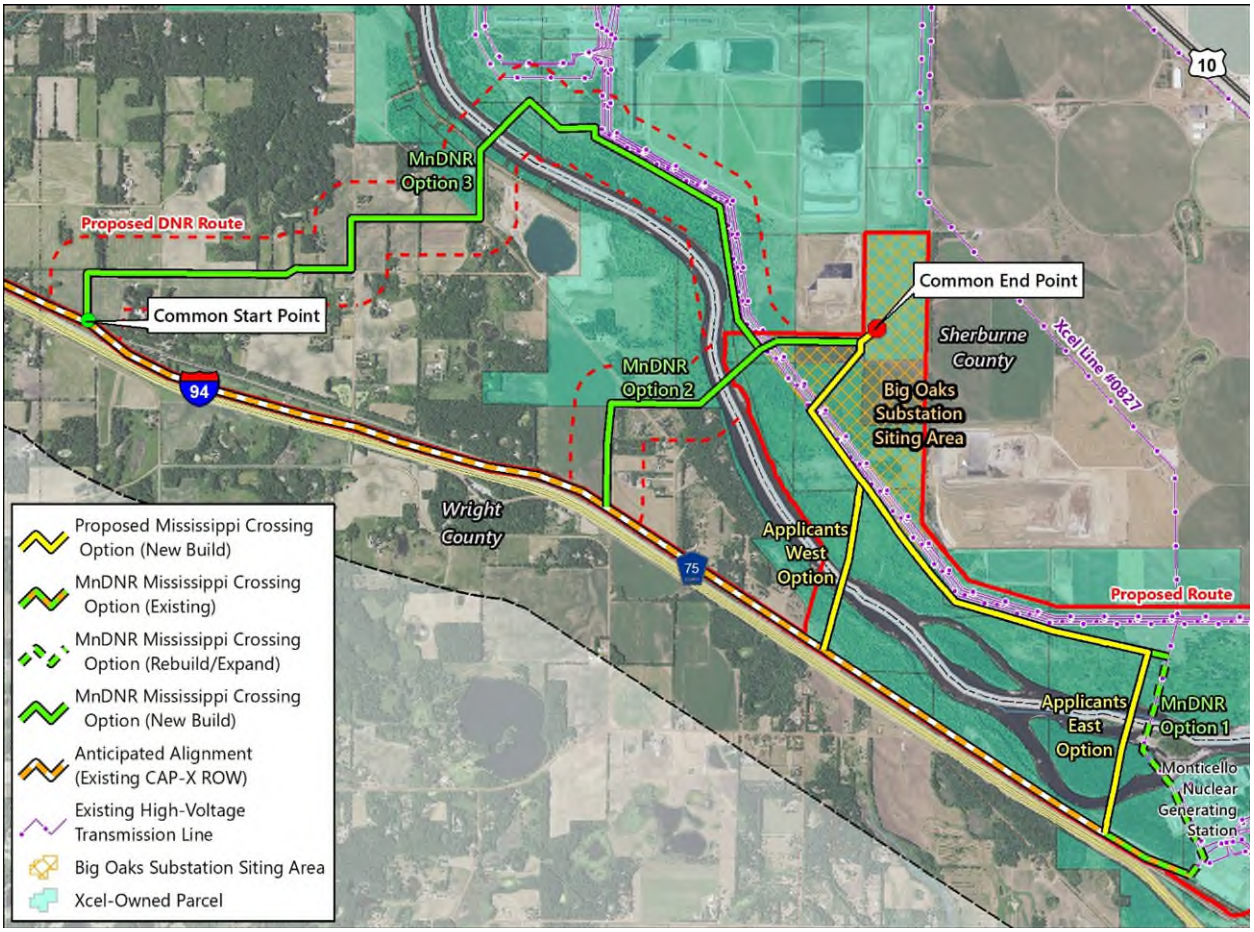
62. MnDNR Option 2 would cross the Mississippi River northwest of the existing Monticello Plant. There are two different design options for the MnDNR Option 2. The first option would construct the new 345 kV transmission line as a single-circuit line across the Mississippi River (MnDNR Option 2 (Single-Circuit)). The second option would be to double-circuit the new 345 kV line with an existing 115 kV transmission line (MnDNR Option 2B (Double-Circuit)). Both design options would include 1.6 miles of new right-of-way and cross private land.[74]

63. MnDNR Option 3 is the northernmost option and would depart from the existing 345 kV transmission line structures and travel east across private land before crossing the Mississippi River north of the proposed Big Oaks Substation. This option would include 4.4 miles of new right-of-way.[75] All five Mississippi River crossing options are shown in the Figure 5 below.

[74] Ex. APP-28 at 5 (Direct Testimony and Schedules of Matthew Langan); Ex. EERA-22 at 31 (EA).

[75] Ex. APP-28 at 5 (Direct Testimony and Schedules of Matthew Langan); Ex. EERA-22 at 31 (EA).

Figure 5. Mississippi River Crossing Options



D. Transmission Line Structures and Conductor Design

64. A high-voltage transmission line consists of three phases (conductors), each at the end of a separate insulator string, and all physically supported by structures. Conductors are metal cables consisting of multiple strands of steel and aluminum wire wound together. There are also two shield wires strung above the electrical phases to prevent damage from lightning strikes. These cables are typically less than one inch in diameter. The shield wire can also include fiber optic cable, which provides a communication path between substations for transmission line protection equipment. The majority of the Project involves adding a second 345 kV circuit to an existing single-circuit (double-circuit capable) transmission line, creating a double-circuit transmission line (six phases) and two shield wires. The new conductors will be strung primarily on existing monopole, galvanized steel, double-circuit structures.[76]

[76] Ex. APP-14 at 21–22 (Route Permit Application).

65. When these double-circuit capable structures were originally installed, they left space for this future second circuit, allowing electrical capacity to be increased without additional right-of-way requirements. For the Project, there are certain locations where new structures will be required. Approximately 67 to 78 new structures are proposed depending on the Mississippi River crossing selected for the Project. New structures are needed in select areas along the existing infrastructure to accommodate angles (i.e., where the alignment turns), highway crossings, or where the anticipated alignment deviates from the existing infrastructure (e.g., substation bypasses, new substation taps, and the Mississippi River crossing). The angle structures were originally designed as 2-pole structures, typical for double circuit 345kV lines; one full circuit and a shield wire attached to each pole. When the first circuit was installed, there was no need for the second monopole; also, without wires attached, the second monopole would have been susceptible to damage from vibration. As part of this Project, the second monopole will be installed. New structures will primarily be monopole structures; however, H-frame structures may be used at the Mississippi River crossing or if needed to accommodate longer spans. Where a second monopole structure is required next to an existing structure, it will be placed within the existing right-of-way, 40 to 60 feet from the existing structure.[77]

66. The proposed new structures will range in height from 75 feet to 160 feet tall. The typical span between structures is about 1,000 feet. A single pole structure is typically installed on a concrete foundation while an H-frame structure can either be installed on two concrete foundations or directly embedded in the ground.[78]

67. Table 1 below summarizes the key specifications of the proposed transmission structures.

[77] Ex. APP-14 at 24 (Route Permit Application); Ex. APP-14 (Appendix C to Route Permit Application).

[78] Ex. APP-14 at 25 (Route Permit Application).

Table 1. Typical Structure Design Summary[79]

Line Type	Structure Type	Structure material	Typical Right-of-Way Width (feet)	Structure Height (feet)	Foundation Diameter (feet)	Average Span Between Structure (feet)
345 kV Double-Circuit	Monopole w/ Davit Arms	Galvanized or Self-Weathering Steel	150	90-160	7-12	1,000
345 kV Single-Circuit	Monopole with Davit Arms	Galvanized or Self-Weathering steel	150	90-150	7-12	1,000
345 kV Single-Circuit	H-Frame	Self-Weathering steel	150	75-150	5-8	1,000

68. For the two Mississippi River crossing options that have double-circuit design options, i.e., the Western Crossing Option B (Double-Circuit) and MnDNR Option 2 (Double-Circuit), the Applicants are considering either a side-by-side H-frame design or a double-circuit monopole design for the structures on either side of the river.[80] For both design options, the Applicants propose to install bird flight diverters on the shield wire plane. This design will reduce the potential for avian interactions with the transmission line.[81]

69. The H-frame design would generally require wider right-of-way than the monopole design, while the monopole design is taller and has more vertical planes, which are more likely to interfere with the flight paths of various avian species. The monopole design would also likely be slightly less expensive than separating out the circuits into two H-frame structures at the Mississippi river crossing, as using double-circuit capable structures will reduce of the number of poles and foundations and require the clearing of a smaller right-of-way width.[82] The Applicants have not selected a preferred design for these two double-circuit design options at this time.[83]

70. The Applicants are currently evaluating two different conductor types for the new 345 kV transmission line which include: a double bundled 2x397.5 kcmil 26/7

[79] Ex. APP-14 at 25 (Route Permit Application).

[80] Ex. APP-28 at 17 (Direct Testimony and Schedules of Matthew Langan).

[81] Ex. APP-28 at 17 (Direct Testimony and Schedules of Matthew Langan).

[82] Ex. APP-28 at 20 (Direct Testimony and Schedules of Matthew Langan).

[83] Ex. APP-28 at 20 (Direct Testimony and Schedules of Matthew Langan).

ZTACSR "Ibis" conductor and a double bundled round (non-twisted pair) 954 kcmil 20/7 ACSS/TW "Cardinal" conductor.[84]

71. The proposed transmission line will be designed to meet or surpass relevant local and state codes including the National Electric Safety Code (NESC) and the Applicants' standards. Applicable standards will be met for construction and installation, and applicable safety procedures will be followed during design, construction, and after installation.[85]

E. Route Width and Right-of-Way

1. Route Width

72. The Applicants are requesting a route width that is wider than the right-of-way to have some flexibility to make alignment adjustments during final design to work with landowners, avoid sensitive natural resources, and to manage construction constraints as practical.[86]

73. For this Project, the Applicants propose a route width ranging from approximately 150 feet to 1,000 feet along proposed alignments, and up to 1 mile around the proposed Big Oaks Substation and Mississippi River crossing locations. For the portion of the Project where the Applicants plan to add the second 345 kV circuit to the existing infrastructure, the Applicants are requesting a route width of 150 feet centered on the right-of-way of the existing double-circuit capable structures. For the portions of the Project that will deviate from the existing right-of-way, the Applicants are requesting a route width of 1,000 feet centered on the anticipated alignment of the new 345 kV transmission line (i.e., 500 feet on either side of the line). The Applicants are also requesting a route width of 500 feet around the Alexandria, Riverview, and Quarry substations.[87]

74. The Applicants are requesting a route width of 600 feet to almost 2,000 feet extending west from the Big Oaks Substation Siting Area to the Mississippi River, creating a wider route width ranging from 0.75 to 1.0 miles in this area.[88] The Applicants also requested additional route width to the north of the Big Oaks Substation Siting Area if either double-circuit design option is selected for the Mississippi River

[84] Ex. APP-14 at 26 (Route Permit Application).

[85] Ex. APP-14 at 25 (Route Permit Application).

[86] Ex. APP-14 at 20 (Route Permit Application).

[87] Ex. APP-14 at 21 (Route Permit Application).

[88] Ex. APP-14 at 21 (Route Permit Application).

crossing.[89] The Applicants are requesting the larger route in this area due to site-specific considerations and to accommodate both the Big Oaks Substation interconnection and Mississippi River crossing.[90]

2. Right-of-Way

75. The majority of the new 345 kV transmission circuit will be strung on existing infrastructure, using existing double-circuit capable structures already present within an existing 150-foot-wide transmission line right-of-way. The Applicants will require new 150-feet right-of-way for construction of the new structures and transmission lines in areas where the Proposed Route deviates from the existing transmission line right-of-way.[91]

3. Associated Facilities

76. The associated facilities for the Project include expansion of the existing Alexandria Substation, expansion of the existing Riverview Substation, expansion of the existing Quarry substation, and construction of the new Big Oaks Substation.[92]

a. Alexandria Substation Expansion

77. The existing Alexandria Substation, owned by Western Minnesota, is on the southern edge of the City of Alexandria just south of Interstate 94. New substation equipment necessary to accommodate the proposed 345 kV transmission line will be installed at the Alexandria Substation. Equipment will include new termination structures, circuit breakers, relays and associated control equipment. An expansion of approximately 2 to 4 acres from the current fenced area will be required to accommodate the new substation equipment and will require the purchase of additional land.[93]

b. Riverview Substation Expansion

78. The existing Riverview Substation, owned by Great River Energy, is in Stearns County, Minnesota. The existing 345 kV circuit from the Alexandria Substation (to the Quarry Substation) will be reconfigured to bypass the Riverview Substation and the new 345 kV circuit from the Alexandria Substation to the Big Oaks Substation will

[89] Applicants' Comments (July 8, 2024) (eDocket No. 20247-208401-01).

[90] Ex. APP-14 at 21 (Route Permit Application).

[91] Ex. APP-14 at 26 (Route Permit Application).

[92] Ex. APP-14 at 19 (Route Permit Application).

[93] Ex. APP-14 at 19 (Route Permit Application); *see infra* Figure 2.

connect to the Riverview Substation. New substation equipment necessary to provide reactive power support will be installed at the Riverview Substation. The current fenced area of the Riverview Substation will be expanded by approximately 0.5 acres on Great River Energy-owned property to accommodate this new substation equipment.[94]

c. Quarry Substation Expansion

79. The existing Quarry Substation, owned by Xcel Energy, is located near the city of Waite Park in Stearns County, Minnesota. New substation equipment may be necessary to provide reactive power support will be installed at the Quarry Substation. The current fenced area of the Quarry Substation will be expanded by approximately 0.3 acres on Xcel Energy-owned property to accommodate this new substation equipment.[95]

d. Big Oaks Substation Construction

80. The Big Oaks Substation, which will be owned by Xcel Energy, is the eastern endpoint for the Project. The Big Oaks Substation will be a 345 kV switching station located northwest of the Monticello Nuclear Generating Plant in Becker, Minnesota. The exact location of the substation has not yet been determined, but a 250-acre portion of land owned by Xcel Energy has been identified as the location for the substation; this area is being referred to as the "Big Oaks Substation Siting Area". The Applicants are evaluating the Big Oaks Substation Siting Area to confirm adequate space for planned facilities, future transmission line interconnections, and an additional area surrounding the proposed facility to minimize immediate encroachment with other existing or new land uses.[96]

81. Big Oaks Substation will include eighteen 345 kV circuit breakers configured to accommodate the connection of up to twelve 345 kV transmission lines. Substation equipment necessary to provide reactive power support will also be installed. The Big Oaks Substation will be located on a graded and fenced area of approximately 10 acres. The following transmission lines are proposed to connect to the Big Oaks Substation:[97]

- Four existing 345 kV transmission lines originating at the Sherburne County Substation;

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[94] Ex. APP-14 at 19 (Route Permit Application); *see infra* Figure 3.

[95] Ex. APP-14 at 19 (Route Permit Application); *see infra* Figure 4.

[96] Ex. APP-14 at 18–20 (Route Permit Application); *see infra* Figure 1.

[97] Ex. APP-14 at 20 (Route Permit Application).

- The Eastern Segment of the Project: the 345 kV transmission line from Alexandria Substation to Big Oaks Substation; and

- Two 345 kV transmission lines proposed as part of LRTP3 (Benton County – Big Oaks Line #1, Benton County – Big Oaks Line #2).

82. Xcel Energy is evaluating a 250-acre property for the proposed Big Oaks Substation to confirm adequate space for planned facilities, future transmission line interconnections, and an additional area surrounding the proposed facility to minimize immediate encroachment with other existing or new land uses.[98]

F. Project Schedule

83. Construction for the Project is expected to begin in the fourth quarter of 2024 or first quarter of 2025. The Applicants anticipate Project construction to be completed in the fourth quarter of 2027. Table 2 provides a permitting and construction schedule summary, with anticipated end dates identified.[99]

Table 2. Anticipated Project Schedule

Activity	Estimated Dates
Minnesota Certificate of Need and Route Permit for Eastern Segment Issued	Second/Third Quarter 2024
Land Acquisition Begins	Third Quarter 2024
Survey and Transmission Line Design Begins	Second Quarter 2024
Other Federal, State, and Local Permits Issued	First Quarter 2025
Start Right-of-Way Clearing	Second Quarter 2025
Start Project Construction	Second Quarter 2025
Project In-Service	Fourth Quarter 2027

G. Project Costs

84. The Project will cost between $209.5 million and $238.2 million (in 2022 dollars) depending on the alignment selected.[100] The Applicants filed updated costs for the Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project as part of their reply comments in the informal Certificate of Need review process. These updated costs reflected updates to Project design that were not known at the time the applications were filed and were also escalated to the anticipated year of spend. The

[98] Ex. APP-14 at 18, 20 (Route Permit Application).

[99] Ex. APP-14 at 26 (Route Permit Application).

[100] Ex. APP-14 at 27 (Route Permit Application).

updated costs for the Eastern Segment components were between $250.7 million and $280.90 million ($ escalated to anticipated year of spend).

H. Permittee

85. Xcel Energy, Great River Energy, Minnesota Power, Otter Tail and Western Minnesota are the requested permittees for the Project.[101]

V. FEDERAL AND STATE AGENCY, LOCAL GOVERNMENT, AND PUBLIC INVOLVEMENT

86. As part of pre-Application outreach, the Applicants mailed over 100 90-day preapplication notice letters to relevant local government units (LGUs) and tribal representatives on March 31, 2023. The notice letter introduced the Project and offered an opportunity to request a consultation meeting regarding the Project.[102]

87. In April 2023, the Applicants mailed 130 postcards to LGUs, tribal representatives, local senators and representatives, and relevant state and federal agencies, providing notification of the three Project open houses. In addition to providing information on dates and locations of the open houses, notifications also included a general Project description, a Project schedule, a map of the Project Study Area, the Project's website address, and Project contact information.[103]

88. After the Route Permit Application was filed, there were multiple opportunities for tribal nations, federal, state, and local agencies and governments and potentially affected landowners to participate in the proceeding and to provide comments regarding the Project.[104]

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[101] Ex. APP-14 at 3 (Route Permit Application).

[102] Ex. APP-14 at 161 (Route Permit Application).

[103] Ex. APP-14 at 161 (Route Permit Application).

[104] Ex. APP-14 at 3 (Route Permit Application); Ex. PUC-3 (Notice of Comment Period for Certificate of Need and Route Permit); Ex. PUC-7 (Notice of Public Information and Environmental Assessment Scoping Meetings); PUC-22 (Notice of Public Hearings and Availability of Environmental Assessment).

A. Federal and State Agency, Tribal Nations, and Local Government Unit Involvement

1. Federal Agencies

a. U.S. Fish and Wildlife Service

89. The Applicants reached out via email to Shauna Marquardt of the USFWS Minnesota-Wisconsin Ecological Services Field Office in August 2023 to provide Project information and answer any questions the USFWS may have. The email also provided information on the Commission's upcoming review of the Route Permit application. No response has been received from the USFWS, and no further correspondence has occurred.[105]

2. State Agencies

a. Minnesota Department of Natural Resources

90. Prior to filing the Route Permit Application, the Applicants met with the MnDNR on June 27, 2023, to discuss the overall Project and potential impacts to sensitive resources associated with the Mississippi River crossing options. Melissa Collins, MnDNR Regional Environmental Assessment Ecologist, followed up with a letter to the Applicant on July 31, 2023.[106]

91. In its July 31, 2023 letter, the MnDNR indicated that a new calcareous fen had been identified near Saint Martin and that it was in the process of undergoing state approval. So that potential impacts to the fen could be assessed, the MnDNR provided a shapefile containing the Saint Martin 15 fen location to the Applicants on June 28, 2023.[107]

92. In its July 31, 2023 letter, the MnDNR stated that it had concerns with the Applicants' Eastern Crossing Option of the Mississippi River in that it would parallel an existing transmission line but would not share any existing right-of-way, thereby fragmenting an island in the Mississippi River. There was a discussion regarding the extensive tree clearing that would be needed for the Eastern Crossing Option and that the area may contain the state endangered butternut (*Juglans cinerea*) tree. The MnDNR

[105] Ex. APP-14 at 161–62 (Route Permit Application).

[106] Ex. APP-14 at 162 (Route Permit Application).

[107] Ex. APP-14 at 162 (Route Permit Application).

recommended a tree survey and a Minnesota Conservation Explorer Natural Heritage Review.[108]

93. During the scoping process for the EA, the MnDNR submitted additional comments regarding the Project. In its January 8, 2024 letter, the MnDNR recommended that the EA consider measures to avoid/minimize impacts to ecological significant areas. The MnDNR also stated that the EA should consider impacts to the St. Martin 15 Calcareous Fen, which is located along the Proposed Route. The MnDNR commented that new pole locations are being proposed within one mile of the fen and that the MnDNR will require further analysis to determine if location and depth of these structure foundations are likely to impact the fen hydrology such that a Calcareous Fen Management Plan is needed. The MnDNR also recommended that the EA evaluate three new route alternatives for the Project's crossing of the Mississippi River: (1) MnDNR Option 1; (2) MnDNR Option 2; and (3) MnDNR Option 3.[109]

94. On January 24, 2024, the MnDNR filed additional comments to respond to the Applicants proposed refinements to the MnDNR's Mississippi River crossing options.[110] The MnDNR stated that it had no objection to these proposed refinements.

95. On July 8, 2024, the MnDNR filed comments regarding the Mississippi River crossing for the Project. The MnDNR noted their appreciation for the Applicants response to their prior comments and for seeking to find a mutually-acceptable crossing option. The MnDNR stated their preferred crossing is MnDNR Option 2B (Double-Circuit). The MnDNR stated that they support this option because: (1) it maintains only one crossing of the Mississippi River; (2) it minimizes tree removal and vegetation clearing along the Mississippi River bluff and within the mapped Minnesota Biological Survey (MBS) Sites of Biodiversity Significance; (3) it removes an existing transmission line from the island in the Mississippi River that is mapped as a MBS Site; and (4) it relocates an existing transmission line out of the floodway. The MnDNR also stated that it supports using a horizontal design for the conductors near the Mississippi River crossing rather than a vertical design. The MnDNR stated that this design would create fewer vertical planes, thereby reducing potential migratory bird impacts.[111]

[108] Ex. APP-14 at 162 (Route Permit Application).

[109] Ex. EERA-4 (Comments - Updated - Combined Public Comments on Scope of EA).

[110] MnDNR Comments on Scope of EA (January 8, 2024) (eDocket No. 20241-201967-01).

[111] MnDNR Comments (July 8, 2024) (eDocket No. 20247-208367-01).

b. Minnesota Department of Transportation

96. The Applicants held a virtual meeting with several staff members from MnDOT on August 3, 2023. The Applicants shared a presentation of the Project with MnDOT during the meeting and answered questions.[112]

97. On August 24, 2023, Stacy Kotch Egstad, Utility Routing and Siting Coordinator for MnDOT, submitted a letter to the Applicants with a cursory review in response of information exchanged during the August 3, 2023, meeting. The letter from MnDOT indicates the following:[113]

- Existing poles, where applicable, including a second set of conductors on all crossings of I-94, were previously permitted by MnDOT.

- For any new construction associated with the Project, including new pole placement and second stringing in areas over/within the state trunk highway system, additional consultation would be required.

- Should the Applicant plan to utilize any portion of MnDOT right-of-way for temporary access and/or staging during construction activities, staff from MnDOT's Office of Environmental Stewardship would request the opportunity to review for unique environmental resources.

98. MnDOT submitted a comment on the scope of the EA on January 8, 2024.[114] In these comments, MnDOT noted that Proposed Route parallels I-94 in several locations and recommended that the Applicants continue to coordinate with MnDOT regarding any necessary MnDOT permits.

c. Minnesota State Historic Preservation Office

99. The Minnesota SHPO was contacted on March 7, 2023, to request information on known cultural resources with the Project Study Area. The Minnesota SHPO responded on March 10, 2023, with a Microsoft Access database file containing all known records of cultural resources within the Project Study Area.[115]

[112] Ex. APP-14 at 163 (Route Permit Application).

[113] Ex. APP-14 at 163 (Route Permit Application).

[114] Ex. EERA-4 (Comments - Updated - Combined Public Comments on Scope of EA).

[115] Ex. APP-14 at 163 (Route Permit Application).

100. As part of its Order accepting the Route Permit Application as complete, the Commission issued authorization for the Applicants to initiate consultation with SHPO under Minn. Stat. § 138.665.[116]

101. On October 25, 2023, the Applicants sent SHPO copy of the Commission authorization for Applicants to initiate consultation with SHPO and the Phase Ia cultural resources literature review for the Proposed Route for the Project. The Applicants also informed SHPO that they intend to complete a Phase I archaeological reconnaissance for portions of the Project where new ground disturbance is necessary for Project construction and maintenance.[117]

102. On December 8, 2023, SHPO sent a response to the Applicants regarding their review of the Phase Ia cultural resources literature review for the Proposed Route.[118] SHPO stated that the Phase Ia's conclusion that the Project will not result in any anticipated effects to the two historic/architectural properties previously determined eligible for listing in the National Register of Historic Places (NRHP) will need to be supported with adequate documentation for SHPO's review and comment.[119] SHPO also stated that four archeological sites that were unevaluated for NRHP eligibility but that appear to be within the Project footprint should be evaluated or the Applicants should describe how impacts to the sites will be avoided.[120]

3. Local Government Units

a. Sherburne County and Wright County

103. The Applicants met with zoning and planning administrators for Sherburne and Wright counties on August 30, 2023, to discuss Project details and permitting and construction timelines, with a primary focus on the options for crossing the Mississippi River. The Applicants informed Sherburne and Wright counties that it was looking for crossing options that create the least amount of impact to the Mississippi Wild & Scenic River District, and that the crossings are being proposed in locations where Xcel Energy owns the land on both sides of the Mississippi River.[121]

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[116] Ex. PUC-9 (Order Accepting Applications as Complete and Establishing Procedural Requirements); PUC-6 (SHPO Authorization to Initiate Consultation Letter).

[117] Ex. APP-19 (Compliance Filing – Response to Commission Dec. 5, 2023 Order).

[118] Ex. APP-19 (Compliance Filing – Response to Commission Dec. 5, 2023 Order).

[119] Ex. APP-19 at Attachment C (Compliance Filing – Response to Commission Dec. 5, 2023 Order).

[120] Ex. APP-19 at Attachment C (Compliance Filing – Response to Commission Dec. 5, 2023 Order).

[121] Ex. APP-14 at 163–64 (Route Permit Application).

B. Pre-Application Public Outreach

1. Mailings and Newsletters

104. In April 2023, the Applicants mailed nearly 3,000 postcards to landowners in the Project Study Area providing notification of the April 2023 open houses to landowners and agencies. As noted above, in addition to providing information on dates and locations of the open houses, notifications also included a general Project description, a Project schedule, a map of the Project Study Area, the Project's website address, and Project contact information. Open houses were also advertised in the Alexandria Echo Press, the Becker Patriot News, and the St. Cloud Times.[122]

2. Open House Meetings

105. Prior to filing the Route Permit Application, four open house meetings were held by the Applicants for the Project, two in-person and two virtual:[123]

- Alexandria Holiday Inn, Alexandria, MN - April 11, 2023
- Becker Community Center, Becker, MN - April 12, 2023
- Virtual - April 13, 2023 (1:00pm and 6:00pm)

106. A total of 12 people attended the in-person open house in Alexandria, 17 people attended the in-person open house in Becker, and 25 people logged on to attend the virtual meetings. During and after the open house meetings, formal and informal comments were collected. A total of four comments were submitted, one from each in-person open house and two submitted by email.[124]

107. Comments submitted about the Project during and after the open house meetings were centered on the following themes:[125]

- Use of existing infrastructure will lessen the disturbance to farmland.
- Request for Project construction to occur after harvest to minimize damage to fields.

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[122] Ex. APP-14 at 164 (Route Permit Application).

[123] Ex. APP-14 at 164 (Route Permit Application).

[124] Ex. APP-14 at 164–65 (Route Permit Application).

[125] Ex. APP-14 at 165 (Route Permit Application).

- Opposition of a previously reviewed but rejected Mississippi River crossing option because it bisects and would disrupt long-standing research at the University of Minnesota Sand Plain Research Farm.

C. Public Comments Received During the Route Permit Proceeding

108. The public provided comments at the public hearings held on June 13, 17, and 18, 2024. Written public comments were received until July 8, 2024.

1. Comments at Public Hearings

109. Darin Ehrenberg asked whether the need for the Project was to transmit power from Alexandria to Becker and if so if the power could be brought from the Monticello Generation Plant instead.[126]

110. George Duckwitz commented that he has bald eagles on his property and asked about the Project's potential impact on their migration. Mr. Duckwitz also asked whether potential impacts from ozone and electromagnetic fields on the reproductive health of bald eagles had been studied in the EA. Mr. Duckwitz also stated his support for interconnecting the Project with fuel cell generation that uses ethanol as a fuel source.[127]

111. David Edmonds stated concerns about the potential health impacts from the proposed transmission lines. Mr. Edmonds also questioned the need for the Project and asked whether existing coal-fired generation could be relied on instead of building new transmission lines. Mr. Edmonds asked how transmission reduces costs when he did not see a reduction in his electric bill after the transmission lines were constructed in the 1970s.[128]

112. Brett Duncan asked whether if a Certificate of Need is approved for the Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project if a Route Permit must also be approved for the Western Segment.[129]

113. Dan Martin asked if the transmission lines could be placed underground to avoid potential impacts with wildlife and birds and the cost of placing transmission

[126] Ortonville Public Hrg. Tr. at 17-18 (June 13, 2024).

[127] Benson Public Hrg. Tr. at 14-18 (June 13, 2024).

[128] Benson Public Hrg. Tr. at 18-21; 25-28 (June 13, 2024).

[129] Benson Public Hrg. Tr. at 21-24 (June 13, 2024).

lines underground. Mr. Martin also asked whether there is a cost when a transmission line shares public road right-of-way.[130]

114. Wayne Erickson asked how much of road right-of-way could be shared by the transmission lines on Western Segment of the Project.[131]

115. Nathan Westphall commented that he delivers an average of 5,000 gallons of fuel and gasoline every day and that there was only one of his customers in attendance at the hearing.[132]

116. Patricia Bouta asked where she could read about the need for the Big Stone – Alexandria – Big Oaks 345 kV Transmission Project. Ms. Bouta also asked whether cell towers are considered during the routing process for transmission lines.[133]

117. John Riggle asked about the lifespan of the transmission line and whether the materials used to construct the transmission facilities could be recycled at the end of their life. Mr. Riggle also asked about the type of materials used to construct transmission facilities.[134]

118. Jeremy Made asked whether investing in natural gas powered generation was a feasible alternative to the Big Stone – Alexandria – Big Oaks 345 kV Transmission Project and whether there is enough redundancy built into the transmission system.[135]

119. Charles Bray stated his opposition to the MnDNR crossing options of the Mississippi River and his support for the Western Crossing Option. Mr. Bray stated that MnDNR Option 2 would interfere with his neighbor's irrigation system. Mr. Bray also stated that many of the trees along the Western Crossing Option have already been removed.[136]

120. Rhonda Battis commented that she opposes MnDNR Option 3 because it impacts more residences than the other crossing options. Ms. Battis noted that the

[130] Alexandria Public Hrg. Tr. at 14-20 (June 17, 2024).

[131] Alexandria Public Hrg. Tr. at 21 (June 17, 2024).

[132] Alexandria Public Hrg. Tr. at 21-24 (June 17, 2024).

[133] Alexandria Public Hrg. Tr. at 24-29; 33-34 (June 17, 2024).

[134] Alexandria Public Hrg. Tr. at 29-31 (June 17, 2024).

[135] Alexandria Public Hrg. Tr. at 36-41 (June 17, 2024).

[136] Monticello Public Hrg. Tr. at 14-19 (June 17, 2024).

Eastern Crossing Option and the Western Crossing Option are located entirely on land owned by Xcel Energy.[137]

121. Lance Lindstrom stated his support for either the Western Crossing Option or the Eastern Crossing Option as these routes are located on land already owned by Xcel Energy.[138]

122. Nate Runke, a member of Local 49 of the International Union of Operating Engineers, commented that transmission projects like the Big Stone – Alexandria – Big Oaks 345 kV Transmission Project are very important to Local 49 as they provide jobs to its members. Mr. Runke asked the Commission to approve both the Certificate of Need for the Big Stone – Alexandria – Big Oaks 345 kV Transmission Project and the Route Permit for the Eastern Segment.[139]

123. Sherre Rinkenberger asked about the height of the structures and how the Commission decides which route to approve.[140]

124. Ron Faber, Director of Operations for the University of Minnesota Sand Plain Research Farm, stated a preference for the Western Crossing Option of the Minnesota River as it has the least impact on activities and research being conducted at the Sand Plain Research Farm.[141]

125. Dave Jungst asked about the need for the Big Stone – Alexandria – Big Oaks 345 kV Transmission Project. Mr. Jungst also asked about the future operation of the Big Stone power plant and how transmission lines facilitate the greater use of renewable generation on the system. Mr. Jungst also expressed his appreciation for the Commission providing a virtual public hearing in addition to the in-person public hearings. [142]

126. Tim Rudnicki asked if the Big Stone – Alexandria – Big Oaks 345 kV Transmission Project would allow for interconnection of more community solar gardens and other distributed energy resources.[143]

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[137] Monticello Public Hrg. Tr. at 19-20 (June 17, 2024).

[138] Monticello Public Hrg. Tr. at 20-21 (June 17, 2024).

[139] St. Joseph Public Hrg. Tr. at 14-15 (June 18, 2024).

[140] St. Joseph Public Hrg. Tr. at 15-20 (June 18, 2024).

[141] St. Joseph Public Hrg. Tr. at 21-25 (June 18, 2024).

[142] Virtual Public Hrg. Tr. at 19-29 (June 18, 2024).

[143] Virtual Public Hrg. Tr. at 28 (June 18, 2024).

2. Public Hearing Comment Period – Written Comments

127. Viola and John Riggle encouraged Applicants to work with MnDNR and Audubon Minnesota to make decisions about the Project so that birds will not be harmed.[144]

128. The Minnesota Pollution Control Agency (MPCA) filed a comment noting that the MPCA has reviewed of the EA and has no comments at this time.[145]

129. Jeanette Bray noted her agreement with the Applicants that the Western Crossing Option B (Double-Circuit) is the best option for the Mississippi River crossing because no additional homeowners would be impacted and it is located on property owned by Xcel Energy. Ms. Bray also stated that she objects to MnDNR Option 2B (Double-Circuit) due to the impacts to existing landowners in the area. She noted that MnDNR Option 2B would require 6.9 acres of new easements across private property and could result in removal of mature oak trees on her property.[146]

130. Ron Faber, Director of Operations for the University of Minnesota Sand Plain Research Farm, filed a written comment in support of the Western Crossing Option B (Double-Circuit) for the Mississippi River crossing. Mr. Faber stated that this crossing option is preferred because it eliminates the possibility of having transmission lines to the south of operations building and removes the existing 115 kV transmission to the east of the operations building. He notes that removal of this 115 kV line would "greatly increase the functionality of our property and allow for the installation of a proposed public outreach/demonstration space." Mr. Faber also stated opposition to the Eastern Crossing Option and MnDNR Option 1 due to their proximity to the operations building and activities.[147]

131. Clean Energy Economy Minnesota (CEEM) submitted written comments in support of the Project. CEEM urged the Commission to grant a Certificate of Need for the Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project and a Route Permit for the Alexandria – Big Oaks 345 kV Transmission Project. CEEM stated that "[t]he Alexandria to Big Oaks project colocation negates the need for a new route, holds the potential to address congestion, ensure greater reliability to the system, open access to renewables, and reduce greenhouse gas emissions."[148] CEEM did

[144] Public Comment from Viola and John Ridge (June 18, 2024) (eDocket No. 20246-207778-01).

[145] Public Comment from the Minnesota Pollution Control Agency (June 25, 2024) (eDocket No. 20246-208010-01).

[146] Public Comment from Jeanette Bray (July 3, 2024) (eDocket No. 20247-208297-01).

[147] Public Comment from Ron Farber (July 3, 2024) (eDocket No. 20247-208296-01).

[148] Public Comment from Clean Energy Economy Minnesota (July 8, 2024) (eDocket No. 20247-208395-01 at 4).

request that the Applicants and the Commission "ensure that the Alexandria to Big Oaks project explicitly provides access to and transports larger amounts of electricity generated from solar and wind projects."[149]

132. Arlyce and Bruce Abrahamson stated that although they do not feel the Project is necessary that they support either the Western Crossing Option or the Eastern Crossing Option rather than the MnDNR crossings for the Mississippi River. The Abrahmsons also stated that if a MnDNR river crossing is selected that they prefer MnDNR Option 1 or MnDNR Option 2 and are opposed to MnDNR Option 3 due to its impacts on natural areas and longer length.[150]

133. Wilbur and Mary Hamann commented that they do not believe the Project is needed and that it will not benefit farmers or add any value to the land. The Hamanns also expressed concern that construction of the Project could damage drainage tiles on their land due to the use of heavy equipment.[151]

134. Joshua Battis filed a written comment opposing MnDNR Option 3 for the Mississippi River crossing. Mr. Battis stated that MnDNR Option 3 would impact more homes and is more costly as compared to the other crossing options. Mr. Battis stated his support for either the Western Crossing Option or the Eastern Crossing Option.[152]

135. David Bray stated his support for the Western Crossing Option of the Mississippi River. He noted that the Western Crossing Option only crosses land owned by Xcel Energy. He also stated that the "DNR is concerned about disturbing the land but it was already heavily damaged when most of the mature trees were cut down during the Savana Restoration Project." Mr. Bray commented that he opposes MnDNR Option 3 due to the number of residences potentially impacted. Mr. Bray also stated his opposition to MnDNR Option 2 because it would interfere with a large pivot irrigation system and would diminish the property values of homes on Meridian and Appleton Avenues.[153]

136. The Minnesota Conservative Energy Forum (MnCEF) commented in support of granting a Certificate of Need for the Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project and a Route Permit for the Alexandria – Big Oaks

[149] Public Comment from Clean Energy Economy Minnesota (July 8, 2024 (eDocket No. 20247-208395-01 at 3).

[150] Public Comment from Arlyce and Bruce Abrahamson (July 8, 2024) (eDocket No. 20247-208358-01).

[151] Public Comment from Wilbur and Mary Hamann (July 9, 2024) (eDocket No. 20247-208434-02).

[152] Public Comment from Joshua Battis (July 9 2024) (eDocket No. 20247-208432-02).

[153] Public Comment from David Bray (July 9, 2024) (eDocket No. 20247-208431-01).

345 kV Transmission Project. MnCEF noted that the Project will play a crucial role in facilitating the clean energy transition by alleviating congestion and improving power delivery efficiency across the region.[154]

VI. FACTORS FOR A ROUTE PERMIT

137. The Power Plant Siting Act (PPSA), Minn. Stat. Ch. 216E, 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."[155]

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

[154] Public Comment from Minnesota Conservative Energy Forum (July 10, 2024) (eDocket No. 20247-208456-02).

[155] Minn. Stat. § 216E.03, subd. 7.

(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 subdivisions 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 the 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;

(12) when appropriate, consideration of problems raised by other state and federal agencies and local entities;

(13) evaluation of the benefits of the proposed facility with respect to (i) the protection and enhancement of environmental quality, and (ii) the reliability of state and regional energy supplies;

(14) evaluation of the proposed facility's impact on socioeconomic factors; and

(15) evaluation of the proposed facility's employment and economic impacts in the vicinity of the facility site and throughout Minnesota, including the quantity and quality of construction and permanent jobs and their compensation levels. The commission must consider a facility's local employment and economic impacts, and may reject or place conditions on a site or route permit based on the local employment and economic impacts.[156]

139. Also, Minn. Stat. § 216E.03, subd. 7(e), provides that the Commission "must make specific findings that it has considered locating a route for a high-voltage transmission line on an existing high-voltage transmission route and the use of parallel

[156] Minn. Stat. § 216E.03, subd. 7.

existing highway right-of-way and, to the extent those are not used for the route, the [C]ommission must state the reasons."

140. In addition to the PPSA, the Commission and the ALJ are governed by Minn. R. 7850.4100, which mandates consideration of the following factors 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;
>
> 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;
>
> 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.

141. There is sufficient evidence in the record for the ALJ to assess the Proposed Route using the criteria and factors set out above.

VII. APPLICATION OF ROUTING FACTORS TO PROPOSED ROUTE

A. Effects on Human Settlement

142. Minnesota Rule 7850.4100(A) requires consideration of the Proposed Route's effects on human settlement, including displacement of residences and businesses, noise created during construction and by operation of the Project, and impacts to aesthetics, cultural values, recreation, and public services.

1. Displacement

143. NESC and Applicants' standards require certain clearances between transmission line facilities and buildings for safe operation of a transmission line. In areas where the Project will require new right-of-way, the Applicants will acquire additional right-of-way that is sufficient to maintain these clearances. Displacement can occur when an existing structure is within the right-of-way for a new transmission facility.[157]

144. Applicants completed a desktop review to identify any residences located within 500 feet of the anticipated alignment. The review identified 154 residences within 500 feet of the anticipated alignment. There are no residences located within 500 feet of the new segments of right-of-way for the proposed 345 kV transmission line.[158]

145. There is one residence located approximately 75 feet from the existing 345 kV transmission line in St. Cloud, Minnesota. This residence would not be displaced from stringing the additional circuit at this location.[159]

146. There are no residences within 500 feet of the Alexandria Substation Tap. The nearest residence within the Proposed Route is 0.9 miles southeast of the Alexandria Substation.[160]

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[157] Ex. APP-14 at 54 (Route Permit Application).

[158] Ex. APP-14 at 54 (Route Permit Application).

[159] Ex. APP-14 at 54 (Route Permit Application).

[160] Ex. APP-14 at 55 (Route Permit Application).

147. There are no residences within 500 feet of the Riverview Substation Bypass. The nearest residence within the Proposed Route is 2 miles south of the Riverview Substation Bypass.[161]

148. There are no residences within 500 feet of the Quarry Substation Bypass. The nearest residence within the Proposed Route is 0.9 miles southwest of the Quarry Substation Bypass.[162]

149. The Big Oaks Substation will be located on land owned primarily by Xcel Energy. There are no residences within 500 feet of the substation and siting the final location of the substation will not result in any displacement of residences.[163]

150. With regard to the Mississippi River crossing, there are no residences within 500 feet of the Western Option, Eastern Option, or MnDNR Option 1.[164] There are 2 residences within 300-500 feet of MnDNR Option 2.[165] There is 1 residence within 75-300 feet and 6 residences within 300-500 feet of MnDNR Option 3.[166]

151. No residential displacement is anticipated as a result of the Project.[167]

2. Noise

152. Potential noise impacts from the Project are associated with both construction and operation. The primary noise receptors within the local vicinity are residences and farmsteads.[168]

153. The MPCA has established standards for the regulation of noise levels. The land use activities associated with residential, commercial and industrial land have been grouped together into Noise Area Classifications (NACs).[169] Residences, which are typically considered sensitive to noise, are classified as NAC-1.[170] The Applicants

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[161] Ex. APP-14 at 55 (Route Permit Application).

[162] Ex. APP-14 at 55 (Route Permit Application).

[163] Ex. APP-14 at 55 (Route Permit Application).

[164] Ex. APP-28 at 30 (Direct Testimony and Schedules of Matthew Langan).

[165] Ex. APP-28 at 30 (Direct Testimony and Schedules of Matthew Langan).

[166] Ex. APP-28 at 30 (Direct Testimony and Schedules of Matthew Langan).

[167] Ex. APP-14 at 57 (Route Permit Application).

[168] Ex. EERA-22 at 60 (EA).

[169] Minn. R. 7030.0050.

[170] Ex. APP-14 at 72 (Route Permit Application).

anticipate that NAC-1 is likely to apply to the large majority of the Project. NAC-1 has a daytime L50 limit of 60 dBA and a nighttime L50 limit of 50 dBA.[171]

154. Construction activities will generate noise that is short-term and intermittent. Construction activities will be limited to daytime hours. As such, the Project will have temporary and localized noise impacts during construction, but overall will not have significant noise effects for the surrounding area. Residents living in close proximity would be temporarily affected by noise generated from construction activities. Construction activities are estimated to last 18 to 20 months however noise would dissipate at a single location as construction crews progress along the route for the Project.[172]

155. Transmission conductors can produce noise under certain conditions. The level of noise depends on conductor conditions, voltage level, and weather conditions.[173] Noise generated by a double-circuit 345 kV transmission line would not exceed 45 dBA at the centerline of the transmission line.[174] Therefore, it is not anticipated that the Project would exceed MPCA noise limits.[175]

156. Substations may also contribute noise. Typical substation design is such that noise produced by these sources does not reach beyond the substation property, in the rare cases that space is limited such that it cannot be accomplished, noise reduction designs are applied such as sound walls placed around transformers, or shelter belts planted around substations to reduce the distance the sound can travel. Like the transmission lines themselves, the Project substations will comply with the MPCA noise standards as set forth in Minn. R. 7030.0040.[176]

157. Noise created by construction of the Project are anticipated to be minimal. Potential noise impacts from construction are anticipated to be intermittent, short-term, and localized. Since noises related to the operation of the Project will not exceed the most stringent MPCA noise standards of NAC-1, potential impacts are expected to be minimal.[177]

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[171] Minn. R. 7030.0040.

[172] Ex. APP-14 at 71 (Route Permit Application); Ex. EERA-22 at 60–61 (EA).

[173] Ex. APP-14 at 71–72 (Route Permit Application).

[174] Ex. APP-14 at 73 (Route Permit Application).

[175] Ex. APP-14 at 73 (Route Permit Application); Ex. EERA-22 at 64 (EA).

[176] Ex. APP-14 at 74 (Route Permit Application); Ex. EERA-22 at 65 (EA).

[177] Ex. EERA-22 at 58 (EA).

3. Aesthetics

158. Aesthetics refers to the visual quality of an area as perceived by the viewer and forms the impression a viewer has of an area. Aesthetics are unique to the human subject or population, meaning their relative value, held individually or communally, depends upon several factors that may include perception, and the strength of values, history, and memory, held either individually or communally resulting in potentially varied and unique responses. Impacts to aesthetic changes are expected to be equally diverse, depending upon individual perception of impact, degree of aesthetic change, strength of commitment to the unimpacted aesthetic, and acceptance of the proposed project. This means that how an individual values aesthetics and reacts to their change, especially perceived impacts to a viewshed, can vary greatly.[178]

159. The Project will introduce slightly over 10 acres of new and expanded substation facilities along with up to 108 miles of new high-voltage transmission lines to connect those facilities together and the existing electrical grid on the landscape. These features will create aesthetic impacts.[179]

160. Because the existing transmission line right-of-way portion of the Project consists largely of stringing a second circuit onto existing infrastructure, aesthetic changes related to this portion of the Proposed Route will be minimal. Visual alterations to the landscape by the construction of a new transmission line occurred when the existing infrastructure was installed. Stringing a new line onto existing infrastructure will result in a very minimal change to the landscape.[180]

161. The Alexandria Substation Tap represents a deviation from the existing infrastructure for approximately 0.2 miles, where new transmission line would be installed north of existing infrastructure to connect to the Alexandria Substation. The substation's current fenced area would also be expanded to accommodate new substation equipment. The landscape surrounding the Proposed Route in this area is generally industrial and adjacent to I-94. In this setting, the Alexandria Substation Tap and expansion represents a minimal visual disruption that is not anticipated to impact the existing viewshed.[181]

162. The Riverview Substation Bypass represents a deviation from the existing infrastructure for approximately 0.5 miles, where the new circuit will connect to the

[178] Ex. EERA-22 at 44 (EA).

[179] Ex. EERA-22 at 45 (EA).

[180] Ex. APP-14 at 76 (Route Permit Application).

[181] Ex. APP-14 at 76 (Route Permit Application).

Riverview Substation and the existing circuit will be reconfigured to bypass the Riverview Substation; the bypass would be installed west and south of the existing infrastructure around the existing Riverview Substation. The landscape surrounding the Proposed Route in this area is generally rural, with the exception of the existing Riverview Substation. Visual disruptions in this predominantly rural landscape are mitigated by siting the proposed alignment along existing roadway corridors. Additionally, the Proposed Route's proximity to the existing Riverview Substation, which is already a visual disruption to the generally rural nature of this area, minimizes the impact that might be caused by construction of the Riverview Substation Bypass.[182]

163. The Quarry Substation Bypass represents a deviation from the existing infrastructure for approximately 0.2 miles, where new transmission line would be installed east of the existing infrastructure for the Project to bypass the existing Quarry Substation. The landscape surrounding the Proposed Route in this area is generally rural, except for the existing Riverview Substation. The proposed alignment would result in the clearing of an existing tree line, thereby altering the landscape in this area from one that is forested and partially shields views of the Quarry Substation to a landscape that is more open and industrial. However, the presence of the Quarry Substation already represents a visual disruption to the rural setting, and further changes to the landscape in this area will not result in a large change to the viewshed.[183]

164. The Big Oaks Substation would consist of a new, 10-acre substation constructed within the Big Oaks Substation Siting Area. The landscape surrounding the Big Oaks Substation Siting Area is generally agricultural but is also located adjacent to a landfill facility to the east and a power plant to the north. Any visual disruption caused by construction of a new substation in a predominantly rural landscape is minimized by the presence of the existing landfill facility and the power plant.[184] In addition, existing vegetation and topography provide natural screening such that the Big Oaks Substation will not be visible from the Mississippi River (i.e., recreational users of the Mississippi River water trail would not be able to see the Big Oaks Substation from the river).[185] However, for any residences within the viewshed of the new Big Oaks Substation, the impact would be more significant.[186]

165. A new crossing over the Mississippi River will be constructed to connect the Proposed Route to the new Big Oaks Substation. The Western Option, MnDNR

[182] Ex. APP-14 at 76 (Route Permit Application).

[183] Ex. APP-14 at 76–77 (Route Permit Application).

[184] Ex. APP-14 at 77 (Route Permit Application).

[185] Ex. APP-14 at 78 (Route Permit Application).

[186] Ex. APP-14 at 77 (Route Permit Application).

Option 2, and MnDNR Option 3 would place a new transmission line in an otherwise undisturbed river setting.[187] However, the double-circuit design option for the Western Option and the MnDNR Option 2 would remove an existing 115 kV transmission line crossing and consolidate it with the new 345 kV transmission line.[188] The Eastern Option and DNR Alternative 1 minimize impacts by constructing the new line adjacent to existing transmission line infrastructure, however they would require the most new structures and the longest lengths of new transmission line.[189] The Eastern Option and MnDNR Option 1 would be completely within utility-owned property.[190] In contrast, MnDNR Alternative 3 has the greatest aesthetic impact because it crosses the most private properties, requires the most acres of new easements, is nearest to residences, has the most length within the Wild & Scenic River District, and would also create a new visual impact over the Mississippi River.[191]

166. Because the majority of the Proposed Route consists of stringing a new circuit along an existing transmission corridor, aesthetic impacts are anticipated to be minimal. Potential impacts to aesthetics along the Proposed Route will occur in areas where new structures are proposed, where the Proposed Route will deviate from the existing infrastructure, and where the new Big Oaks Substation will be constructed.[192]

167. On the whole, potential aesthetic impacts are anticipated to be minimal for all routing options.[193]

4. Cultural Values

168. Cultural values consist of shared community attitudes expressed within a given area and provide a framework for community unity. The Proposed Route is generally rural in nature but crosses through several urban/industrial areas including Alexandria, St. Cloud, Becker, and Monticello. Rural portions of the Proposed Route have an agriculture-based economy. Corn and soybean crop production, livestock operations, and associated industries drive the local agricultural economy. Farming and protecting agriculture, the land, and the ability to continue to farm and support

[187] Ex. EERA-22 at 47 (EA).

[188] Ex. APP-28 at 9 and 11 (Direct Testimony and Schedules of Matthew Langan).

[189] Ex. EERA-22 at 47 (EA).

[190] Ex. EERA-22 at 47 (EA).

[191] Ex. EERA-22 at 47 (EA).

[192] Ex. APP-14 at 77–78 (Route Permit Application).

[193] Ex. APP-14 at 77 (Route Permit Application); Ex. EERA-22 at 44 (EA).

livelihoods through agriculture are strong values in the area surrounding the Proposed Route.[194]

169. Manufacturing, industrial, and service industries (restaurants, hotels, repair shops, power plants, landfill, convenience, and retail stores) are concentrated in the urban areas crossed by the Proposed Route, with St. Cloud representing the largest city along the Proposed Route. St. Cloud has been recognized for its livability, culture and heritage management, and community participation and empowerment. St. Cloud is also home to St. Cloud State University, Minnesota's third-largest public university.[195]

170. Numerous natural amenities, including lakes, rivers, and WMAs attract local and regional recreational users along the Proposed Route. These areas are also important to the identity of the area and provide opportunities for various recreational activities such as fishing, hunting, and snowmobiling which are also part of the identity of area residents.[196]

171. Overall, the Project's potential impacts to cultural values are anticipated to be minimal.[197] Construction, operation, and maintenance of the Project is not expected to conflict with the cultural values along the Proposed Route. The area is generally rural in nature with an agriculture-based economy and is anticipated to remain so after construction.[198]

5. Recreation

172. Recreational opportunities in and near the Proposed Route include outdoor recreational trails, use of public lands and parks, snowmobiling, hunting and fishing, boating, camping and participation in local area events associated with these amenities. There are several types of formally managed and regulated lands near the Proposed Route such as WMAs, WPAs, state water trails, and municipal and county parks and trails. Each of these land types offer many recreational opportunities that attract residents and tourists. There are additional recreational opportunities within the municipalities in and adjacent to the Proposed Route such as museums and festivals.[199]

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[194] Ex. APP-14 at 86–87 (Route Permit Application); Ex. EERA-22 at 50 (EA).

[195] Ex. APP-14 at 87 (Route Permit Application); Ex. EERA-22 at 50–51 (EA).

[196] Ex. APP-14 at 87 (Route Permit Application); Ex. EERA-22 at 51 (EA).

[197] Ex. EERA-22 at 50 (EA).

[198] Ex. APP-14 at 87 (Route Permit Application); Ex. EERA-22 at 51 (EA).

[199] Ex. APP-14 at 87 (Route Permit Application); Ex. EERA-22 at 69 (EA).

173. WPAs are lands that were established to conserve migratory bird habitat. The Proposed Route crosses two Douglas County WPA locations and two Stearns County WPA locations. Both WPAs are located in the west end of the Project, west of St. Cloud. WPAs are available for hunting during state-designated hunting seasons.[200]

174. WMAs are part of Minnesota's outdoor recreation system and are established to protect those lands and waters that have a high potential for wildlife production, public hunting, trapping, fishing, and other compatible recreational uses. The Proposed Route crosses one WMA: the Sauk River WMA.[201]

175. The MnDNR manages 35 state water trails covering over 4,500 miles in Minnesota. These trails provide opportunities for canoeing, kayaking, paddleboarding, and camping. The Proposed Route crosses the Sauk River water trail in four locations. Additionally, each of the proposed Mississippi River crossing options would cross the Mississippi water trail one time.[202]

176. Snowmobile trails are mapped by MnDNR and managed locally by each county and their respective snowmobile clubs. There are three snowmobile trails in the Proposed Route: one each in Douglas, Stearns, and Wright Counties. At the western end of the Project, the Douglas Area trails parallel and cross portions of the Proposed Route. The Stearns County Snowmobile Trails parallel and cross portions of the Proposed Route between Alexandria and St. Cloud. At the eastern end of the Project, the Wright County Trails parallel and cross the Proposed Route in proximity to the Mississippi River.[203]

177. The Proposed Route crosses two Stearns County parks: a small corner of Warner Lake County Park, just west of Clearwater, Minnesota as well as Lake Wobegon Trail near its inception northwest of Sauk Centre, Minnesota.[204]

178. There are no MnDNR Scientific and Natural Areas, Aquatic Management Areas, state parks, municipal parks, or golf courses in or crossed by the Proposed Route.[205] MnDNR Forestry acquires and manages parcels of Minnesota's forests and trees for both ecological and economic benefit, rather than DNR State Forests, which are managed for public recreation. There are no federal parks, forests, refuges, or county

[200] Ex. APP-14 at 88 (Route Permit Application); Ex. EERA-22 at 69 (EA).

[201] Ex. APP-14 at 88 (Route Permit Application); Ex. EERA-22 at 69 (EA).

[202] Ex. APP-14 at 88 (Route Permit Application); Ex. EERA-22 at 69 (EA).

[203] Ex. APP-14 at 88 (Route Permit Application); Ex. EERA-22 at 69–70 (EA).

[204] Ex. APP-14 at 88 (Route Permit Application); Ex. EERA-22 at 70 (EA).

[205] Ex. APP-14 at 88 (Route Permit Application); Ex. EERA-22 at 70 (EA).

parks within the local vicinity. Near the Mississippi River crossing for all routing options, there are no WMAs, trout or muskie lakes, state trails, public water access, designated wildlife lakes, or state lands.[206]

179. Construction of the Project is not anticipated to affect public access to nearby recreational opportunities. Impacts to recreation areas would mostly be related to Project construction and will be minimal, temporary, and isolated to specific areas. Because the Project consists largely of stringing a second circuit onto existing infrastructure, construction activities related to the majority of the Project will be minimal. Temporary disruptions to use of the snowmobile trails could occur if Project construction occurs during the winter months. However, any disruptions would be minimal, short-term, and would resolve with the completion of construction.[207]

180. Short-term increases in noise and dust would occur during construction of the Project and could detract from public enjoyment of nearby recreational activities. However, these impacts would be minimal, and use of BMPs to limit noise and fugitive dust during construction would effectively mitigate their effects. No impacts are anticipated during operation and maintenance of the Project.[208]

181. Potential impacts to recreation resources are anticipated as a result of the Project are anticipated to be minimal and temporary.[209]

6. Public Service and Infrastructure

182. Public services within the Project Study Area include police, fire, and ambulance services; hospitals; water and wastewater services; school districts; utilities; and other public services such as public utility infrastructure.[210]

183. Potential impacts to roads, railroads, and electric and other utilities are anticipated to be short-term, intermittent, and localized during construction.[211] Impacts

[206] Ex. EERA-22 at 70 (EA).

[207] Ex. APP-14 at 90 (Route Permit Application).

[208] Ex. APP-14 at 90 (Route Permit Application).

[209] Ex. EERA-22 at 69 (EA).

[210] Ex. APP-14 at 90 (Route Permit Application).

[211] Ex. EERA-22 at 72-80 (EA).

to water wells, septic systems, and pipelines is not expected to occur.[212] Overall, construction of the Project is expected to improve the reliability of the electric system.[213]

184. The Applicants will work with the appropriate authorities (including emergency services) and utility providers to determine where public facilities exist and how to best ensure the proper safety precautions are being met. The Applicants may meet with residents and utility providers to prevent direct or indirect impacts to their services. Overall, public services and facilities are not anticipated to be impacted by the construction and operation of the Project.[214]

B. Effects on Public Health and Safety

185. Minnesota Rule 7850.4100(B) requires consideration of the Project's effect on public health and safety.

1. Construction and Operation of the Project

186. The Project will be designed according to local, state, and NESC standards regarding ground clearance, crossing utilities clearance, building clearance, strength of materials, and right-of-way widths. Construction crews and/or contract crews will comply with local, state, and NESC standards regarding facility installation and standard construction practices. Established Applicants' and industry safety procedures will be followed during and after installation of the transmission line, including clear signage during all construction activities.[215]

187. The proposed transmission line will be equipped with protective devices (circuit breakers and relays located in substations where transmission lines terminate) to safeguard the public in the event of an accident, or if the structure or conductor falls to the ground. The protective equipment will de-energize the transmission line should such an event occur. In addition, the substation facilities will be properly fenced and accessible only by authorized personnel.[216]

2. Electric and Magnetic Fields

188. Electric and magnetic fields (EMFs) are invisible forces resulting from the presence of electricity. They occur naturally and are caused by weather or the

[212] Ex. EERA-22 at 72-80 (EA).

[213] Ex. APP-14 at 2 (Route Permit Application).

[214] Ex. APP-14 at 94 (Route Permit Application).

[215] Ex. APP-14 at 57 (Route Permit Application).

[216] Ex. APP-14 at 57 (Route Permit Application); Ex. EERA-22 at 91 (EA).

geomagnetic field. They are also caused by all electrical devices wherever people use electricity. EMFs are characterized and distinguished by their frequency, that is, the rate at which the field changes direction each second. Electrical lines in the United States have a frequency of 60 cycles per second or 60 hertz, which is extremely low frequency EMF (ELF-EMF).[217]

189. The primary sources of EMF include the transmission lines, transformers, and equipment in the substations.[218]

190. There is no federal standard for transmission line electric fields. The Commission, however, has imposed a maximum electric field limit of 8 kV/m measured at one meter above the ground. The maximum electric field, measured at one meter (3.28 feet) above ground, associated with the Project is calculated to be 4.62 kV/m, consistent with the Commission's limit. The strength of electric fields diminishes rapidly as the distance from the conductor increases.[219]

191. There are presently no Minnesota regulations related to magnetic field exposure.[220] The intensity of the magnetic field associated with a transmission line is proportional to the amount of current flowing through the line's conductors, and rapidly decreases with the distance from the conductors.[221]

192. Researchers have examined possible links between ELF-EMF exposure and health effects through epidemiological, animal, clinical, and cellular studies.[222] To date, "no mechanism by which ELF-EMFs or radiofrequency radiation could cause cancer has been identified. Unlike high-energy (ionizing) radiation, EMFs in the non-ionizing part of the electromagnetic spectrum cannot damage DNA or cells directly," that is, the ELF-EMF that is emitted from HVTLs does not have the energy to ionize molecules or to heat them.[223] The National Institute of Environmental Health Sciences concludes, "The few studies that have been conducted on adults show no evidence of a link between EMF exposure and adult cancers, such as leukemia, brain cancer, and

[217] Ex. EERA-22 at 82 (EA).

[218] Ex. EERA-22 at 85 (EA).

[219] Ex. APP-14 at 58 (Route Permit Application).

[220] Ex. EERA-22 at 85 (EA).

[221] Ex. EERA-22 at 86 (EA).

[222] Ex. EERA-22 at 84 (EA).

[223] Ex. EERA-22 at 84 (EA) *citing* National Cancer Institute. *Magnetic Field Exposure and Cancer.* (2016). http://www.cancer.gov/about-cancer/causes-prevention/risk/radiation/magnetic-fields-fact-sheet.

breast cancer."[224] The World Health Organization similarly concludes, "Overall there is no evidence that exposure to ELF magnetic fields alone causes tumors. The evidence that ELF magnetic field exposure can enhance tumor development in combination with carcinogens is inadequate."[225]

193. No health impacts from possible exposure to EMFs are anticipated. The transmission line will be constructed to maintain proper safety clearances. The Project substations will not be accessible to the public.[226]

3. Stray Voltage and Induced Voltage

194. "Stray voltage" is a condition that can potentially occur on a property or on the electric service entrances to structures from distribution lines connected to these structures—not transmission lines as proposed here. The term generally describes a voltage between two objects where no voltage difference should exist. More precisely, stray voltage is a voltage that exists between the neutral wire of either the service entrance or of premise wiring and grounded objects in buildings such as barns and milking parlors. The source of stray voltage is a voltage that is developed on the grounded neutral wiring network of a building and/or the electric power distribution system.[227]

195. Transmission lines do not, by themselves, create stray voltage because they do not connect directly to businesses, residences, or farms.[228] The Project might induce a voltage on insulated metal objects within the right-of-way; however, the Commission requires that transmission lines be constructed and operated to meet NESC standards as well as the Commission's own electric field limit of 8 kV/m thus reducing these impacts. As a result, impacts due to stray voltage are not anticipated to occur as a result of the Project.[229]

196. No public health or safety impacts are anticipated from the construction or operation of the Project. The Project will be designed and constructed in compliance

[224] Ex. EERA-22 at 84 (EA) *citing* National Institute of Environmental Health Sciences. *Electric and Magnetic Fields,* (2018). http://www.niehs.nih.gov/health/topics/agents/emf/index.cfm.

[225] Ex. EERA-22 at 84 (EA) *citing* World Health Organization. *Extremely Low Frequency Fields.* (2007).

[226] Ex. EERA-22 at 87 (EA).

[227] Ex. APP-14 at 68 (Route Permit Application).

[228] Ex. EERA-22 at 93 (EA).

[229] Ex. EERA-22 at 93 (EA).

with applicable codes and regulations and safeguards will be implemented to safeguard the public in the event that a structure or conductor falls to the ground.[230]

C. Effects on Land-Based Economies

197. Minnesota Rule 7850.4100 (C) requires consideration of the Project's effects on land-based economies, specifically agriculture, forestry, tourism, and mining.

1. Agriculture

198. Approximately 25 percent (939 acres) of the Proposed Route is mapped as prime farmland, 10 percent (366 acres) as prime farmland if drained, and 12 percent (476 acres) as farmland of statewide importance.[231] There are no certified organic producers or beehives within the Proposed Route.[232]

199. Of the Mississippi River crossing options, MnDNR Option 3 impacts the most acres of prime farmland and farmland of statewide importance and MnDNR Option 2 does not impact any of these types of agricultural land impacts. There is approximately 20.4 acres of prime farmland and 14.5 acres of farmland of statewide importance within the route width for MnDNR Option 3. MnDNR Alternative 2 does not impact any prime farmland or farmland of statewide importance. The Western Option includes approximately 0.4 acres of prime farmland, whereas the Eastern Option includes 3.8 acres of prime farmland and MnDNR Option 1 includes approximately 2.1 acres of prime farmland.[233]

200. Temporary construction impacts on agricultural land could include soil compaction and rutting, accelerated soil erosion, crop disturbance, disruption to normal farming activities, and introduction of noxious weeds to soil surface. Construction would occur throughout the year, with an effort made to schedule construction during frozen ground conditions. During the winter, impacts are not anticipated to affect agricultural activities as crop fields are unplanted and the ground is frozen. The Applicants would implement measures to reduce compaction, soil erosion, and sedimentation and would compensate producers for crop damage. Farmers would be compensated for crops damaged during the construction process and future year crop loss due to soil compaction. Construction, restoration, and maintenance activities

[230] Ex. EERA-22 at 91 (EA).

[231] Ex. EERA-22 at 95 (EA).

[232] Ex. EERA-22 at 95 (EA).

[233] Ex. EERA-22 at 95 (EA).

would follow an Agricultural Impact Mitigation Plan (AIMP). Both crop and livestock activities would be able to continue around Project facilities after construction.[234]

201. Potential impacts to agriculture are anticipated to be minimal for all routing options. A majority of the structures for the Project are already in place and the stringing of the second 345 kV circuit will not have additional impacts on agriculture. However, permanent impacts to farmland would occur where new structures are placed in cultivated fields.[235]

2. Forestry

202. The Proposed Route is dominated by cultivated cropland, with wooded lands including deciduous forest, evergreen forest, mixed forest, and woody wetland making up 854.4 acres or approximately 22 percent of the Proposed Route. There are no commercial forest operations identified within the Proposed Route. According to the MnDNR forest inventory, there are no forest inventory areas within the Proposed Route. Impacts on forest resources will occur at locations where trees need to be cleared within the right-of-way.[236]

203. Since there are no known commercial forestry operations in the vicinity of the Proposed Route, there are no anticipated impacts to commercial forestry operations from the construction and operation of the Project.[237]

3. Tourism

204. Tourism in the vicinity of the Proposed Route centers around outdoor recreational activities. Residents and tourists enjoy recreational areas such as state and county parks, WMAs, WPAs, state water trails, and snowmobile trails. Local economies benefit from tourists who travel from outside the region to enjoy these recreational amenities.[238]

205. Construction of the Project is not anticipated to affect available tourism opportunities. Impacts to tourism would be similar to those related to recreation and

[234] Ex. APP-14 at 107–08 (Route Permit Application); Ex. EERA-22 at 95 (EA).

[235] Ex. APP-14 at 108 (Route Permit Application); Ex. EERA-22 at 95 (EA).

[236] Ex. APP-14 at 110 (Route Permit Application); Ex. EERA-22 at 143 (EA).

[237] Ex. APP-14 at 110 (Route Permit Application); Ex. EERA-22 at 143 (EA).

[238] Ex. APP-14 at 110 (Route Permit Application); Ex. EERA-22 at 144 (EA).

mostly be related to Project construction, which will be temporary and isolated to specific areas throughout the route.[239]

4. Mining

206. Mining does not comprise a major industry in the Project Study Area and is only identified in one county within the Proposed Route. Stearns County is mapped as having crushed stone and granite mines. Sand and gravel are primarily mined for making concrete for highways, roads, bridges, and buildings.[240]

207. There are no active aggregate pits within the Proposed Route. There is one reclaimed aggregate pit located within the Proposed Route. Data indicates one small, potentially active site within 500 feet of the proposed centerline that is outside of Clearwater, Minnesota; however, based on review of recent aerial photography, this site does not appear to be an aggregate source.[241]

208. There are ten active gravel pits within the Project Study Area that are outside of the Proposed Route.[242]

209. Construction and operation of the Project would not have any impacts on existing mining operation because there are no active mines within the Proposed Route.[243]

D. Effects on Archeological and Historic Resources

210. Minnesota Rule 7850.4100(D) requires consideration of the effects of the Project on archaeological and historic resources, also referred to collectively as cultural resources.

211. Impacts to cultural resources have the potential to occur in areas where new construction is proposed, which have been identified as the 67 to 78 locations where new structures will be built for the Project, including the Alexandria Substation tap and expansion, the Riverview Substation bypass and expansion, the Quarry

[239] Ex. APP-14 at 110 (Route Permit Application); Ex. EERA-22 at 144 (EA).

[240] Ex. APP-14 at 110–11 (Route Permit Application); Ex. EERA-22 at 99 (EA).

[241] Ex. APP-14 at 111 (Route Permit Application).

[242] Ex. APP-14 at 111 (Route Permit Application).

[243] Ex. APP-14 at 111 (Route Permit Application).

Substation bypass, the Mississippi River crossing, and the new Big Oaks Substation siting area.[244]

212. Background research on known cultural resources was conducted in March 2023 by requesting information from the SHPO as well as reviewing the Minnesota Office of the State Archaeologist Portal for archaeological sites. Data regarding known cultural resources identified through previous professional cultural resources surveys and reported archaeological sites and historic architectural resources were reviewed. This information was gathered for the Project Study Area, and then refined to determine known archaeological and historic architectural resources within the Proposed Route for the Project.[245]

213. The Applicants gathered information on known archaeological and historic resources in October and November 2023 from SHPO and the Minnesota Office of the State Archaeologist (OSA). The Applicants hired a third-party to conduct a Phase Ia Literature Review Report for the Project in August of 2023. This review covers the parcels within a half mile of the proposed alignment, which includes all routing alternatives. SHPO responded to the report on December 8, 2023, having reviewed the information as technical assistance only, not pursuant to the responsibilities under the Minnesota Historic Sites Act (Minn. Stat. 138.665-666) and the Minnesota Field Archaeology Act (Minn. Stat. 138.40).[246]

214. The Applicants stated that SHPO regulations will be addressed by completing a Phase I archaeological reconnaissance for the portions of the Project where new ground disturbance will occur during the summer of 2024. This field work will also include documentation of the three listed/eligible historic architectural resources specifically mentioned in SHPO's letter. The additional documentation requested by SHPO has not been acquired or submitted yet because it depends on the results of the field surveys to be completed during the summer of 2024. The Applicants committed to submitting this documentation to SHPO before the end of the fall of 2024.[247]

215. SHPO confirmed the Applicants' assertion that one historic property currently listed in the National Register of Historic Places (NRHP) is within the Project area. This property is the Saint Mary Help of Christians Church and Rectory [SN-SAT-00001 and SN-SAT-00002] in Saint Augusta, Stearns County. Although the designated

[244] Ex. EERA-22 at 100 (EA).

[245] Ex. APP-14 at 111 (Route Permit Application).

[246] Ex. EERA-22 at 100 (EA).

[247] Ex. EERA-22 at 100 (EA).

historic property is not within the Proposed Route, SHPO stated that it will be important to clarify and assess the nature of potential effects from the Project within a reasonable viewshed or setting of this historic property.[248]

216. SHPO also noted two historic/architectural properties previously determined eligible for listing in the NRHP: Burgen Lake Rest Area [DL-HUD-00010]; and St. Cloud, Mankato & Austin Railroad [SN-SJT00003]. SHPO stated that supporting documentation for SHPO review and comment would be required to confirm that the Project will not result in any anticipated effects to these NRHP eligible properties.[249]

217. The Phase Ia report indicated the presence of 79 previously inventoried historic/architectural properties that may be within a half mile of the proposed alignment because they have not been subject to intensive level survey and evaluation. SHPO stated that depending on the eventual regulatory requirements for the Project, these 79 properties, which have the potential to be affected by the Project, may also require updated survey documentation.[250]

218. The Applicants have begun coordinating with the USACE for permitting of the Project and assume the USACE will serve as the lead federal agency pursuant to Section 106 of the National Historic Preservation Act. They will coordinate with the USACE on the area of potential effects from the Project to determine whether any of these properties need to be investigated. However, as the Project consists primarily of stringing a second circuit onto existing infrastructure, it is not anticipated that the Project will adversely affect any of these properties. However, one resource eligible for the NRHP is noted within the Proposed Route (SN-SJT-003) by the Quarry Substation Bypass. There is existing infrastructure that crosses the resource in this area, and since no new construction is anticipated within the vicinity of it, the Project is not expected to affect SN-SJT-003. The Applicants have committed to not performing work in the area of SN-SJT-003.[251]

219. SHPO determined that an archaeological survey of areas of new ground disturbance is appropriate for this Project due to the presence of unevaluated sites. SHPO concurred that areas where the ground surface will not be disturbed do not need to be surveyed. The unevaluated archaeological sites for NRHP eligibility in SHPO records (21DLf, 21SH0036, 21SH0068, and 21SN0169) "appear to be within the

[248] Ex. EERA-22 at 100–01 (EA).

[249] Ex. EERA-22 at 101 (EA).

[250] Ex. EERA-22 at 101 (EA).

[251] Ex. EERA-22 at 101 (EA).

proposed project footprint." SHPO asked that an evaluation of these archaeological sites or a description of how impacts to these sites will be avoided by the Project be provided. Another archaeological site, 21WR0136, was mentioned as previously determined eligible for listing in the NRHP within the Project footprint. SHPO additionally requested a description of how this site will be avoided by the Project. The Applicants will complete investigation and evaluation of these sites during the summer 2024 field survey.[252]

220. While further surveys and investigation of will be completed by the Applicants, in coordination with SHPO, impacts to archeological and historic resources as a result of the Project are not anticipated.[253]

E. Effects on Natural Environment

221. Minnesota Rule 7850.4100(E) requires consideration of the Project's effects on the natural environment including effects on air and water quality and flora and fauna.

1. Air Quality

222. Construction of the Project will result in intermittent and temporary emissions of criteria pollutants. These emissions generally include dust generated from soil disturbing activities, such as earthmoving and wind erosion associated with right-of-way clearing and construction, combustion emissions from construction machinery engines, and indirect emissions attributable to construction workers commuting to and from work sites during construction. Air pollutants from the construction equipment will be limited to the immediate vicinity of the construction area and will be temporary. Therefore, impacts to air quality from construction of the Project will be intermittent, localized, short-term, minimal, and below state and federal standards.[254]

223. During operation of the Project, air quality impacts will also be minimal and are associated with the creation of ozone and nitrous oxide emissions.[255] During operation, power lines produce ozone and nitrous oxide through the corona effect—the ionization of air molecules surrounding the conductor. Ozone production from a conductor is proportional to temperature and sunlight and inversely proportional to

[252] Ex. EERA-22 at 101 (EA).

[253] Ex. EERA-22 at 99, 102 (EA).

[254] Ex. EERA-22 at 102 (EA); Ex. APP-14 at 117 (Route Permit Application).

[255] Ex. EERA-22 at 102 (EA).

humidity. Nitrogen oxides can react to form ground-level ozone. Ozone and nitrous oxide emissions are anticipated to be well below state and federal limits.[256]

2. Greenhouse Gas Emissions

a. Greenhouse Gas Emissions

224. During construction and operation of the Project, small amounts of Greenhouse Gas Emissions (GHGs) will be generated. GHG emissions from this Project will be largely from the combustion of fossil fuels such as gasoline and diesel. GHGs associated with fuel combustion are CO2, CH4, and N2O. The largest source of GHG emissions from the Project will be from the temporary combustion of fossil fuels in construction equipment and heavy machinery. Construction emissions will be localized to the construction area and are not anticipated to result in long-term impacts. Total GHG emissions from the construction of this Project are estimated to be approximately 2,396 tons of CO2e.[257]

225. Emissions resulting from routine operation and maintenance of the transmission line and substation will largely be from the combustion of gasoline or diesel in maintenance equipment and vehicle use. Routine maintenance is expected to occur on an annual basis and involve the use of diesel fueled, mobile combustion sources. Total annual GHG emissions expected from the routine operation and maintenance of this Project are estimated to be 14 tons of CO2e per year.[258]

226. The overall Big Stone South – Alexandria – Big Oaks Transmission Project is anticipated to help the state's carbon reduction goals.[259] MISO's analysis demonstrated the implementation of the LRTP Tranche 1 Portfolio is estimated to reduce carbon emissions by 399 million metric tons over 20 years and 677 million metric tons over 40 years of LRTP Tranche 1 project life. Xcel Energy estimated that the Big Stone South – Alexandria – Big Oaks Transmission Project will reduce CO2 emissions by 17.8 to 22.4 million metric tons over the first 20 years that the Project is in service and by 36.1 to 49.6 million metric tons over the first 40 years that the Project is in service. Therefore, the Big Stone South – Alexandria – Big Oaks Transmission Project

[256] Ex. EERA-22 at 104-105 (EA).

[257] Ex. APP-14 at 118–19 (Route Permit Application).

[258] Ex. APP-14 at 119 (Route Permit Application).

[259] Ex. EERA-22 at 105 (EA).

is anticipated to help carbon reduction goals both nationally and those set by the state of Minnesota.[260]

227. Potential impacts on GHG emissions due to both construction and operation of the Project are anticipated to be minimal and positive.[261]

3. Water Quality and Resources

a. Groundwater

228. The Proposed Route is within the East Central and Arrowhead/Shallow Bedrock Provinces. Most of the Proposed Route is within the Central Groundwater Province which is characterized by buried sand aquifers relatively extensive surficial sand plains, part of a thick layer of sediment deposited by glaciers overlaying the bedrock. This province has a thick glacial sediment sand and gravel aquifers are common.[262]

229. The construction and operation of the Project is not anticipated to adversely impact groundwater resources because wellhead protection areas within the route width will either not be exposed to new Project infrastructure or are within drinking water supply management areas with low vulnerability to human caused contaminants. Subsurface activity would likely penetrate shallow water tables; however, subsurface disturbance is expected to be above well-depth used for potable water. The Applicants state that wells and private septic systems will be located and avoided during construction.[263]

b. Wetlands

230. According to the USFWS National Wetlands Inventory (NWI) database, the Proposed Route contains approximately 666 acres of wetlands, comprising approximately 0.1 percent of the Proposed Route. The majority of the wetlands are classified as shallow open water wetlands, seasonally flooded wetlands, or shallow marshes.[264]

[260] Ex. APP-14 at 121 (Route Permit Application).

[261] Ex. EERA-22 at 105 (EA).

[262] Ex. APP-14 at 122 (Route Permit Application).

[263] Ex. EERA-22 at 110 (EA).

[264] Ex. APP-14 at 126 (Route Permit Application).

231. Each Mississippi River crossing option will have different wetland impacts but these impacts will be minimal overall.[265] Table 3 breaks down the amount and type of wetlands within the route width of each of the Mississippi River crossing options. Riverine wetlands make up to majority of the route widths' total and will be spanned for the Project.[266] MnDNR Option 1 has the most wetlands within its route width at around 71 acres, most of it being freshwater/forested shrub and riverine. The Western Option has the least amount of wetlands within its route width at 11 acres of riverine wetland.[267]

Table 3. Acres of Wetlands Within the Route Width of the Mississippi River Crossing Options[268]

Wetland type	DNR Alternative 1	DNR Alternative 2	DNR Alternative 3	Western Option	Eastern Option
Freshwater forested/shrub	30.20 acres	0.97 acres	4.30 acres	--	3.86 acres
Freshwater emergent	1.45 acres	0.108 acres	5.46 acres	--	0.06 acres
Freshwater pond	0.07 acres	--	3.35 acres	--	0.07 acres
Riverine	39.09 acres	19.87 acres	29.71 acres	10.93 acres	25.64 acres
TOTAL	70.81 acres	20.95 acres	42.82 acres	10.93 acres	29.63 acres

232. According to the NWI database, there are two wetlands (0.23 acres) within the proposed expansion area for the Alexandria Substation. These wetlands are classified as a seasonally flooded basin (0.01 acres) and hardwood forest wetland (0.22 acres). The Applicants stated they will complete a field wetland delineation to confirm the boundaries of these two wetlands. Additionally, the Applicants will consult with the local government unit and USACE prior to construction.[269]

233. The Riverview Substation bypass would require a transmission line be routed over a seasonally flooded basin at its northwest corner, with a new pole and foundation needed to accommodate the transmission line's turn south. A wetland field

[265] Ex. EERA-22 at 127 (EA).

[266] Ex. EERA-22 at 127 (EA).

[267] Ex. EERA-22 at 127 (EA).

[268] Ex. EERA-22 at 127 (EA).

[269] Ex. EERA-22 at 127 (EA).

delineation should be completed to confirm the boundary of this wetland, as well as consultation with the local government unit and USACE prior to construction.[270]

234. There are no wetlands or watercourses near the Quarry Substation tap and expansion.[271] There are no wetlands within the Big Oaks Substation Siting Area.[272]

235. Due to flexibility in alignment placement, future wetland delineations, and spanning of riverine wetlands, impacts to wetlands are anticipated to be short-term, minimal, and localized, especially when compared to the total wetland acres of counties crossed by the Project.[273]

c. Calcareous Fens

236. In its scoping comments, the MnDNR requested that the EA evaluate potential impacts to the newly listed St. Martin 15 calcareous fen along the Proposed Route in St. Martin township.[274]

237. A calcareous fen is a rare distinctive peat accumulating wetlands that depend on a constant supply of calcium and other mineral rich groundwater. This unique microenvironment can support highly diverse and unique rare plant communities. According to the MnDNR's Identification List of Known Calcareous Fens, there are no known calcareous fens located within the Proposed Route. The nearest calcareous fen is 290 feet east of the Proposed Route in Stearns County.[275] Two new pole structures are proposed within a mile on either side of the fen.[276]

238. The MnDNR stated that they will require further analysis to determine if the location and depth of these new pole structures and foundations are likely to impact fen hydrology and thus require a Calcareous Fen Management Plan.[277]

[270] Ex. EERA-22 at 127 (EA).

[271] Ex. EERA-22 at 127 (EA).

[272] Ex. EERA-22 at 128 (EA).

[273] Ex. EERA-22 at 125 (EA).

[274] MnDNR Comments on Scope of EA (January 8, 2024) (eDocket No. 20241-201967-01).

[275] Ex. APP-14 at 128 (Route Permit Application).

[276] Ex. EERA-22 at 128 (EA).

[277] Ex. EERA-22 at 128 (EA).

d. Floodplains

239. The Proposed Route crosses FEMA designated 100-year and 500-year floodplain areas. FEMA designated 100-year floodplain areas are associated with major rivers along the Proposed Route such as the Mississippi River.[278]

240. The Project may require transmission line structures to be placed within FEMA-designated 100-year or 500-year floodplains. The floodplain would be temporarily disturbed from construction site access and the placement of construction access. The placement of transmission line structures in floodplains is not anticipated to alter the flood storage capacity of the floodplain based on the minimal size of individual transmission line structures. In addition, the proposed structures will be designed to be capable of accommodating increased flood elevations that could result from climate change.[279]

241. Potential impacts to floodplains are anticipated to be minimal for all routing options.[280]

4. Flora

242. The current landscape across the Proposed Route is dominated by agricultural land, with corn and soybeans representing the most common crops. Natural vegetation is present in wetlands and the forested areas near waterbodies and watercourses. In addition, areas of native vegetation are found scattered throughout the Proposed Route in lands mapped or managed by the MnDNR; these include Sites of Biodiversity Significance (SBS) and native plant communities. No Scientific and Natural Areas are located within one mile of the Proposed Route. Federal and state lands that are managed for wildlife also contain natural vegetation.[281]

243. The Proposed Route traverses several SBS, including 11 SBS ranked "moderate" and 2 ranked "high" with regards to biodiversity significance. Areas with "moderate" biodiversity ranks contain significant occurrences of rare species and/or moderately disturbed native plant communities and landscapes that have a strong potential for recovery. Areas with "high" biodiversity ranks contain sites with high

[278] Ex. APP-14 at 133–34 (Route Permit Application); Ex. EERA-22 at 118 (EA).

[279] Ex. APP-14 at 134 (Route Permit Application); Ex. EERA-22 at 119 (EA).

[280] Ex. EERA-22 at 118 (EA).

[281] Ex. APP-14 at 137 (Route Permit Application); Ex. EERA-22 at 151–152 (EA).

quality occurrences of the rarest plant communities and/or important functional landscapes.[282]

244. The MnDNR identifies 11 native plant community types in 19 locations within the Proposed Route, several of which are located within the SBSs. Native plant community types mapped within the Proposed Route include the following:[283]

- Southern Dry-Mesic Oak (Maple) Woodland (FDs37; conservation status S3, S4)
- Pin Oak – Bur Oak Woodland (FDs37b; conservation status S3)
- Southern Terrace Forest (FFs59; conservation status S1, S2, S3)
- Elm – Ash – Basswood Terrace Forest (FFs59c; conservation status S2)
- Silver Maple – (Virginia Creeper) Floodplain Forest (FFS68a; conservation status S3)
- Tamarack Swamp (Southern) (FPs63a; conservation status S2, S3)
- Basswood – Bur Oak – (Green Ash) Forest (MHs38b; conservation status S3)
- Red Oak – Sugar maple – Basswood – (Bitternut Hickory) Forest (MHs38c; conservation status S3)
- Dry Sand – Gravel Prairie (Southern) (UPs13b; conservation status S2)
- Dry Sand – Gravel Oak Savanna (Southern) (UPs14b; conservation status S1, S2)
- Willow – Dogwood Shrub Swamp (WMn82a; conservation status S5)

245. Where the second 345 kV circuit will be strung along existing infrastructure, impacts to vegetation are anticipated to be minimal and/or temporary in nature. While the existing right-of-way primarily crosses through agricultural land, it also crosses six SBS with moderate biodiversity significance ranks and four native plant communities. The integrity of these SBS and native plant communities has already been altered from the construction and maintenance of the existing transmission infrastructure. As such, impacts due to construction of the second circuit are not

[282] Ex. APP-14 at 137 (Route Permit Application).

[283] Ex. APP-14 at 138 (Route Permit Application).

anticipated to substantially further disrupt vegetative community quality or function within the existing right-of-way, as this area is continually impacted by maintenance activities.[284]

246. Permanent impacts to vegetation will occur in areas where up to 60 new structures are proposed in the existing infrastructure right-of-way to accommodate the second circuit. Structures were placed to avoid sensitive areas to the extent feasible; however, two structures will be placed in a SBS of moderate biodiversity significance, one of which is also located in a Basswood – Bur Oak – (Green Ash) Forest native plant community (conservation status S3). The permanent loss of vegetation cover from new structures will occur within a previously disturbed and routinely maintained right-of-way and not undisturbed native plant communities.[285]

247. The Big Oaks Substation siting area is dominated by agricultural landcover, with open forest vegetation cover in the southern extent of the siting area. The Big Oaks Substation was sited to avoid the South Becker 13 SBS (ranked high) and a Southern Dry-Mesic Oak (Maple) Woodland native plant community (conservation status S3, S4), which border the siting area to the southwest.[286] Construction of the Big Oaks Substation will result in the permanent removal of 10 acres of agricultural land.[287]

248. Vegetation impacts for the Project are most impactful at the Mississippi River crossing where existing vegetation will be removed to accommodate the new transmission line facilities. Estimated acreage of vegetation removed based on the proposed alignments, which could change within their respective route widths, is summarized in Table 4.

Table 4. Vegetation Impacts by Mississippi River Crossing Option[288]

River Crossing Name	Forested Area Cleared for ROW	Non-forested Area Cleared for ROW	Total Forested/Non-forested Area Cleared
Western Crossing	8.47 acres	4.70 acres	13.17 acres
Eastern Crossing	29.26 acres	9.75 acres	39.01 acres
DNR Alternative 1	26.06 acres	24.21 acres	50.27 acres
DNR Alternative 2	4.67 acres	15.48 acres	20.15 acres
DNR Alternative 3	6.16 acres	64.97 acres	71.13 acres

[284] Ex. APP-14 at 140 (Route Permit Application).

[285] Ex. APP-14 at 140–41 (Route Permit Application).

[286] Ex. APP-14 at 142 (Route Permit Application).

[287] Ex. APP-14 at 142–43 (Route Permit Application); Ex. EERA-22 at 152 (EA).

[288] Ex. EERA-22 at 163 (EA).

249. The Western Option would clear the fewest acres of vegetation at 13.17 acres whereas MnDNR Option 3 would clear the most acres of vegetation at 71.13 acres but the majority of that vegetation is non-forested vegetation.[289] The Eastern Option and MnDNR would clear the most acres of forested vegetation at 29.26 acres and 26.06 acres, respectively.[290]

250. Potential impacts to flora, such as clearing, compacting, or otherwise disturbing vegetation, are expected to be minimal for the Western Option and MnDNR Options 2 and 3. Impacts would be more moderate for the Eastern Option and MnDNR Alternative 1.[291]

5. Fauna

251. The Proposed Route's agricultural landscape, combined with the natural habitats associated with wetlands, the Mississippi River, preserved or managed wildlife lands, and SBS and native plant communities, provide habitat for a diversity of resident and migratory wildlife species. These species include large and small mammals, songbirds, waterfowl, raptors, fish, reptiles, mussels, and insects. These species use the area for forage, shelter, breeding, or as stopover during migration.[292]

252. Several lands that are preserved or managed for wildlife and associated habitat are scattered throughout the geographic area. The preserved or managed wildlife lands within the Proposed Route include: the Lake Osakis and Avon Hills National Audubon Society Important Bird Areas (IBA), several USFWS Grassland Bird Conservation Areas (GBCA), the USFWS Douglas and Stearns County WPAs, and the MnDNR Sauk River WMA.[293]

253. Potential temporary impacts to wildlife within the Proposed Route may occur during Project construction as a result of increased noise, dust, and human activity, which could cause some species to temporarily abandon habitat. The majority of common wildlife species are mobile and can avoid impacts from noise by leaving the affected area for similar habitat adjacent to the Proposed Route. Less mobile wildlife species, such as small mammals, amphibians, reptiles, and nesting birds may be

[289] Ex. EERA-22 at 163 (EA).

[290] Ex. EERA-22 at 163 (EA).

[291] Ex. EERA-22 at 151 (EA).

[292] Ex. APP-14 at 144 (Route Permit Application).

[293] Ex. APP-14 at 145 (Route Permit Application); Ex. EERA-22 at 156 (EA).

susceptible to mortality from vehicles and other equipment moving within the right-of-way.[294]

254. The creation of new transmission line corridors can result in permanent habitat loss, conversion, and/or fragmentation as a result of clearing vegetation for construction and maintenance. Permanent removal of potential habitat will occur in areas where new structures are proposed. Each structure will result in a permanent loss of approximately 115 square feet of potential habitat.[295]

255. Once the Project is operational, there is potential for avian and transmission line interactions in the form of collisions. Waterfowl are more susceptible to transmission line collisions, especially if the transmission line is placed between agricultural fields that serve as feeding areas, and wetlands or open water which serve as resting areas. In these areas, it is likely that waterfowl and other birds will travel between different habitats, potentially increasing the likelihood of avian conflicts with the transmission line. To minimize these potential impacts on birds, the Project will be constructed according to Avian Power Line Interaction Committee (APLIC) recommended safety standards to reduce the potential for avian collisions. These APLIC safety standards will include the use of bird flight diverters in certain locations where the risk of collision is high.[296]

256. Where the second circuit will be strung along existing infrastructure, impacts to wildlife are anticipated to be minimal and/or temporary in nature. Wildlife inhabiting this area are already accustomed to disturbance from routine maintenance activities within the existing right-of-way. In addition, the existing infrastructure already poses a threat to avian collisions; as such, the second circuit is not anticipated to pose a significantly increased threat.[297]

257. The existing infrastructure right-of-way intersects the Douglas and Stearns County WPAs, the Sauk River WMA, the Lake Osakis and Avon Hills IBAs and 12 GBCAs. The integrity of these preserved or managed wildlife lands has already been altered from the construction and maintenance of the existing infrastructure. As such, impacts due to construction of the second circuit without new infrastructure proposed within these areas are not anticipated to further alter the quality of these habitats.[298]

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[294] Ex. APP-14 at 147 (Route Permit Application).

[295] Ex. APP-14 at 147 (Route Permit Application).

[296] Ex. APP-14 at 147 (Route Permit Application).

[297] Ex. APP-14 at 148 (Route Permit Application).

[298] Ex. APP-14 at 148 (Route Permit Application).

258. Permanent loss of potential wildlife habitat will occur in areas where up to 60 new structures are proposed within the existing infrastructure right-of-way to accommodate the second circuit. Preserved or managed wildlife lands were spanned to the extent feasible; however, the Avon Hills IBA is too large to span and will require the placement of three new structures within it.[299]

259. With the exception of structure placement, no other permanent changes to wildlife habitat are anticipated to occur within the right-of-way where the second circuit will be strung.[300]

260. The Big Oaks Substation siting area primarily contains agricultural habitat, with open forest habitat also present in the southern part. No preserved or managed wildlife lands are present in the siting area.[301]

261. Due to the limited amount of right-of-way clearing required for the Project, potential impacts to wildlife and habitat are expected to be minimal for most routing options.[302] As discussed in the "Flora" section above and in the "Effects on Rare and Unique Natural Resources" section below, potential impacts related to the Eastern Option and MnDNR Option 1 are rated moderate due to the acreage of Minnesota Biological Survey (MBS) Sites of Biodiversity Significance that would be cleared for new right-of-way, the percentage of those MBS Sites of Biodiversity Significance considered high quality, acreage of forested habitat that would be cleared for new right-of-way, and an Aquatic Management Area located near these routes.[303]

F. Effects on Rare and Unique Natural Resources

262. Minnesota Rule 7850.4100(F) requires consideration of the Project's effects on rare and unique resources.

1. Rare Species

263. The USFWS Information, Planning, and Conservation (IPaC) online tool was queried on April 20, 2023, for a list of federally threatened and endangered species, proposed species, candidate species, and designated critical habitat that may be present within the Proposed Route. The IPaC query identified the following species as potentially occurring in the Proposed Route: northern long-eared bat (Myotis

[299] Ex. APP-14 at 148–49 (Route Permit Application).

[300] Ex. APP-14 at 149 (Route Permit Application).

[301] Ex. APP-14 at 150 (Route Permit Application).

[302] Ex. EERA-22 at 155 (EA).

[303] Ex. EERA-22 at 155 (EA).

septentrionalis; endangered), tricolored bat (Perimyotis subflavus; proposed endangered), monarch butterfly (Danaus plexippus; candidate), and whooping crane (Grus americana; experimental population, non-essential). The IPaC query also identifies bald eagles and golden eagles and several migratory birds as potentially being present in the Proposed Route.[304]

264. According to the MnDNR and USFWS, a northern long-eared bat hibernacula is present approximately 4 miles north of the Proposed Route in Stearns and Sherburne Counties; no maternity roost trees have been identified within the Proposed Route. However, potentially suitable roosting and foraging habitat is present within the Proposed Route.[305]

265. Potential impacts to northern-long eared bats may occur in areas of the Project where tree clearing will occur, such as the Alexandria Substation Tap, Quarry Substation Bypass, and the Mississippi River crossing options. Direct impacts to individual northern long-eared bats may occur if removal of woody vegetation occurs during the active season, April 15 - October 1. Tree clearing activities conducted when the species is in hibernation are not anticipated to result in direct impacts to individual bats but could result in indirect impacts due to removal of suitable foraging and roosting habitat. The Applicants will consult with the USFWS to develop necessary avoidance and minimization measures for this species and will comply with any applicable USFWS requirements in place at the time of Project construction.[306]

266. Tri-colored bats, a federally proposed endangered species, are found in forested habitats where they roost in trees during the active season; tri-colored bats hibernate in caves and mines over the winter. Potentially suitable roosting and foraging habitat is present within the Proposed Route; however, proposed species are not protected under the ESA.[307]

267. Similar to the northern long-eared bat, tree clearing may impact individual tri-colored bats if tree removal occurs during their active season. Tree clearing activities conducted when the species is in hibernation is not anticipated to result in direct impacts to individual bats but could result in indirect impacts due to removal of suitable foraging and roosting habitat. Avoidance and minimization measures implemented for the northern long-eared bat would also serve to protect tri-colored bats. If the USFWS reaches a decision on the final rule listing the species as endangered prior to Project

[304] Ex. APP-14 at 152 (Route Permit Application).

[305] Ex. APP-14 at 152 (Route Permit Application).

[306] Ex. APP-14 at 154 (Route Permit Application).

[307] Ex. APP-14 at 152 (Route Permit Application).

construction, the Applicants will consult with the USFWS to determine if additional measures are needed to prevent adverse impacts to tricolored bats.[308]

268. Suitable habitat for monarch butterflies is present within the Proposed Route; however, candidate species are not protected under the ESA.[309]

269. Construction activities involving clearing and grading may impact monarch butterfly individuals. These activities will occur throughout all Project Components. If the USFWS determines the monarch butterfly should be listed and protection for the species coincides with Project planning, permitting, and/or construction, the Applicants will review Project activities for potential impacts on the species, develop appropriate avoidance and minimization measures, and consult with the USFWS as appropriate.[310]

270. Whooping cranes breed, migrate, winter, and forage in a variety of wetland and other habitats, including coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields. Whooping cranes are extremely rare in Minnesota. Currently there is only one self-sustaining wild population in North America, the Aransas-Wood Buffalo National Park population, which nests in Wood Buffalo National Park and adjacent areas in Canada, and winters in coastal marshes in Texas at Aransas.[311]

271. The whooping crane is designated as a non-essential experimental population in Minnesota. This designation refers to a population that has been established within its historical range under Section 10(j) of the ESA to aid in recovery of the species. Consultation under Section 7(a)(2) of the ESA is only required if project activities will occur within a National Wildlife Refuge or National Park. If project activities are proposed on lands outside of a National Wildlife Refuge or National Park, consultation is not required. The Proposed Route does not cross a National Wildlife Refuge or a National Park. The nearest location of these resources is the Sherburne National Wildlife Refuge, which is approximately 8 miles northeast of the Big Oaks Substation siting area. Although suitable habitat is present within the Proposed Route, given the highly disturbed nature of the Proposed Route and the extreme rarity of whooping cranes in Minnesota, they are not likely to be present.[312]

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[308] Ex. APP-14 at 154 (Route Permit Application).

[309] Ex. APP-14 at 152 (Route Permit Application).

[310] Ex. APP-14 at 155 (Route Permit Application).

[311] Ex. APP-14 at 153 (Route Permit Application).

[312] Ex. APP-14 at 153 (Route Permit Application).

272. Potential impacts to whooping cranes could occur as a result of collision with transmission lines. The new transmission line corridors associated with the Mississippi River crossing options could pose a potential threat to whooping cranes should they be present. However, given the rarity of whooping cranes in Minnesota, their presence is not anticipated. Implementation of APLIC safety standards will minimize the potential for whooping crane collisions.[313]

273. In Minnesota, bald eagles inhabit forested areas near large lakes, reservoirs, and rivers. Golden eagles can be found in open country in the vicinity of hills, cliffs and bluffs associated with grasslands, intermittent forested habitat, and woodland-brushlands. Habitat suitable for bald and golden eagles is present within the Proposed Route.[314]

274. Potential impacts to bald and golden eagles could occur as a result of collision with transmission lines or if construction activities are conducted within 660 feet of an active eagle nest. During the nesting season construction noise and human activity may disturb nesting eagles to such a degree that adults abandon the nest. Suitable nesting habitat is present in the vicinity of the Minnesota River crossing options. If construction activities take place in suitable eagle nesting habitat during the species' nesting season, surveys to identify active nests within 660 feet of work areas will be conducted in early spring (i.e., early March/early April) of the year of construction. If active nests are identified within the disturbance buffer, the Applicants will consult with the USFWS to determine next steps and develop appropriate avoidance and minimization measures. Implementation of APLIC safety standards will minimize the potential for bald and golden eagle collisions.[315]

275. The state of Minnesota is in the Central Flyway of North America. The Central Flyway is a bird migration route that encompasses the Great Plains of the U.S. and Canada. Migratory birds use portions of the Central Flyway as resting grounds during spring and fall migration, as well as breeding and nesting grounds throughout the summer. Suitable habitat for migratory birds is present throughout the Proposed Route in the extensive agricultural habitat, as well as areas of high-quality native habitat, including those preserved or managed for wildlife. The IPaC query identified 20 USFWS Birds of Conservation Concern (BCC) as potentially being present in the Proposed Route.[316]

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[313] Ex. APP-14 at 155 (Route Permit Application).

[314] Ex. APP-14 at 153 (Route Permit Application).

[315] Ex. APP-14 at 155 (Route Permit Application).

[316] Ex. APP-14 at 153–54 (Route Permit Application).

276. Potential indirect impacts to migratory birds, including BCC, could occur as a result of loss of habitat or displacement during construction activities. Vegetation clearing and other ground disturbing activities could directly impact migratory birds should they be nesting within or adjacent to construction areas. Where possible, the Applicants will conduct these activities outside of the nesting season or conduct pre-construction nest surveys in areas of suitable habitat.[317]

277. Once the Project is operational, there is potential for impacts to migratory birds as a result of collisions with transmission lines and associated equipment. The threat of collision is already present along the existing infrastructure; as such, the second circuit is not anticipated to pose an increased threat. However, areas of new transmission line corridor, particularly the Mississippi River crossing options, could pose new potential threats of collision. The Project will be constructed according to APLIC recommended safety standards to reduce the potential for avian collisions.[318]

278. State-listed threatened or endangered species are protected under the Minnesota Endangered Species Statute (Minn. Stat. § 84.0895). The MnDNR NHIS database was queried on March 13, 2023, to identify known occurrences of state protected threatened and endangered species within the Proposed Route. The NHIS query identified three endangered, five threatened, and thirteen special concern species that have been documented within one mile of the Proposed Route:[319]

- **Endangered:** Butternut, Henslow's Sparrow, Loggerhead Shrike
- **Threatened:** Rock Sandwort, Sterile Sedge, Tubercled Rein Orchid, Pugnose Shiner, Blanding's Turtle
- **Special Concern:** Hill's Thistle, Small White Lady's-slipper, Black Sandshell, Creek Heelsplitter, Least Darter, Mudpuppy, Acadian Flycatcher, Cerulean Warbler, Lark Sparrow, Marbled Godwit, Peregrine Falcon, Red-shouldered Hawk, Trumpeter Swan

279. Although state special concern species are tracked and monitored by the MnDNR, they are not legally protected under state law.[320]

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[317] Ex. APP-14 at 155–56 (Route Permit Application).

[318] Ex. APP-14 at 156 (Route Permit Application).

[319] Ex. APP-14 at 156–57 (Route Permit Application).

[320] Ex. APP-14 at 156–57 (Route Permit Application).

280. A Natural Heritage Review request was submitted through the MnDNR Minnesota Conservation Explorer on August 15, 2023 (Project ID 2023-00630). The Applicants will continue to work with the MnDNR to avoid or minimize adverse impacts to state protected species and will implement appropriate, species-specific BMPs if Project activities will take place during the species' active season.[321]

281. Power lines can impact rare and unique resources during construction and operation. Adverse impacts include the taking or displacement of individual plants or animals, invasive species introduction, habitat loss, reduced community size, and, for avian species, collision with conductors or electrocution. Impacts to rare and unique resources are not necessarily adverse. In some limited cases, power line rights-of-way can be managed to provide habitat. For example, nesting platforms can be built on top of transmission structures for use by rare avian species.[322]

282. Several federally protected and state listed species have the potential to occur in the Project area based on the USFWS IPaC tool and the MnDNR Natural Heritage Information System. The Applicants have stated they will schedule the project's tree clearing activities to comply with USFWS requirements for the applicable species' inactive seasons, thus, the potential to adversely affect nesting species and bats within the Project area is minimal for all routing options.[323]

2. Rare Ecological Communities

283. The DNR has established several classifications of rare communities across the state, including Scientific and Natural Areas (SNAs), MBS Sites of Biodiversity Significance, High Conservation Value Forest, and MBS native plant communities.[324]

284. SNAs are areas of land designated to preserve natural features and rare resources of exceptional scientific and educational values. There are no SNAs in the local vicinity of the Project.[325]

285. There are several MBS Sites of Biodiversity Significance near the Mississippi River crossing. All the sites near the Mississippi River crossing are ranked as "high" or "moderate." Sites ranked as high contain very good quality occurrences of

[321] Ex. APP-14 at 158 (Route Permit Application).

[322] Ex. EERA-22 at 137 (EA).

[323] Ex. EERA-22 at 132 (EA).

[324] Ex. EERA-22 at 136 (EA).

[325] Ex. EERA-22 at 136 (EA).

the rarest species, high quality examples of the rare native plant communities, and/or important functional landscapes. Sites ranked as moderate contain occurrences of rare species and/or moderately disturbed native plant communities, and/or landscapes that have a strong potential for recovery.[326]

286. Impacts to MBS Sites of Biodiversity Significance near the Mississippi River crossing are expected to be the greatest along the Eastern Option for the Project, shortly followed by MnDNR Option 1. Several moderate to high MBS Sites are in the area as demonstrated by acreage amounts for each routing option in Table 5. MnDNR Options 2 and 3 have the least amount of MBS Site of Biodiversity Significance acreage along the rights-of-way of their proposed alignments.[327]

Table 5. Summary of Potential Impacts to MBS Sites for the Mississippi River Crossing Options[328]

Route Option	Western Option	Eastern Option	DNR Alternative 1	DNR Alternative 2	DNR Alternative 3
MBS Sites in New ROW (acres)	11.6	27.4	23	3.4	2.2
150 foot ROW (existing) - Moderate	0	0	0	0	0
150 foot ROW (existing) - High	0	10.0	10.9	0	0
150 foot ROW (new) - Moderate	5.9	19.0	19.6	0.0	2.2
150 foot ROW (new) - High	5.7	8.4	3.4	3.4	0

287. Many MBS Sites of Biodiversity Significance contain native prairies, a rare and unique resource managed by the DNR and identified through the NHIS along with other native plant communities across the state. There are some native prairies near the Mississippi River crossing.[329]

288. The Eastern Option and MnDNR Option 1 are near a specific aquatic habitat likely to be impacted, the Mississippi Island Sherburne State Aquatic Management Area.[330]

[326] Ex. EERA-22 at 136 (EA).

[327] Ex. EERA-22 at 164 (EA).

[328] Ex. EERA-22 at 164 (EA).

[329] Ex. EERA-22 at 136 (EA).

[330] Ex. EERA-22 at 163 (EA).

289. MnDNR High Conservation Value Forests are broadly defined as areas of outstanding biological or cultural significance. There is one State Forest in the vicinity of the line to be double-circuited, however it is labelled as Other Forest Lands which are not considered a MnDNR Management Unit owned by the Division of Forestry within Statutory boundaries. It is also mapped over School Lake 1,300 feet west of the proposed alignment, indicating that even if the alignment were near this land, it would not be placed within the lake and impact the area mapped as Forest Land.[331]

290. There are no other lands within the Project area reserved for the protection of natural resources such as National Wildlife Refuges or State Significant Ecological Areas.[332]

291. If proper mitigation measures such as a protection plan are implemented for native prairie and plant communities near the Mississippi River crossing, impacts to rare ecological communities are expected to be minimal among all routing options.[333] As noted above, while the potential impacts to MBS Sites of Biodiversity Significance are expected to be minimal for most routing options; the Eastern Option and DNR Alternative 1 are rated moderate due to the acreage of MBS Sites of Biodiversity Significance that would be cleared for new right-of-way and the percentage of those MBS Sites of Biodiversity Significance considered high quality.[334]

G. Application of Various Design Considerations

292. Minnesota Rule 7850.4100(G) requires consideration of whether the applied design options maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity.

293. The Project is designed to improve electric reliability and is appropriately sized to accommodate electric demand growth and additional future electrical improvements. For instance, the proposed Big Oaks Substation is designed to accommodate future transmission line interconnections.[335]

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[331] Ex. EERA-22 at 136–137 (EA).

[332] Ex. EERA-22 at 137 (EA).

[333] Ex. EERA-22 at 132 (EA).

[334] Ex. EERA-22 at 155 (EA).

[335] Ex. APP-14 at 20 (Route Permit Application).

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

294. Minnesota Rule 7850.4100(H) requires consideration of the use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries.

295. The majority of the new 345 kV transmission circuit will be strung on existing infrastructure, using existing double-circuit capable structures already present within an existing 150-foot-wide transmission line right-of-way.[336] As the majority of the new 345 kV transmission circuit will be placed on existing transmission line structures, the Proposed Route will follow existing transmission line right-of-way for over 95 percent of its length.[337]

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

296. Minnesota Rule 7850.4100(J) requires consideration of use or paralleling of existing transportation, pipeline, and electrical transmission system rights-of-way.

297. As noted above, the Proposed Route will follow existing transmission line right-of-way for over 95 percent of its length.[338]

J. Electrical System Reliability

298. Minnesota Rule 7850.4100(K) requires consideration of electrical system reliability when selecting a route for a high-voltage transmission line.

299. The Project is one segment, the Eastern Segment, of the larger Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project.[339]

300. The Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project was studied, reviewed, and approved as part of the Long-Range Transmission Planning (LRTP) Tranche 1 Portfolio by the Midcontinent Independent System

[336] Ex. APP-14 at 26 (Route Permit Application).

[337] Ex. APP-14 at 28 (Route Permit Application).

[338] Ex. APP-14 at 28 (Route Permit Application).

[339] Ex. APP-14 at 2 (Route Permit Application).

Operator, Inc.'s (MISO) Board of Directors in July 2022 as part of its 2021 Transmission Expansion Plan.[340]

301. The LRTP Tranche 1 Portfolio will provide significant benefits to the Midwest subregion of the MISO footprint by facilitating more reliable, safe, and affordable energy delivery. The Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project, designated as LRTP2 in 2021 Transmission Expansion Plan, is a key part of the LRTP Tranche 1 Portfolio. More specifically, the existing 230 kV transmission system in eastern North Dakota and South Dakota plays a key role in transporting and delivering energy into Minnesota. The 230 kV system is at its capacity leading to a number of reliability concerns that could affect customers' service. The Big Stone South – Alexandria – Big Oaks 345 kV Transmission Project is needed to provide additional transmission capacity, to mitigate current capacity issues, and to improve electric system reliability throughout the region as more renewable energy resources are added to the electric system in and around the region.[341]

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

302. Minnesota Rule 7850.4100(L) requires consideration of the cost to construct proposed routes and the cost of O&M.

303. The Project will cost between $250.7 million and $280.90 million ($ escalated to anticipated year of spend) to construct.[342]

304. The costs to construct the Mississippi River crossing options are shown in Table 6. The Western Crossing Single-Circuit Option is the least expensive option to construct and MnDNR Option 1 is the most expensive option to construct.[343]

Table 6. Estimated Construction Costs of the Mississippi River Crossing Options

Route Option	Western Crossing Single-Circuit Option	Eastern Crossing Option	MnDNR Option 1	MnDNR Option 2 (Single-Circuit)	MnDNR Option 3	Western Crossing Option B (Double-Circuit)	MnDNR Option 2B (Double-Circuit)
Estimated Cost	$10,130,000	$15,310,000	$26,960,000	$10,140,000	$21,170,000	$14,380,000	$14,660,000

[340] Ex. APP-14 at 2 (Route Permit Application).

[341] Ex. APP-14 at 2 (Route Permit Application).

[342] Ex. APP-27 at 6-7 (Reply Comments).

[343] Ex. APP-28 at 10 (Direct Testimony and Schedules of Matthew Langan).

305. Line inspections are the principal operating and maintenance cost for transmission facilities. The aerial inspections cost approximately $75-$100 per mile and the ground inspections cost approximately $200-$400 per mile. Actual line specific maintenance costs depend on the setting, the amount of vegetation management necessary, storm damage occurrences, structure types, materials used, and the age of the line.[344]

306. The Applicants' substation operation and maintenance costs typically range from $50,000 to $100,000 annually.[345]

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

307. Minnesota Rule 7850.4100(M) requires consideration of unavoidable human and environmental impacts.

308. Resource impacts are unavoidable when an impact cannot be avoided even with mitigation strategies.[346]

309. Transmission lines are infrastructure projects that have unavoidable adverse human and environmental impacts. These potential impacts and the possible ways to mitigate against them were discussed in the Application and the EA. However, even with mitigation strategies, certain impacts cannot be avoided.[347]

310. Unavoidable adverse impacts associated with construction of the proposed Project include:[348]

- Possible traffic delays and fugitive dust on roadways.
- Visual and noise disturbances.
- Soil compaction and erosion.
- Vegetative clearing; removal or changes to wetland type and function to be confirmed after delineation is completed.

[344] Ex. APP-14 at 42 (Route Permit Application).

[345] Ex. EERA-22 at 38–39 (EA).

[346] Ex. EERA-22 at 141 (EA).

[347] Ex. EERA-22 at 141 (EA).

[348] Ex. EERA-22 at 141–42 (EA).

- Disturbance and temporary displacement of wildlife, as well as direct impacts to wildlife due to inadvertent injury during structure placement or other construction activities.

- Minor amounts of habitat loss.

- Converting the underlying land use to an industrial use.

- Criteria pollutant and GHG emissions.[349]

311. Unavoidable adverse impacts associated with the operation of the proposed project include:[350]

- Visual impact of structures, conductors, and the new Big Oaks Substation.

- Change in landscape character and any subsequent impact to cultural values.

- Loss of land use for other purposes where structures are placed.

- Injury or death of avian species that collide with, or are electrocuted by, new transmission lines or conductors.

- Interference with AM radio signals.

- Continued maintenance of tall-growing vegetation.

- Criteria pollutant and GHG emissions.

- Increased EMF on the landscape (potential impacts from EMF are minimal and are not expected to impact human health).[351]

M. Irreversible and Irretrievable Commitments of Resources

312. Minnesota Rule 7850.4100(N) requires consideration of the irreversible and irretrievable commitments of resources that are necessary for the Project.

[349] Ex. EERA-22 at 141–42 (EA).

[350] Ex. EERA-22 at 142 (EA).

[351] Ex. EERA-22 at 142 (EA).

313. Resource commitments are irreversible when it is impossible or very difficult to redirect that resource to a different future use; an irretrievable commitment of resources means the resource is not recoverable for later use by future generations.[352]

314. Irreversible impacts include the land required to construct the transmission line. While it is possible that the structures, conductors, and buildings could be removed and the right-of-way restored to previous conditions, this is unlikely to happen in the reasonably foreseeable future (~50 years). As it will be determined after wetland delineation, the loss of wetlands would be considered irreversible, because replacing these wetlands would take a significant amount of time. Certain land uses within the right-of-way will no longer be able to occur, especially at the Big Oaks Substation.[353]

315. Irretrievable commitments of resources are primarily related to project construction, including the use of water, aggregate, hydrocarbon fuel, steel, concrete, wood, and other consumable resources. The commitment of labor and fiscal resources is also considered irretrievable.[354]

316. As the Proposed Route is located along existing high-voltage transmission line right-of-way for more than 95 percent of its length, this land has already been committed to transmission line right-of-way.[355]

VIII. COMPARISON OF MISSISSIPPI RIVER CROSSING OPTIONS

317. The Applicants identified Western Crossing Option B (Double-Circuit) as their preferred route for the Mississippi River crossing of the Project.[356]

318. Western Crossing Option B (Double-Circuit) is a modification to the Western Option included in the Application. This option involves stringing a new 115 kV circuit on existing 345 kV structures from the Monticello Substation north to where the new 345 kV transmission line deviates from the existing 345/345 kV structures to cross the Mississippi River. At this point, the new 345 kV transmission line would be double-circuited with an existing 115 kV transmission line across the Mississippi River to the Big Oaks Substation. At the Big Oaks Substation, the 115 kV circuit would then route north around the new Big Oaks Substation to reconnect with the existing 115 kV

[352] Ex. EERA-22 at 142 (EA).

[353] Ex. EERA-22 at 142 (EA).

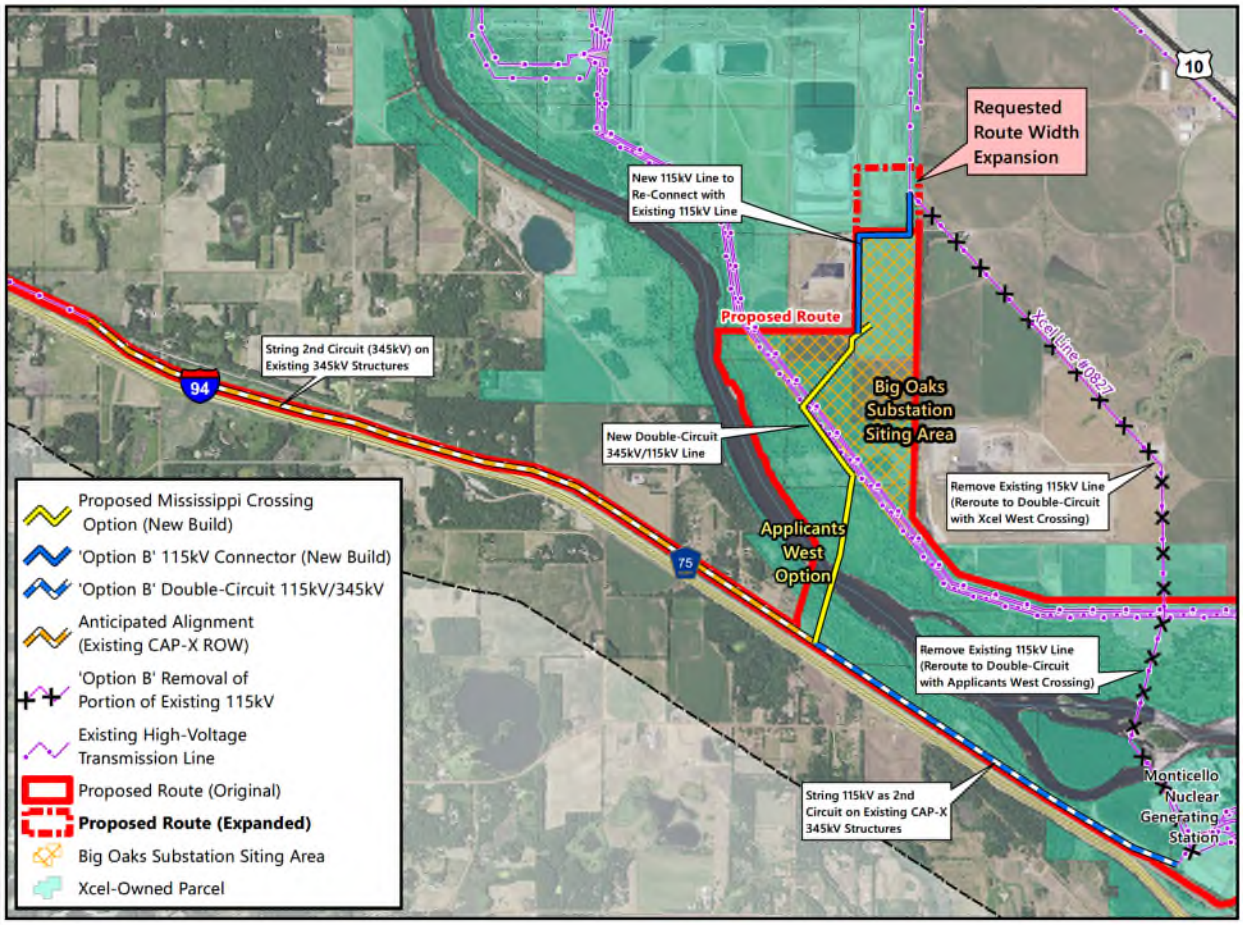
[354] Ex. EERA-22 at 142 (EA).

[355] Ex. APP-14 at 28 (Route Permit Application).

[356] Ex. APP-28 at 8 (Direct Testimony and Schedules of Matthew Langan).

transmission alignment. The existing 115 kV transmission line crossing the Mississippi River would be removed.[357] This option is shown in Figure 6 below.

Figure 6. Western Crossing Option B (Double-Circuit)[358]



319. Western Crossing Option B (Double-Circuit) best aligns with the routing factors in Minn. R. 7850.4100 by minimizing impacts to existing land use and the natural environment and has fewer potential construction and maintenance issues.[359] This option mitigates a number of key construction and maintenance issues that may arise for the other Mississippi River crossing options as it would not require any new transmission structures to be placed either on an island in the middle of the Mississippi River or on the river bluffs.[360]

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[357] Ex. APP-28 at 7 (Direct Testimony and Schedules of Matthew Langan).

[358] Attachment A to Applicants' Comments (July 8, 2024) (eDocket No. 20247-208401-01).

[359] Ex. EERA-22 at 170-171 (EA).

[360] Ex. APP-28 at 8-9 (Direct Testimony and Schedules of Matthew Langan).

320. Western Crossing Option B (Double-Circuit) also minimizes long-term impacts to ecologically significant areas and a nearby Wild & Scenic River District by consolidating transmission line crossings of the Mississippi River, as this option would remove an existing 115 kV transmission line crossing.[361]

321. Western Crossing Option B (Double-Circuit) also has only 0.7 miles in that Wild & Scenic River District, which will have significantly fewer ecological impacts in that area compared to the other crossing alternatives.[362]

322. This option also has fewer nearby occupied residences compared to other route alternatives, mitigating potential visual and aesthetic impacts.[363]

323. As shown in Table 4 above, the Western Crossing Option B (Double-Circuit) would require the least amount of forested and non-forested vegetation clearing.[364]

324. Western Crossing Option B (Double-Circuit) is also located entirely on Xcel Energy-owned land, eliminating the need for additional easements from local landowners and reducing impacts to landowners and the costs associated with obtaining these new easements.[365]

325. As shown in Table 6 above, the projected cost of constructing Western Crossing Option B (Double-Circuit) is $14.38 million, which is less than the estimated cost to construct either the Eastern Crossing Option or MnDNR Option 2B (Double-Circuit), and significantly less than the estimated cost to construct MnDNR Options 1 or 3.[366]

326. Based on a consideration of all routing factors, Western Crossing Option B (Double-Circuit) is the best Mississippi River crossing option for the Project.[367]

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[361] Ex. APP-28 at 9 (Direct Testimony and Schedules of Matthew Langan).

[362] Ex. APP-28 at 9 (Direct Testimony and Schedules of Matthew Langan).

[363] Ex. APP-28 at 9 (Direct Testimony and Schedules of Matthew Langan).

[364] Ex. EERA-22 at 163 (EA).

[365] Ex. APP-28 at 9 (Direct Testimony and Schedules of Matthew Langan).

[366] Ex. APP-28 at 10 (Direct Testimony and Schedules of Matthew Langan).

[367] Ex. APP-28 at Schedule 2 at 15-16 (Direct Testimony and Schedules of Matthew Langan).

IX. CONSIDERATION OF ISSUES PRESENTED BY STATE AGENCIES AND LOCAL UNITS OF GOVERNMENT

327. Minn. Stat. § 216E.03, subd. 7(12) requires the Commission to examine, when appropriate, issues presented by federal and state agencies and local units of government. The issues presented by federal, state, and local units of government are addressed as part of the analysis of the Commission's routing factors.

X. SUMMARY OF ROUTE RECOMMENDATION

328. Based on a consideration of all routing factors, the record demonstrates that the Proposed Route with the Western Crossing Option B (Double-Circuit) satisfies the routing factors in Minn. Stat. § 216E.03, subd. 7 and Minn. R. 7850.4000 and 7850.4100.

XI. SPECIAL ROUTE PERMIT CONDITIONS

329. The EA recommended inclusion of several special permit conditions into the final Route Permit.[368] The record supports the inclusion of the conditions discussed below with respect to the Proposed Route with the Western Crossing Option B (Double-Circuit).

330. Substation Lighting: For all new lighting installations at Project substations, the Permittees shall utilize downlit and shielded lighting at the site entrances and inverters to reduce harm to birds, insects, and other animals. Lighting utilized shall minimize blue hue. The Permittees shall keep records of compliance with this section and provide them upon the request of Department of Commerce or Commission staff.[369]

331. Noise: The Permittee shall comply with noise standards established under Minn. R. 7030.0010 to 7030.0080. The Permittee shall limit construction and maintenance activities to daytime working hours to the extent practicable.[370]

332. Vegetation: The Permittees shall use of the wire/border zone vegetation clearing method could help to stabilize soils by allowing certain low growing woody vegetation and trees to persist along the outside edges of the right-of-way, to the extent

[368] Ex. EERA-22 at 173 (EA).

[369] Ex. EERA-22 at 173 (EA); Applicants' Comments (July 8, 2024) (eDocket No. 20247-208401-01).

[370] Ex. EERA-22 at 173 (EA). This is already part of the sample route permit included in Appendix C of the EA. Ex. EERA-22 at Appendix C at 5 (EA).

that the low growing vegetation that will not pose a threat to the transmission line or impede construction.[371]

333. Vegetation Management Plan: The Permittees shall develop a vegetation management plan (VMP), in coordination with the MnDNR. The Permittee shall file the VMP and documentation of the coordination efforts between the Permittee and the MnDNR with the Commission as part of the plan and profile required in Section 9.2 of the Permit.[372]

334. Dust Control: To protect plants and wildlife from chloride products that do not break down in the environment, the Permittees are prohibited from using dust control products containing calcium chloride or magnesium chloride during construction and operation of the Project. The Permittees shall keep records of compliance with this section and provide them upon the request of Department of Commerce or Commission staff.[373]

335. Wildlife Friendly Erosion Control: The Permittees shall use only "bio-netting" or "natural netting" types and mulch products without synthetic (plastic) fiber additives.[374]

336. Archeological and Historic Resources: Permittees shall file a demonstration as part of the plan and profile required in Section 9.2 of this Permit that they have coordinated with SHPO once a final alignment has been determined for the Project and before beginning construction.

337. Native Prairies: The Permittees shall not impact native prairie during construction activities, as defined in Minn. Stat. § 216E.01, unless addressed in a prairie protection and management plan. The Permittees shall prepare a prairie protection and management plan in consultation with the MnDNR if native prairie, as defined in Minn. Stat. § 84.02, subd. 5, is identified within the Project right-of-way. The Permittees shall file the prairie protection and management plan with the Commission at least 30 days prior to submitting the plan and profile required by Section 9.2 of this permit. The prairie protection and management plan shall address steps that will be taken to avoid impacts to native prairie and mitigation to unavoidable impacts to native prairie by restoration or management of other native prairie areas that are in degraded condition,

[371] Ex. EERA-22 at 173 (EA).

[372] Ex. EERA-22 at 173 (EA).

[373] Ex. EERA-22 at 174 (EA).

[374] Ex. EERA-22 at 174 (EA).

by conveyance of conservation easements, or by other means agreed to by the Permittees, the MnDNR, and the Commission.

338. Calcareous Fen: Should any calcareous fens be identified within the project area, the Permittees must work with MnDNR to determine if any impacts will occur during any phase of the Project. If the Project is anticipated to impact any calcareous fens, the Permittees must develop a Calcareous Fen Management Plan in coordination with the MnDNR, as specified in Minn. Stat. § 103G.223. Should a Calcareous Fen Management Plan be required, the approved plan must be submitted concurrently with the plan and profile required in Section 9.2 of the Permit.[375]

XII. NOTICE

339. Minnesota statutes and rules require an applicant for a Route Permit to provide certain notice to the public as well as to local governments before and during the Application for a Route Permit process.[376]

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

341. Minnesota statutes and rules also require the DOC-EERA and the Commission to provide certain notice to the public throughout the Route Permit process. The DOC-EERA and the Commission provided the notice in satisfaction of Minnesota statutes and rules.[377]

COMPLETENESS OF THE EA

342. The Commission is required to determine the completeness of the EA.[378] An EA is complete if it and the record address the issues and alternatives identified in the Scoping Decision.[379]

343. The evidence in the record demonstrates that the EA is complete because the EA and the record created at the public hearings and during the subsequent comment period address the issues and alternatives raised in the Scoping Decision.

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[375] Ex. EERA-22 at 175 (EA); Applicants' Comments (July 8, 2024) (eDocket No. 20247-208401-01).

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

[377] Minn. Stat. § 216E.03, subd. 6; Minn. Stat. § 216E.04, subd. 6; Minn. R. 7850.2300, subp. 2; Minn. R. 7850.3700, subps. 2, 3, and 6.

[378] Minn. R. 7850.3900, subp. 2.

[379] Minn. R. 7850.3900, subp. 2.

Based on the foregoing Findings of Fact and the record in this proceeding, the ALJ makes the following:

CONCLUSIONS

1. The Commission and the ALJ have jurisdiction to consider the Applicants' Route Permit Application.

2. The Commission determined that the Application was substantially complete and accepted the Application on December 5, 2023.

3. The DOC-EERA has conducted an appropriate environmental analysis for the Project for purposes of this Route Permit proceeding and the EA satisfies Minn. R. 7850.3700.

4. The Applicants gave notice as required by Minn. Stat. §§ 216E.03, subd. 3a and 4, 216E.04, subd. 4, and Minn. R. 7850.2100, subp. 2 and 4.

5. DOC-EERA gave notice as required by Minn. Stat. §§ 216E.03, subd. 6, 216E.04, subd. 6, Minn. R. 7850.2300, subp. 2, and Minn. R. 7850.2500, subp. 2, 3, and 6.

6. Public hearings were conducted in communities along the proposed transmission line routes. The Applicants and the Commission gave proper notice of the public hearings and the public was given the opportunity to appear at the hearings or submit written comments.

7. All procedural requirements for processing the Route Permit have been met.

8. The record evidence demonstrates that the Proposed Route with the Western Crossing Option B (Double-Circuit) satisfies the Route Permit criteria set forth in Minn. Stat. § 216E.03, subd. 7(a) and Minn. R. 7850.4100 based on the factors in Minn. Stat. § 216E.03, subd. 7 and Minn. R. 7850.4000.

9. The record evidence demonstrates that constructing the Project along the Proposed Route with the Western Crossing Option B (Double-Circuit) does not present a potential for significant adverse environmental effects pursuant to the Minnesota Environmental Rights Acts, Minn. Stat. §§ 116B.01-116B.13, and the Minnesota Environmental Policy Act, Minn. Stat. §§ 116D.01-116D.11.

10. The evidence in the record demonstrates that the Proposed Route with the Western Crossing Option B (Double-Circuit) is the best route for the Project.

11. Any Findings more properly designated as Conclusions are adopted as such.

Based on these Findings and Fact and Conclusions, the ALJ makes the following:

RECOMMENDATIONS

1. The Commission concludes that all relevant statutory and rule criteria necessary to obtain a Route Permit for the Proposed Route with the Western Crossing Option B (Double-Circuit) have been satisfied and that there are no statutory or other requirements that preclude granting a Route Permit based on the record.

2. The Commission should grant a Route Permit for the Proposed Route with the Western Crossing Option B (Double-Circuit).

3. The Commission's Standard Route Permit Conditions should be incorporated into the Route Permit, unless modified herein in Section XI.

4. The Applicants be required to take those actions necessary to implement the Commission's orders in this proceeding.

THIS REPORT IS NOT AN ORDER AND NO AUTHORITY IS GRANTED HEREIN. THE MINNESOTA PUBLIC UTILITIES COMMISSION WILL ISSUE THE ORDER THAT MAY ADOPT OR DIFFER FROM THE PRECEDING RECOMMENDATION.

Dated on_____

_____
Megan J. McKenzie
Administrative Law Judge