BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

COMMENTS AND RECOMMENDATIONS OF MINNESOTA DEPARTMENT OF COMMERCE ENERGY FACILITY PERMITTING STAFF

DOCKET NO. ET2/TL-11-867

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In the Matter of the Route Permit Application by Great River Energy for the Parkers Prairie 115 kV Transmission Line Project in Otter Tail County, Minnesota

Issues Addressed:
These comments and recommendations address the questions of whether the Commission should:

(1) Determine that the environmental assessment (EA) and record created at the public hearing address the issues identified in the EA scoping decision, and
(2) Issue a route permit, with a designated route and appropriate conditions, to Great River Energy for the Parkers Prairie 115 kV transmission line project.

Documents Attached:
(1) Proposed findings of facts, conclusions of law, and order
(2) Proposed transmission line route permit

Additional documents and information can be found on eDockets: https://www.edockets.state.mn.us/EFiling/search.jsp (11-867) and on the Department's energy facilities permitting website: http://mn.gov/commerce/energyfacilities/Docket.html?Id=32307.

The enclosed materials are work papers of Department of Commerce, Energy Facility Permitting (EFP) staff. They are intended for use by the Public Utilities Commission and are based on information already in the record unless otherwise noted.

Introduction and Background

On October 24, 2011, Great River Energy (GRE) submitted a route permit application to the Commission for the proposed Parkers Prairie 115 kilovolt (kV) transmission line project.

Project Description
The Parkers Prairie project would remove approximately 2.1 miles of an existing 41.6 kV transmission line and replace this line with a new 115 kV line. The existing 41.6 kV transmission line runs parallel to and on the south side of Otter Tail County Road 6 (CSAH 6).

The new 115 kV line will feed an expanded and updated Parkers Prairie substation. The substation's fenced area will be expanded 40 ft. to the south to accommodate a new 115 kV transformer. The substation and new 115 kV line will be connected to GRE's existing Inman – Alexandria 115 kV line (LR-IA) through a switch structure. Upon construction of the new 115 kV line and connection to the existing LR-IA line, GRE will remove the existing 41.6 kV line along CSAH 6 and an additional 1650 ft. of 41.6 kV line, southward along Minnesota State Highway 29, which will no longer be need for electrical service in the area.

In its route permit application, GRE requested a route width of 300 ft., centered on CSAH 6, and a route width of 300 ft. along its existing LR-IA line to accommodate connection via the switch structure. GRE has indicated the 115 kV line will require a right-of-way (easement) of 100 feet. Wooden poles, ranging in height from 60-85 feet, will be used for the new line. Some specialty poles may be required at specific locations (e.g., steel poles).

GRE estimates the total costs for construction of the project to be $1.47 million dollars. The project is anticipated to begin construction in late 2012.

Regulatory Process and Procedures

In Minnesota, no person may construct a high voltage transmission line (HVTL) without a route permit from the Commission (Minnesota Statute 216E.03). A high voltage transmission line is defined as a conductor of electric energy designed for and capable of operation at a voltage of 100 kV or more and greater than 1,500 feet in length (Minnesota Statute 216E.01). The Parkers Prairie project will consist of approximately 2.1 miles of new 115 kV transmission line and therefore requires a route permit from the Commission.

Route Permit Application and Acceptance
On October 24, 2011, GRE filed a route permit application under the alternative permitting process for the Parkers Prairie 115 kV transmission line project.[1] On December 7, 2011, the Commission found the application complete and authorized Department of Commerce, Energy Facility Permitting (EFP) staff to process the application under the alternative permitting process pursuant to Minnesota Rules 7850.2800 to 7850.3900.[2]

[1] Application to the Minnesota Public Utilities Commission for a Route Permit, Parkers Prairie 115 kV Project, Great River Energy, October, 24, 2011, eDocket Numbers 201110-67619-01, 201110-67619-02, 201110-67619-03, 201110-67619-04, 201110-67619-05 [hereafter Route Permit Application].
[2] Commission Order Accepting Application as Complete, eDockets Number 201112-69045-01.

Public Information and Environmental Assessment Scoping Meeting

EFP staff is responsible for conducting environmental review for route permit applications to the Commission (Minn. Rules 7850.3700). Environmental review under the alternative permitting process requires a public information and scoping meeting, development of a scoping decision, and the preparation of the environmental assessment (EA). The EA exams the potential human and environmental impacts of a proposed project, alternative routes for the project, and potential mitigative measures.

Following notice by mail and newspaper publication, EFP staff held a public information and EA scoping meeting on December 13, 2011, at the Prairie Event Center in Parkers Prairie, Minn. Approximately 15 members of the public attended the meeting, and two persons took the opportunity to make comments. A court reporter was present at the public meeting and transcribed comments made by the public, as well as responses from EFP staff and GRE. A citizen at the meeting proposed an alternative to the project – moving the existing Parkers Prairie substation to a new location east of Minnesota State Highway 29, thus mooting the need for a new 115 kV line.

A comment period following the meeting ended on December 30, 2011. Five comment letters were received during this comment period. Two comment letters expressed concern for the potential loss of trees due to the project. The Otter Tail County Highway Department commented that it would like to reserve a 120 ft. road right-of-way for CSAH 6 to accommodate future road reconstruction (the current road right-of-way is 100 ft.).

The issues raised during the scoping process were reviewed for incorporation into an EA scoping decision.

Scoping Decision

The issues and alternative raised during the EA scoping process were reviewed in preparation for the EA scoping decision. The scoping decision identified one route to be evaluated in the EA – the route proposed by GRE in its route permit application. Additionally, the scope identified alternative alignments within GRE's proposed route, including: (1) within the right-of-way (ROW) of CSAH 6, (2) outside the current ROW of CSAH 6, and (3) outside the potential future ROW of CSAH 6.

The project alternative proposed during the EA scoping process was not carried forward in the EA scoping decision. This alternative was determined by EFP staff to not meet the project's purpose as well as being relatively less efficient, less reliable, and more expensive to construct and maintain.

The Department of Commerce (Department) issued its EA scoping decision on January 13, 2012.[3]

[3] Environmental Assessment Scoping Decision, PUC Docket No. ET2/TL-11-867, Minnesota Department of Commerce, January 13, 2012, eDockets Number 20121-70357-01.

Environmental Assessment

An EA must be prepared for all transmission line projects reviewed under the alternative permitting process. The EA for the Parkers Prairie project identifies and characterizes the potential human and environmental impacts of the project, and methods to avoid, minimize, and mitigate such impacts. EFP staff issued the EA on March 19, 2012.[4]

Public Hearing

EPF staff requested that an administrative law judge (ALJ) from the Office of Administrative Hearings preside over the public hearing and provide a summary of testimony. After notice by mail and newspaper publication, a public hearing was held on April 10, 2012, at the Prairie Event Center in Parkers Prairie, Minn. Judge Richard Luis presided over the hearing. Approximately 20 members of the public attended the public hearing. A comment period following the hearing ended on April 27, 2012. Five persons made comments and asked questions at the public hearing; three comment letters were submitted to Judge Luis during the comment period after the hearing. Judge Luis issued a revised summary of testimony and written comments on May 29, 2012.[5]

Comments and questions received during the hearing related to: (1) Otter Tail County's proposed reconstruction of CSAH 6 and the potential placement of transmission line poles outside of a future road ROW, (2) the potential loss of trees due to the project, particularly if the line is placed outside of a future road ROW, and (3) the potential interference with agricultural irrigation systems along CSAH 6, particularly if the line is placed outside of a future road ROW.

Standards for Permit Issuance

The Power Plant Siting Act requires that transmission lines be located "in an orderly manner compatible with environmental preservation and the efficient use of resources" and in a way that minimizes "adverse human and environmental impact while insuring" electric power reliability (Minnesota Statute 216E.02). Minnesota Statute 216E.03, subdivision 7(b) identifies 12 considerations to guide route designations, including the evaluation and minimization of adverse environmental impacts, impacts to public health and welfare, and adverse economic impacts.

Minnesota Rule 7850.4100 establishes 14 factors to be considered in determining whether to issue a route permit, including effects on human settlement, effects on public health and safety, effects on land-based economies, and effects on the natural environment. The Commission, when issuing a route permit, may place such conditions on the permit as are appropriate and supported by the record (Minnesota Statue 216E.03).

[4] Environmental Assessment, Parkers Prairie 115 kV Transmission Line Project, Minnesota Department of Commerce, March 19, 2012, eDockets Number 20123-72712-01.
[5] Revised Summary of Testimony at Public Hearing and Summary of Written Comments, May 29, 2012, eDockets Number 20125-75075-01.

DOC EFP Staff Analysis and Comments

EFP staff has prepared: (1) proposed findings of fact, conclusions of law, and order, and (2) a proposed route permit (attached). The proposed findings demonstrate that the alternative permitting process has been conducted in accordance with Minnesota Rules 7850.2800, to 7850.3900.[6] The findings identify potential impacts of the route and alignments studied in the EA and mitigative measures.[7] The findings evaluate these impacts and mitigative measures against the criteria of Minnesota Statute 216E.03, subdivision 7(b) and Minnesota Rule 7850.4100.[8] The proposed permit includes measures to ensure that the Parker Prairie project is constructed safely, operates reliably, and that impacts are minimized or mitigated.

EFP staff has developed its proposed findings, proposed route permit, and comments and recommendations based on the record in this matter and with consideration of the statutes and rules guiding permit issuance.[9]

Many potential impacts of the Parkers Prairie are anticipated to be minimal and relatively independent of the alignment for the new 115 kV line, e.g., impacts to public health and safety, public services, electronic communications, water resources.[10] There are impacts which are anticipated to be non-minimal and could be significant depending on the alignment of the project – specifically, impacts to land-based economies (agriculture, forestry), and to treed areas and shelterbelts.[11]

Based on record in this matter, EFP staff recommends that the Commission permit an alignment which utilizes both sides of CSAH 6 to avoid and mitigate impacts. This is alignment 3 from the EA for this project. EFP staff recommends that the Commission permit GRE's proposed route with an anticipated alignment as described in the proposed route permit and shown in the attached permit maps. EFP staff's recommendation is based on the three primary concerns that emerged from the EA and public hearing process – (1) Otter Tail County's proposed reconstruction of CSAH 6, (2) the potential loss of trees due to the project, and (3) the potential interference with agricultural irrigation systems along CSAH 6 due to the project.

Otter Tail County's Proposed Reconstruction of CSAH 6

During the EA scoping process and the public hearing, the Otter Tail County highway department indicated that CSAH 6 would, at some time in the future, be reconstructed and requested that a road right-of-way (ROW) of 120 ft. be reserved for this reconstruction.[12] The current road ROW is 100 ft. The gist of the county's request is that the transmission line poles for the Parkers Prairie project be placed at a distance greater than 60 ft. from the CSAH 6 centerline. If they are not placed at this distance, the county would need to pay for the relocation

[6] Proposed Findings of Fact 32-69.
[7] Proposed Findings of Fact 75-179.
[8] Id.
[9] Proposed Findings of Fact 72-74.
[10] Proposed Finding of Fact 173.
[11] Proposed Findings of Fact 126-136; 147-156; 174.
[12] Proposed Finding of Fact 63.

of the poles at some future date to facilitate the CSAH 6 reconstruction.[13] The costs for relocation are estimated by the county to be in the range of $800,000 dollars.[14]

EFP staff believes the record indicates that granting the county's request would be inconsistent with the state's routing criteria and cannot reasonably be accommodated. Two portions of the record support this belief. First, an alignment at greater than 60 ft. from the CSAH 6 centerline significantly increases potential impacts to irrigated agricultural fields and to trees/shelterbelts.[15] Though the increase in the road ROW sought by the county is relatively small – 10 ft. on each side of the road – here that 10 ft. matters. Irrigation systems on both sides of CSAH 6 have swing arms, spray nozzles, and other equipment that regularly traverse fields at distances of 60-70 ft. from the CSAH 6 centerline.[16] There are several shelterbelts and a tree farm along CSAH.[17] Impacts to two residential shelterbelts and to the tree farm would be significant if the alignment for the project were greater than 60 ft. from the CSAH 6 centerline.[18]

Second, the county's request suffers from indefiniteness. Based on the county's testimony at the public hearing, reconstruction of CSAH 6 would be given consideration, at the earliest, sometime after 2032.[19] Though the state's routing criteria direct the Commission to minimize land use conflicts and consider issues raised by local governments, the county's request does not include a timeline that allows the Commission to properly weigh the impacts that flow from the county's request with the county's interest in avoiding relocation costs.[20]

Impacts to Trees and Shelterbelts

There are five heavily treed areas along CSAH 6 and the proposed route – agricultural shelterbelts, residential shelterbelts, and a tree farm.[21] Of the five, four are on the south side of CSAH 6. Thus, one means of mitigating impacts to trees is to place the alignment for the line on the north side of CSAH 6.[22] Doing so makes the project more expensive; it requires the underbuilding or undergrounding of the existing distribution line on the north side of CSAH 6.[23]

The proposed alignment (alignment 3 from the EA) mitigates impacts to trees and costs by splitting the difference, i.e., by proceeding on the south side of CSAH 6 for a portion of the route where the impacts are to agricultural shelterbelts, and on the north side of CSAH 6 for a portion of the route, avoiding impacts to residential shelterbelts and the tree farm.[24] This alignment, where it impacts trees, impacts agricultural areas rather than residential areas. And though agricultural shelterbelts are of benefit, the loss of such shelterbelts can be mitigated (e.g., by new plantings of low-growing species along a field edge) more easily than the loss of residential shelterbelts or a tree farm.

[13] Id.
[14] Id.
[15] Proposed Findings of Fact 126-136; 147-156; 174.
[16] Proposed Findings of Fact 126-131.
[17] Proposed Findings of Fact 132-134; 147-156.
[18] Id.
[19] Proposed Finding of Fact 63.
[20] Minnesota Statute 216E.03, Subdivision 7(a) and 7(b) (12).
[21] Proposed Findings of Fact 147-156.
[22] Id.
[23] Proposed Finding of Fact 162.
[24] Proposed Finding of Fact 178.

Interference with Agricultural Irrigation Systems

There are seven irrigation systems that abut CSAH 6 and run the length of the proposed route – three on the north side and four on the south side.[25] These systems are used to irrigate crops and have been developed to accommodate CSAH 6, the existing electrical lines along CSAH 6, and shelterbelts.[26] Each system has a well which supplies irrigation water. There are two wells relatively close to CSAH 6 – at distances of 72 ft. and 82 ft. from the CSAH 6 centerline.[27]

The irrigation systems on the south side of CSAH 6 are relatively farther from the CSAH 6 centerline compared with those on the north side. The closest approach of irrigation systems on the south side of CSAH 6 is in the range of 65-70 ft; the closest approach of systems on the north side is in the range of 60-65ft.[28] Thus, an alignment on the south side of CSAH 6, in general, mitigates potential impacts to irrigation systems.

Because of potential impacts to treed areas on the south side of CSAH 6, the proposed alignment utilizes the south side of CSAH 6 to avoid most irrigation systems but runs next to one irrigation system on the north side of CSAH 6.[29] To avoid impacts to this irrigation system, the alignment on the north side of CSAH is proposed to be 50-55 ft. from the CSAH 6 centerline.[30] Additionally, the proposed permit requires the use of self-supporting structures (non-guyed structures) to cross CSAH 6 in order avoid impacts to irrigation systems and fields.[31]

Post-Hearing Concerns Expressed by the Applicant

No person, including the applicant, expressed concerns related to the anticipated alignment (alignment 3) during the environmental review and hearing process. However, during preparation of the proposed permit for this project, the applicant has expressed concerns to EFP staff regarding the anticipated alignment in the permit. There are two specific concerns which EFP staff believes it would be prudent to discuss here.

First, the applicant has expressed a concern with the proximity of the new 115 kV line to an irrigation well on the north side of CSAH 6. This well is approximately 72 ft. from the CSAH 6 centerline.[32] The proposed alignment for this portion of the line is 50-55 ft. from the CSAH 6 centerline; thus, there is a distance of 17-22 ft. between the alignment and the irrigation well.

The concern is one of electrical safety – i.e., can the transmission line and well operate safely when separated by a horizontal distance of 17-22 ft. There is no information in the record on this point. To answer this question will likely require further engineering and design work, additional in-field measurements, and calculations in conformance with the National Electrical Safety Code (NESC). The proposed permit requires compliance with the NESC, specifically limiting short-circuit currents between the ground and fixed metallic objects on or near the

[25] Proposed Findings of Fact 126-131.
[26] Id.
[27] Id.
[28] Id.
[29] Proposed Finding of Fact 178.
[30] Id.
[31] Proposed Finding of Fact 163.
[32] Proposed Finding of Fact 128.

transmission line ROW.[33] The permit directs the permittee to "address and rectify any induced voltage problems" that result from the line.[34] The permit anticipates that the actual alignment of the new 115 kV line will conform to the anticipated alignment in the proposed permit unless changes are "requested by individual landowners, unforeseen conditions are encountered, or are otherwise provided for" by the permit.[35]

EFP staff believes that the above clauses of the proposed permit provide appropriate means for resolution of any safety concerns related to the proximity of the line to the irrigation well. It may be that the clearance between the line and irrigation well is sufficient. It may be that it is sufficient with proper grounding. If neither of these is true, then the applicant may elect to request a change in the alignment of the project, and, with a definitive showing of the safety issue and its inability to be addressed otherwise, be allowed such a change.[36]

Second, the applicant has expressed concern with the challenge and expense of underbuilding (or undergrounding) approximately 0.45 miles of the existing distribution line on the north side of CSAH 6, should the line follow the anticipated alignment in the proposed permit. EFP staff has no doubt that it is challenging to move a distribution line with no loss of electrical service, and that such a move is relatively more expensive that not underbuilding.[37] At $90,000 dollar per mile for underbuilding, doing so would add approximately $40,000 dollars to the project budget.[38]

However, EFP staff notes that underbuilding is a common strategy for managing electrical infrastructure and for mitigating potential impacts.[39] The Parkers Prairie route permit application notes that the applicant, though desirous of remaining on the south side of CSAH 6, wishes to retain flexibility with regard to options on the north side of CSAH 6, "such as underbuilding or burying the distribution line."[40] Moving the new 115 kV line to the north side of CSAH 6 for a portion of the route mitigates potential impacts to a residential shelterbelt and to a tree farm.[41] This mitigation can be achieved with a relatively common and not-too-expensive mitigation – moving across the road and underbuilding an existing distribution line.

[33] Proposed Permit, Section 4.7.
[34] Id.
[35] Proposed Permit, Section 3.1.
[36] Proposed Permit, Section 4.1. The plan and profile for the project must be approved before construction may commence.
[37] Proposed Findings of Fact 170.
[38] Id. Calculation = ($90,000/mile) x (0.45 miles) = $40,500.
[39] See, e.g., Southdale to Scearcyville 115 kV Transmission Line Project, TL-08-712; Enterprise Park to Crooked Lake 115 kV Transmission Line Project, TL-11-915.
[40] Route Permit Application, Section 1.2.2; Proposed Finding of Fact 21.
[41] Proposed Findings of Fact 147-156.

DOC EFP Recommendations

Department EFP staff recommends that the Commission:

1. Approve and adopt the proposed findings of fact, conclusions of law, and order for the Great River Energy Parkers Prairie 115 kV transmission line project which:

    a. Determines that the environmental assessment (EA) and record created at the public hearing addresses the issues identified in the EA scoping decision;

    b. Designates the proposed route and anticipated alignment as the route for the construction of the Parkers Prairies 115 kV transmission line project, including all associated facilities; and

    c. Issues a high voltage transmission line route permit, with appropriate conditions, to Great River Energy, a Minnesota cooperative corporation.

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Phyllis Reha	Acting Chair
David Boyd	Commissioner
J. Dennis O'Brien	Commissioner
Betsy Wergin	Commissioner

In the Matter of the Route Permit Application by Great River Energy for the Parkers Prairie 115 kV Transmission Line Project in Otter Tail County, Minnesota.	ISSUE DATE: DOCKET NO. ET2/TL-11-867 FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER ISSUING A ROUTE PERMIT TO GREAT RIVER ENERGY FOR A 115 KILOVOLT TRANSMISSION LINE AND ASSOCIATED FACILITIES

The above matter has come before the Minnesota Public Utilities Commission (Commission), acting on an application by Great River Energy for a route permit to construct a new 2.1 mile long 115 kilovolt (kV) overhead transmission line in Parkers Prairie Township in Otter Tail County, Minnesota.

A public hearing was held on April 10, 2012, in Parkers Prairie, Minnesota. The hearing was presided over by Judge Richard Luis, an administrative law judge (ALJ) from the Minnesota Office of Administrative Hearings (OAH). The hearing continued until all persons who desired to speak had done so. The hearing comment period closed on April 27, 2012.

STATEMENT OF ISSUE

Should the Commission find that the environmental assessment and the record adequately address the issues identified in the scoping decision? Should the Commission issue a route permit identifying a specific route, an anticipated alignment, and additional permit conditions for the 115 kV Parkers Prairie transmission line project?

Based upon all of the proceedings herein, the Commission makes the following:

FINDINGS OF FACT

I. Applicant

1. Great River Energy (applicant) is a not-for-profit generation and transmission cooperative corporation based in Maple Grove, Minnesota. Great River Energy provides electrical energy and related services to 28 member cooperatives.[1]

2. The applicant has applied for a high voltage transmission line route permit to construct a new 115 kV transmission line and to upgrade the existing Parkers Prairie substation. The applicant indicates that the project will address low voltage issues that jeopardize reliable electrical service in rural areas near Parkers Prairie, Minnesota.[2]

II. Project Description

3. The proposed Parkers Prairie project consists of the following components:[3]

4. Removal of the existing 41.6 kV transmission line that serves the Parkers Prairie substation, from the substation eastward (approximately two miles) and then southward (approximately 1,650 ft.) along Minnesota State Highway 29 (MN 29);

5. Construction of a new 115 kV transmission line from the Parkers Prairie substation to a connection with Great River Energy's existing Inman – Alexandria 115 kV line (LR-IA line) (approximately 2.1 miles);

6. Installation of a new 115 kV, 2000 amp, three-way switch to connect the new 115 kV line to the existing LR-IA line;

7. Replacement of two to four structures on the existing LR-IA line to accommodate the new switch and the connection of the new 115 kV line to the existing LR-IA line; and

8. Expansion of the existing Parkers Prairie substation site southward (approximately 40 ft) to accommodate a new 115/12.5 kV transformer and associated equipment.

[1] Exhibit (Ex.) 2 at p. 1-1 (Route Permit Application [hereafter RPA]).
[2] Ex. 2 at p. 3-1 (RPA).
[3] Ex. 2 at p. 1-3 (RPA).

A. Route and Route Width

9. Great River Energy (GRE) has identified and proposed one route for the project. This route extends from the Parkers Prairie substation, eastward along Otter Tail County Road 6 (CSAH 6), across Minnesota State Highway 29 and Canadian Pacific railroad tracks, to a connection with GRE's existing LR-IA line.[4]

10. The route proposed by GRE was the only route considered in the environmental review of the Parkers Prairie project.[5]

11. GRE requests a route width of 300 feet, centered on CSAH 6, which would allow for the new 115 kV line to be constructed on the north or south side of CSAH 6 or some combination thereof.[6]

12. GRE additionally requests a route width of 300 feet, centered on the existing LR-IA line and extending 150 ft. north of structure LR-IA-317 and 150 ft. south of structure LR-IA-321, to accommodate the connection of the new 115 kV line to the existing LR-IA line.[7]

B. Alignments

13. Four alignments were evaluated in the environmental assessment (EA) for the project. GRE's proposed alignment was among those evaluated and is noted as alignment 1.[8]

14. **Alignment 1.** GRE proposes an alignment for the new 115 kV line on the south side of CSAH 6 at a distance of 55 ft. from the CSAH 6 centerline.[9]

15. **Alignment 2.** Alignment 2 would place the new 115 kV line on the north side of CSAH 6 at a distance of 55 feet from the CSAH 6 centerline.[10]

16. **Alignment 3.** Alignment 3 would place the new 115 kV line on the south side of CSAH 6, 55 feet from the CSAH 6 centerline, from the Parkers Prairie substation eastward to just past the Liljegren residence, then crossing to the north side of CSAH 6 (55 feet from the centerline) for the remainder of the route.[11]

17. **Alignment 4.** Alignment 4 would place the new 115 kV line on the north side of CSAH 6, 55 feet from the CSAH centerline, from the Parkers Prairie substation

[4] Ex. 2 at p. 1-4 (RPA).
[5] Exhibit 11 (Environmental Assessment Scoping Decision).
[6] Ex. 2 at p. 1-4 (RPA).
[7] Ex. 2, Figure B-7 (RPA).
[8] Ex. 13 at pp. 55-57 (Environmental Assessment [hereafter EA]).
[9] Id.
[10] Id.
[11] Id.

eastward to just before the Liljegren residence, then crossing to the south side of CSAH 6 (55 feet from the centerline), and then, once past the Liljegren residence back to the north side (55 feet from the centerline) for the remainder of the route.[12]

C. Right-of-Way

18. GRE indicates that the new 115 kV transmission line will require a 100 foot right-of-way (50 feet on either side of the line).[13]

D. Structures and Conductors

19. GRE proposes to use single pole wooden structures for the project. Poles with horizontal post insulators will be the primary structure for project; braced post insulators will be used if longer spans are required. Structures would range in height from 60 to 85 feet with an average span of 300 to 400 feet between structures.[14]

20. Specialty structures (e.g., laminate wood poles, steel poles, taller poles) and self-supporting structures may be required in certain areas along the route. Guying may be required to minimize structure deflections.[15]

21. Lake Region Electric Cooperative (LREC) operates an electrical distribution line on the north side of CSAH 6. If a route is permitted with an anticipated alignment on the north side of CSAH 6, the distribution line would be underbuilt on the new 115 kV structures or placed underground.[16]

22. The new 115 kV transmission line will have three, single conductor phase wires and one shield wire. The conductor wires will be 477 aluminum conductor steel reinforced (ACSR) wires.[17]

E. Substation

23. The existing Parkers Prairie substation will be modified to accommodate a new 115/12.5 kV transformer. The substation site (fence line) will be expanded southward (approximately 40 ft.) to accommodate the new transformer and associated switchgear.[18]

[12] Id.
[13] Ex. 2 at p. 1-4 (RPA).
[14] Ex. 2 at pp. 5-1 to 5-3 (RPA).
[15] Id.
[16] Ex. 2 at p. 1-4 (RPA).
[17] Ex. 2 at p. 5-1 (RPA).
[18] Ex. 2 at pp. 5-3 to 5-5 (RPA).

F. Project Schedule

24. GRE anticipates construction of the Parkers Prairie project will begin in late 2012; however, this timeline is dependent on several factors including permits, weather, and availability of labor and materials.[19]

G. Project Costs

25. GRE estimates the total costs for construction of the project to be $1.47 million dollars. Annual operations and maintenance costs are anticipated to be in the range of $1,100 - $1,350 dollars per mile of 115 kV transmission line.[20]

H. Construction

26. Upon issuance of a route permit, GRE will conduct a design survey. Landowners along the route will be notified of the survey work. Upon completion of the design survey, GRE will begin acquiring easements from applicable landowners.[21]

27. After easements have been secured, GRE will begin construction. Landowners will be notified in advance of construction schedules, ingress and egress for the project, tree and vegetation removal, and other construction activities.[22]

28. The 115 kV transmission line structures will be constructed at the existing grade; thus, grading and filling will be minimal. Some grading may be required at the switch location to accommodate the connection of the new 115 kV line and the existing LR-IA line.[23]

29. Wooden structures for the new 115 kV line will require a hole 10-15 feet deep and 3-4 feet in diameter for each structure. Poles will be backfilled with soils, crushed rock, or concrete depending on design requirements. Specialty poles may require a concrete foundation.[24]

30. Modification of the Parkers Prairie substation will require grading. New footings and a new concrete slab for the 115 kV transformer will be added.[25]

31. Upon completion of construction, the project area will be restored, including removing debris, employing erosion control measures, and reseeding disturbed soils. Landowners will be contacted to determine whether they believe there is any construction damage to their property (damage beyond or remaining after

[19] Ex. 2 at pp. 3-1 to 3-3 (RPA).
[20] Id.
[21] Ex. 2 at pp. 6-1 to 6-3 (RPA).
[22] Id.
[23] Ex. 2 at pp. 7-1 to 7-3 (RPA).
[24] Id.
[25] Id.

restoration measures). Areas that have been damaged by construction will be restored to their pre-construction condition to the extent possible.[26]

III. Procedural Summary

32. On August 25, 2011, in accordance with Minnesota Rule 7850.2800, subpart 2, GRE filed a letter with the Commission noticing their intent to submit a route permit application under the alternative permitting process set forth in Minnesota Statutes 216E.04 and Minnesota Rules 7850.2800 to 7850.3900.[27]

33. On October 24, 2011, GRE filed a route permit application with the Commission for a new 2.1 mile long 115 kV overhead transmission line in Parkers Prairie Township in Otter Tail County, Minnesota (Parkers Prairie 115 kV Transmission Line Project).[28]

34. On November 1, 2011, GRE mailed notice of their route permit application submittal to those persons whose names are on the general contact list maintained for this purpose (Minnesota Rule 7850.1200), local and regional officials, and property owners in compliance with Minnesota Rule 7850.3300.[29]

35. GRE published notice of their route permit application submittal in the *Fergus Falls Daily Journal* (November 7, 2011) in compliance with Minnesota Rule 7850.3300.[30]

36. In its comments and recommendations to the Commission, Department of Commerce Energy Facility Permitting (EFP) staff recommended that the Commission accept GRE's route permit application for the project as complete, authorize EFP staff to process the application under the alternative permitting process pursuant to Minnesota Rules 7850.2800 to 7850.3900, authorize EFP staff to name a public advisor, and determine that based on the available information an advisory task force is not necessary at this time.[31]

37. On December 7, 2011, the Commission accepted the application as complete and determined that the project is eligible for the alternative permitting process of the Power Plant Siting Act, Minnesota Statute 216E.04 and Minnesota Rules 7850.2800 to 7850.3900, authorized the EFP staff to name a public advisor, and determined that an advisory task force was not necessary at this time.[32]

[26] Ex. 2 at p. 6-3 (RPA).
[27] Ex. 1 (Notice of Intent).
[28] Ex. 2 (RPA).
[29] Ex. 3 (Notice of Route Permit Application)
[30] Id.
[31] Ex. 4 (Comments and Recommendations of EFP Staff on Application Acceptance).
[32] Ex. 6 (Commission Order Accepting Route Permit Application).

38. On November 29, 2011, EFP staff issued and mailed a notice of public information and scoping meeting to those persons whose names are on the project list maintained by the Commission for this purpose in compliance with Minnesota Rule 7850.3500, subpart 1.[33]

39. Notice of the public information and scoping meeting was published in the *Fergus Falls Daily Journal* (December 1, 2011) and the *Parkers Prairie Independent* (December 1, 2011) in compliance with Minnesota Rule 7850.3500, subpart 1.[34]

A. Public Information and Scoping Meeting

40. The scoping process is the first step in developing an environmental assessment (EA). The Department of Commerce (Department) "shall provide the public with an opportunity to participate in the development of the scope of the EA by holding a public meeting and by soliciting public comments."[35] During the scoping process, alternative routes may be suggested for evaluation in the EA.[36]

41. In accordance with Minnesota Rule 7850.3500, subpart 1, EFP staff held a public information and scoping meeting on December 13, 2011, at the Prairie Event Center in Parkers Prairie, Minnesota.[37]

42. Two persons provided oral comments and/or asked questions about the proposed project at the public meeting. One person noted that the Otter Tail County highway department is requesting a 120 foot road right-of-way be reserved for County Road 6 (CSAH 6) to accommodate future road reconstruction. One person asked whether it would be possible to meet the goals of the project without building a new 115 kV line, i.e., by moving the existing Parkers Prairie substation.[38]

43. The public comment period on the scope of EA closed on December 30, 2011. EFP staff received five comment letters during the scoping comment period.[39]

44. Two citizens comment letter expressed concern for the potential loss of trees due to the proposed project.[40]

45. The Otter Tail County highway department commented that it would like to reserve a 120 foot right-of-way for CSAH 6 to accommodate future road reconstruction, and noted the need for a county utility permit for the project. The

[33] Ex. 5 (Notice of Public Information and Scoping Meeting).
[34] Ex. 7 (Published Notice of Public Information and Scoping Meeting).
[35] Minnesota Rule 7850.3700, subpart 2.
[36] Minnesota Rule 7850.3700, subpart 2B.
[37] Ex. 8 (Transcribed Oral Comments from Public Information and Scoping Meeting); Ex. 11 (Scoping Decision).
[38] Ex. 8 (Transcribed Oral Comments from Public Information and Scoping Meeting).
[39] Ex. 9 (Scoping Comment Letters); Ex. 11 Scoping Decision.
[40] Ex. 9 (Scoping Comment Letters).

county indicated that CSAH 6 was last reconstructed in 1980, and that the county typically reconstructs highways on a 50 to 60 year cycle. The county noted that costs to relocate transmission lines to facilitate road reconstruction can be prohibitive. Costs for transmission line relocation on a recent, similar project were in the range of $700,000 dollars.[41]

46. A comment letter from the Minnesota Pollution Control Agency (MPCA) noted that the project will likely require a National Pollution Discharge Elimination System (NPDES) stormwater permit. MPCA also requested clarification as to the existence of wetlands within the proposed route for the project.[42]

47. The Minnesota Department of Transportation (MnDOT) commented that a road crossing permit, consistent with MnDOT's utility accommodation policy, would be required for crossing Minnesota State Highway 29[43]

48. The scoping decision for the EA was signed by the deputy commissioner of the Department of Commerce on January 13, 2012, and made available to the public as provided in Minnesota Rule 7850.3700, subpart 3, on January 17, 2012.[44]

B. Environmental Assessment

49. On March 19, 2012, EFP staff issued the environmental assessment (EA) for the Parkers Prairie project.[45]

50. On March 20, 2012, EFP staff mailed a combined notice of public hearing and availability of EA to those persons whose names are on the project contact list as provided for by Minnesota Rule 7850.3700, subpart 6.[46]

51. On March 21, 2012, the EA was mailed to public agencies with authority to permit or approve the project and was posted to the Department's energy facility permitting website in accordance with Minnesota Rule 7850.3700, subpart 6.[47]

52. On April 2, 2012, notice of the availability of the EA was published in the *EQB Monitor*.[48]

[41] Id.
[42] Id.
[43] Id.
[44] Ex. 11 (EA Scoping Decision); Ex. 12 (Notice of Scoping Decision).
[45] Ex. 13 (EA).
[46] Ex. 14 (Notice of Public Hearing and Availability of EA).
[47] Ex. 15 (Mailing of EA to Public Agencies).
[48] Ex. 16 (Notice in EQB Monitor).

C. Public Hearing

53. On March 22, 2012, EFP staff sent via certified mail a notice of public hearing and availability of EA to chief executives of the regional development commissions, counties, organized towns, townships, and incorporated municipalities in accordance with Minnesota Statute 216E.03, subdivision 6.[49]

54. A notice of public hearing and availability of EA was published in the *Fergus Falls Daily Journal* (March 25, 2012) and the *Parkers Prairie Independent* (March 29, 2012).[50]

55. Administrative Law Judge (ALJ) Richard C. Luis presided over the public hearing conducted on April 10, 2012, at the Prairie Event Center in Parkers Prairie, Minnesota.[51]

56. During the hearing, testimony was heard from Great River Energy and several members of the public. The hearing record closed on April 30, 2012.[52]

57. Pursuant to Minnesota Rule 7850.3800, subpart 3A, EFP state permit manager Ray Kirsch participated in the public hearing, described the permitting process, and introduced the EA and procedural documents into the record.[53]

58. Representatives from Great River Energy present at the hearing included: Rick Heuring, Senior Field Representative; Steve Lawler, Project Manager; and Marsha Parlow, Environmental Services Representative.[54]

59. A transcript of the public hearing was filed by the Office of Administrative Hearings' designated court reporter on May 1, 2012.[55]

60. On May 24, 2012, Judge Luis filed a summary of testimony from the public hearing and a summary of written comments.[56] On May 25, 2012, Judge Luis amended the summary to include additional written comments.[57] On May 29, 2012, Judge Luis filed a revised summary of testimony from the public hearing and a summary of written comments.[58]

[49] Ex. 17 (Certified Mail Notice of Public Hearing and Availability of EA).
[50] Ex. 18 (Published Notice of Public Hearing and Availability of EA).
[51] Ex. 24 (Revised Administrative Law Judge Summary of Public Testimony [hereafter Revised ALJ Report]).
[52] Id.
[53] Id.
[54] Id.
[55] Ex. 20 (Public Hearing Transcript).
[56] Ex. 22 (ALJ Report).
[57] Ex. 23 (Amended Summary of Public Testimony)
[58] Ex. 24 (Revised ALJ Report).

61. During the public hearing, five members of the public presented their views regarding the proposed route and alignment for the project.[59] The ALJ received three written comments by the close of the hearing record on April 30, 2012.[60]

D. Summary of Oral Hearing Comments

62. Bruce Jahnke, a landowner along the proposed route, expressed concern that he would lose his trees and windbreak if the line were located south of CSAH 6 near his residence, particularly if the line were located at a distance of 65 ft. from the centerline of CSAH 6 as suggested by the Otter Tail County highway department. Mr. Jahnke also noted that an alignment at 65 ft. from the CSAH 6 centerline would impact his irrigation systems and would reduce his irrigated crop acreage.[61]

63. Richard (Rick) West, Otter Tail County highway engineer, noted that the county will eventually have to rebuild CSAH 6 in the area of the proposed project. In order to facilitate this rebuild, the county will require a 120 ft. road right-of-way (60 ft. on each side of CSAH 6). Thus, the county requests an alignment for the transmission line of 65 ft. from the centerline of CSAH 6. Mr. West noted that if the line was placed at a distance less than 60 ft. from the CSAH 6 centerline, and if the county was then required to relocate the line as part of a road rebuild, the county would pay the relocation costs. For the proposed project, these costs are in the range of $800,000 dollars. Mr. West indicated that a CSAH 6 reconstruction was not part of the current Otter Tail County highway improvement plan (which runs through 2016). Mr. West estimated that, sometime after 2016, CSAH 6 would be resurfaced. The resurfaced road would have a life of 15 to 18 years. Thus, reconstruction would be given consideration, at the earliest, sometime after 2032.[62]

64. Terry Carlson, a landowner along the proposed route, expressed concern that the new line would impact his irrigation systems and wells, particularly if the line were located at a distance of 65 ft. from the CSAH 6 centerline.[63]

65. Frederick Liljegren, a landowner along the proposed route, expressed concern that he would lose a good number of trees if the line were located north of CSAH 6 near his residence, and that the line would be very near his house.[64]

66. Rodney Peterson, who farms land on the north side of the proposed route, is concerned that the line will interfere with his irrigation equipment and reduce his

[59] Ex. 24 (Revised ALJ Report).
[60] Id.
[61] Ex. 19; Ex. 24 at p. 3 (Revised ALJ Report); Ex. 20 at pp. 27-41, pp. 55-56 (Public Hearing Transcript).
[62] Ex. 21; Ex. 24 at pp. 2-3 (Revised ALJ Report); Ex. 20 at pp. 41-55 (Public Hearing Transcript).
[63] Ex. 24 at p. 3 (Revised ALJ Report); Ex. 20 at pp. 56-71, pp. 74-77 (Public Hearing Transcript).
[64] Ex. 24 at p. 3 (Revised ALJ Report); Ex. 20 at pp. 71-74 (Public Hearing Transcript).

irrigated crop acreage, particularly if the line were located on the north side of CSAH 6 at a distance of 65 ft. from the CSAH 6 centerline.[65]

E. Summary of Written Hearing Comments

67. Otter Tail County highway engineer Rick West filed a comment reiterating his oral testimony at the public hearing – that consideration be given to placing the transmission line at a distance greater than 60 ft. from the centerline of CSAH 6. The goal of this placement is to assure that future reconstruction of CSAH 6 does not conflict with the proposed transmission line.[66]

68. Stacy Kotch, utility transmission coordinator at MnDOT, noted that the proposed transmission line would require a permit to cross Minnesota Trunk Highway 29 (MN 29), and that MnDOT routinely grants such permits to a variety of utilities.[67]

69. The Plants Beautiful Nursery / Dittberner Tree Farm (Plants Beautiful) noted that it owns property on the south side of CSAH 6, east and west of MN 29. On the east side of MN 29, Plants Beautiful requests that the alignment of the transmission line be placed as near as possible to its north property line. On the west side of MN 29, Plants Beautiful requests compensation for the loss of trees and land if the transmission line is located on the south side of CSAH 6 near their property.[68]

IV. Certificate of Need Criteria

70. Pursuant to Minnesota Statute 216B.243, subdivision 2, "No large energy facility shall be sited or constructed in Minnesota without the issuance of a certificate of need by the Commission." In the case of a high-voltage transmission line, a large energy facility is defined as (1) any high-voltage transmission line with a capacity of 200 kV or more and greater than 1,500 feet in length, or (2) any high-voltage transmission line with a capacity of 100 kV or more with more than ten miles of its length in Minnesota or that crosses a state line.[69]

71. A certificate of need is not required for the Parkers Prairie project as the transmission line capacity is less than 200 kV and the proposed route is less than 10 miles in length.[70]

[65] Ex. 24 at p. 4 (Revised ALJ Report); Ex. 20 at pp. 77-78 (Public Hearing Transcript).
[66] Ex. 21; Ex. 24 at p. 4 (Revised ALJ Report).
[67] Ex. 24 at p. 4 (Revised ALJ Report).
[68] Ex. 25; Ex. 24 at p. 4 (Revised ALJ Report).
[69] Minnesota Statute 216B.2421.
[70] Ex. 13 at p. 5 (EA).

V. Routing Criteria

72. The Power Plant Siting Act requires the Commission to locate transmission lines "in an orderly manner compatible with environmental preservation and the efficient use of resources" and in a way that minimizes "adverse human and environmental impact while insuring" electric power reliability.[71]

73. Minnesota Statute 216E.03, subdivision 7(b) identifies 12 considerations to guide Commission route designations, including the evaluation and minimization of adverse environmental impacts, impacts to public health and welfare, and adverse economic impacts.[72]

74. The Commission is also guided by Minnesota Rule 7850.4100 which establishes factors to be considered in determining whether to issue a route permit. These factors are as follows:[73]

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;

[71] Minnesota Statute 216E.02.
[72] Minnesota Statute 216E.03.
[73] Minnesota Rule 7850.4100.

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.

VI. Application of Routing Criteria

A. Effects on Human Settlement

75. **Socioeconomics.** Socioeconomic impacts are anticipated to be positive due to expenditures at local businesses during construction of the project. Indirect positive impacts will result from the increased capacity of the electrical system to reliably serve the project area.[74]

76. Compared to state and county averages, the project area does not have disproportionately high minority or low-income populations. Thus, there is no minority or low-income population which would be negatively and differentially impacted by the project.[75]

77. **Displacement.** National Electric Safety Code (NESC) and GRE standards require certain clearances between transmission lines and buildings for safe operation of the line. GRE has requested a right-of-way (ROW) of 100 feet for the new 115 kV line. In general, no structures are allowed within a transmission line ROW. Displacement would occur where any occupied structure is located within the transmission line ROW.[76]

78. There are two residences within the proposed route for the new 115 kV line (within the 300 foot route width; less than 150 feet from the CSAH 6 centerline). One residence, the Liljegren residence, could be within the ROW for the 115 kV line if the alignment for the line were on the north side of CSAH 6, outside a future potential ROW for CSAH 6, i.e., 65 ft. from the CSAH 6 centerline. With this alignment, the transmission line ROW would extend to 115 feet from the CSAH 6 centerline. The Liljegren residence is approximately 110 ft. from the CSAH 6 centerline. If the residence were within the transmission line ROW, it would be displaced.[77]

[74] Ex. 13 at pp. 18-19 (EA).
[75] Id.
[76] Ex. 13 at p. 22 (EA).
[77] Id.

79. GRE indicates that the new 115 kV line will be designed to avoid displacement of existing residences.[78]

80. The potential displacement of the Liljegren residence can be avoided by selecting an alignment on the south side of CSAH 6 in this area or an alignment on the north side which is closer to the CSAH 6 centerline.[79]

81. **Noise.** All noises produced by the project must be within Minnesota noise standards. These standards limit A-weighted decibel levels (dBA) for specific receptor environments and times of day. The primary noise receptors in the Parkers Prairie project area are residences. Minnesota noise standards for these residences are 60 dBA L_{50} during the daytime and 50 dBA L_{50} during the nighttime.[80]

82. Any exceedances of daytime noise standards due to construction are anticipated to be intermittent and temporary in nature. Construction activities will be limited to daytime working hours; thus, no exceedances of nighttime noise standards are anticipated.[81]

83. Noise from operation of the new 115 kV is estimated to be less than 20 dBA and within Minnesota noise standards for all receptors. [82]

84. Noise from operation of the new 115 kV transformer within the expanded Parkers Prairie substation is estimated to be 50 dBA at 30 feet from the transformer and 20 dBA at the nearest residence/receptor (approximately 395 feet from the transformer). These levels are within Minnesota noise standards.[83]

85. **Aesthetics.** The project area is primarily agricultural with rural residences and outbuildings. There are two residences within the proposed route for the new 115 kV line (less than 150 feet from the CSAH 6 centerline). There are five residences and several outbuildings within 500 feet of the CSAH 6 centerline – one residence west of the Parkers Prairie substation, three residences north of CSAH 6 and one residence south of CSAH 6.[84]

86. The proposed route proceeds along CSAH 6, with an electrical distribution line on the north side of CSAH 6 and a 41.6 kV transmission line on the south side of CSAH 6. The poles for these existing lines are approximately 40 feet in height.[85]

[78] Ex. 2 at p. 8-3 (RPA).
[79] Ex. 13 at p. 22 (EA).
[80] Minnesota Rule 7030; Ex. 13 at pp. 20-22, Table 4 (EA).
[81] Ex. 13 at p. 21 (EA)
[82] Ex. 13 at p. 21, Table 5 (EA).
[83] Ex. 13 at pp. 21-22 (EA).
[84] Ex. 13 at pp. 19-20, Appendix B, Maps B-2 to B-5 (EA).
[85] Ex. 13 at pp. 19-20 (EA).

87. The new transmission line poles would be 60 to 85 feet in height; 20 to 45 feet taller than existing poles along CSAH 6. These new poles would create an incremental negative aesthetic impact in the project area – the new poles would be relatively more visible to residences along CSAH 6 and to drivers on CSAH 6 than the existing poles.[86]

88. The expansion of the Parkers Prairie substation will make it more visible and will create an incremental negative aesthetic impact. The connection of the new 115 kV line with GRE's existing LR-IA line will introduce an incremental negative aesthetic impact.[87]

89. Aesthetic impacts of the project can be mitigated by ensuring that natural landscapes are not damaged or removed during construction of the project. Alignments that avoid or minimize the removal of natural landscapes would mitigate aesthetic impacts. Relative to alignment 1, alignments 2, 3, and 4 impact fewer natural landscapes (trees, shelterbelts).[88]

90. Where natural landscapes are impacted by construction, aesthetic impacts can be mitigated by new plantings compatible with the new 115 kV line, e.g., replanting with low-growing species.[89]

91. GRE indicates that areas that sustain construction damage will be restored to their pre-construction condition to the extent possible.[90]

92. **Property Values.** Impacts to property values in the project area may occur, but the extent of these impacts is uncertain. Impacts may be lessened by the fact that two electrical lines already parallel CSAH 6, i.e., property values in the project area already reflect electrical lines along CSAH 6 and near residences.[91]

93. Property values impacts can be mitigated by choosing an alignment for the new 115 kV line away from residences and out of agricultural fields.[92]

94. **Electronic Interference.** Corona from transmission line conductors can generate electromagnetic noise in the radio frequency range. This noise may cause interference at the same frequencies that communication and media signals are transmitted. This interference may inhibit or affect the reception of these signals depending on the frequency and strength of the signal.[93]

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[86] Id.
[87] Id.
[88] Ex. 13 at pp. 19-20, pp. 47-52, pp. 55-57.
[89] Ex. 13 at p. 52 (EA).
[90] Ex. 2 at p. 6-3 (RPA).
[91] Ex. 13 at pp. 22-23 (EA).
[92] Id.
[93] Ex. 13 at pp. 34-36 (EA).

95. Analog and digital television, FM radio, two-way radios, wireless internet, and cellular phones all operate at frequencies greater than corona-generated noise and are not expected to be impacted by the Parker Prairie project.[94]

96. AM radio frequency interference typically occurs immediately under a transmission line and dissipates rapidly to either side. If radio interference from transmission line corona does occur, satisfactory reception from AM radio stations can be restored by appropriate modification of the receiving antenna system.[95]

97. Satellite television is not anticipated to be impacted by corona-generated noise, but can be impacted by line-of-sight obstruction, e.g., a transmission line pole directly in the path a television signal. Impacts due to obstruction can be mitigated by moving the satellite dish.[96]

98. Global positioning systems (GPS) are not expected to be impacted by corona-generated noise, but can be impacted by line-of-sight obstruction. GPS systems utilize multiple satellite signals; obstruction of any one signal is not anticipated to cause inaccurate navigation. Additionally, any obstruction would be resolved by the movement of the GPS receiver; thus impacts are expected to be minimal and temporary.[97]

99. GRE indicates that it will inspect and repair its facilities to ensure a minimum of corona-generated noise and will take all measures necessary to mitigate impacts to radio and television reception in project area.[98]

B. Public Health and Safety

100. **Electric and Magnetic Fields (EMF).** Electric and magnetic fields (EMF) are invisible regions of forces resulting from the presence of electricity. EMF are characterized by their frequencies, i.e., the rate at which fields change direction each second. Electrical lines in the United States have a frequency of 60 cycles per second, or 60 Hertz (Hz).[99]

101. *Electric Fields.* Electric fields are created by the electric charge (voltage) on a transmission line. Electric field strength is measure in kilovolts per meter (kV/m). The strength of an electric field decreases rapidly as the distance from the source increases. Electric fields are easily shielded or weakened by most objects and materials, e.g., trees and buildings.[100]

[94] Id.
[95] Id.
[96] Id.
[97] Id.
[98] Ex. 2 at p. 8-10 (RPA).
[99] Ex. 13 at pp. 24-28 (EA).
[100] Id.

102. The Commission has established a standard of 8 kV/m for the maximum electrical field associated with a transmission line (measured at the transmission line centerline, one meter above the ground).[101]

103. The estimated maximum electric field for the Parker Prairie project is 1.29 kV/m. This maximum occurs on the transmission line centerline. The estimated maximum electric field at the edge of the transmission line ROW is 0.21 kV/m.[102]

104. The estimated electric fields for the Parkers Prairie project are well below the standard established by the Commission. No adverse health impacts from electric fields are anticipated for persons living or working near the project.[103]

105. *Magnetic Fields.* Magnetic fields are created by the electric current moving through a transmission line. Magnetic field strength is typically measured in milliGauss (mG). The strength of a magnetic field decreases rapidly as the distance from the source increases. Unlike electric fields, magnetic fields are not easily shielded or weakened by objects or materials.[104]

106. There are no State of Minnesota or federal standards for exposure to magnetic fields from transmission lines. Florida, Massachusetts, and New York have established standards for magnetic field exposure at the edge of transmission line rights-of-way. These standards are 150 mG, 85 mG, and 200 mG respectively.[105]

107. The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has developed standards for magnetic field exposure. The ICNIRP standard for magnetic field exposure for the general public is 2,000 mG.[106]

108. Epidemiological studies have shown an association between magnetic field exposure and health risks for children. Epidemiological studies, clinical studies, and cellular studies have shown no association between magnetic field exposure and health risks for adults. No studies have established a causal relationship between magnetic field exposure and adverse health impacts.[107]

109. The estimated maximum magnetic field for the Parker Prairie project, under normal operating conditions, is 12.65 mG. This maximum occurs on the transmission line centerline. The estimated maximum magnetic field at the edge of the transmission line ROW is 2.20 mG. The estimated maximum magnetic fields for the Parkers Prairie project, under emergency conditions (temporary,

[101] Id.
[102] Ex. 13 at p. 28, Table 9 (EA).
[103] Ex. 13 at pp. 24-28 (EA).
[104] Id.
[105] Ex. 13 at p. 26, Table 7 (EA).
[106] Ex. 13 at p. 27, Table 8 (EA).
[107] Ex. 13 at pp. 24-28 (EA).

high current conditions), are 141.25 mG and 69.58 mG at the centerline and edge of the ROW respectively.[108]

110. The estimated magnetic fields for the Parkers Prairie project are below all standards adopted by other states and below international standards. No adverse health impacts from magnetic fields are anticipated for persons living or working near the project.[109]

111. **Implantable Medical Devices.** Implantable medical devices such as pacemakers, defibrillators, neurostimulators, and insulin pumps are electromechanical devices and as such may be subject to interference from electric and magnetic fields. Most of the research on electromagnetic interference and medical devices is related to pacemakers. Pacemakers have been shown to be more sensitive to electric fields than to magnetic fields. In laboratory tests, the earliest interference from magnetic fields in pacemakers was observed at 1,000 mG, a field strength far greater than that associated with high voltage transmission lines.[110]

112. Electric fields may interfere with a pacemaker's ability to sense normal electrical activity in the heart. If a pacemaker is impacted by an electric field, the effect is typically asynchronous pacing (fixed rate pacing), with the pacemaker returning to normal operation when the person moves away from the source of the electric field.[111]

113. Medtronic and Guidant, manufacturers of pacemakers and implantable cardioverter/defibrillators, have indicated that electric fields below 6 kV/m are unlikely to cause interference with modern bipolar devices. Older unipolar designs, however, are more susceptible to interference from electric fields, with research suggesting that interference begins to occur in electric fields ranging from 1.2 to 1.7 kV/m.[112]

114. The estimated maximum electric field for the Parkers Prairie project is 1.29 kV/m, on the transmission line centerline. This field strength is below the 6 kV/m interaction level for modern, bipolar pacemakers, and at the low end of the range of interaction for older, unipolar pacemakers. Accordingly, no adverse impacts on implantable medical devices and persons using them are anticipated as a result of the project.[113]

115. **Stray Voltage.** Stray voltage is an extraneous voltage that appears on metal surfaces in building, barns, and other structures which are grounded to earth. This voltage is typically due to inadequate grounding. Factors that determine whether

[108] Ex. 13 at p. 28, Table10 (EA).
[109] Ex. 13 at pp. 24-28 (EA).
[110] Ex. 13 at p. 29 (EA).
[111] Id.
[112] Id.
[113] Id.

an object is adequately grounded include wire size and length, wire connections, the number and resistance of ground rods, and the current being grounded.[114]

116. Stray voltage is primarily associated with distribution lines and electrical service at a residence or on a farm. Transmission lines do not, by themselves, create stray voltage as they do not connect directly to businesses, residences, or farms. However, transmission lines may, when they parallel distribution lines, induce currents in these lines in the immediate area of the paralleling.[115]

117. No impacts due to stray voltage are anticipated due to the Parkers Prairie project. The new 115 kV is a transmission line that does not connect to residences or farms in the areas and does not change on-farm electrical service. There is a possibility, if the new 115 kV line were placed on the north side of CSAH 6, that it would parallel the existing distribution line, i.e., through underbuilding. If this were to occur then the 115 kV line could induce currents on the distribution line. If the distribution line is properly grounded these currents are not anticipated to cause stray voltage issues in the project area.[116]

118. GRE indicates that if a customer has a stray voltage concern on their property, they should contact their local distribution cooperative and discuss the situation with technical staff. If warranted, an on-farm investigation will be scheduled.[117]

119. **Induced Voltage.** The electric field from a transmission line can reach nearby conductive (metal) objects which are in close proximity to the line. The electric field may induce a voltage on these objects. If these objects are insulated from the ground and a person touches them, then a small current would pass through the person's body to the ground, causing a mild shock.[118]

120. The Commission's electric field standard of 8 kV/m is designed to prevent serious hazard from shocks due to induced voltages near transmission lines. Additionally, the National Electric Safety Code (NESC) requires that transmission lines be designed with clearances such that potential discharges due to induced voltages are less than 5 milliAmperes (mA).[119]

121. No impacts due to induced voltages are anticipated from the Parkers Prairie project. The project will be constructed and operated to meet NESC standards, and the Commission's electric field standard.[120]

[114] Ex. 13 at pp. 29-30 (EA).
[115] Id.
[116] Id.
[117] Id.
[118] Ex. 13 at pp. 30-31 (EA).
[119] Id.
[120] Id.

122. **Air Quality.** Impacts to air quality in the Parkers Prairie project area could occur due to ozone and nitrous oxide emissions from operation of the line and dust caused by construction activities. Estimates of ozone emissions for the project are below state and federal standards. Impacts due to construction dust are anticipated to be minor and temporary. Thus, no significant impacts to air quality are expected as a result of the project.[121]

123. **Public Safety.** The new 115 kV line would have protective devices to safeguard the public from the line if an accident occurred and a structure or conductor fell to the ground. These protective devices are breakers and switches located within connecting substations. The protective devices would de-energize the transmission line should an accident occur. Additionally, the Parkers Prairie substation would be fenced and access limited to authorized personnel.[122]

124. **Public Services**. Public services are generally defined as services provided by governmental or quasi-governmental entities and include fire and police protection, schools, and emergency medical services. These services require functional infrastructure for their delivery in the project area, e.g., roads, communications, water supplies, energy supplies.[123]

125. No significant impacts to public services are anticipated due to the Parkers Prairie project. Construction of the project will cause minor, temporary impacts to travel along CSAH 6 and Minnesota State Highway 29 (MN 29). No impacts are anticipated to emergency communications systems or to water supplies. GRE indicates that regardless of the alignment of the new 115 kV line (north or south side of CSAH 6), the line can be constructed without disruption of electrical service.[124]

C. Land-Based Economies

126. **Agriculture.** Agricultural fields abut CSAH 6 and run the length of the proposed route, from the Parkers Prairie substation to the intersection with MN 29. Seven of these fields are irrigated; three on the north side of CSAH 6, four on the south side. The estimated distance from irrigation systems to the CSAH centerline (closest approach of irrigation booms) are as follows:

[121] Ex. 13 at pp. 31-32 (EA).
[122] Ex. 13 at p. 24 (EA).
[123] Ex. 13 at pp. 32-34 (EA).
[124] Id.

Estimated Distance from Irrigation System to CSAH 6 Centerline[125]

Irrigation System	Location Relative to CSAH 6	Estimated Closest Approach (feet)	System Type
1	North	60-65	Full radius with pivot arm extension
2	North	60	7/8 radius
3	North	61	Half radius
4	South	67	Full radius with pivot arm extension
5	South	65-70	Half radius
6	South	69	Full radius
7	South	76	Half radius

127. Agricultural fields along the proposed route could be impacted by the new 115 kV line by impeding the use of farming equipment, limiting aerial spraying, and by interfering with the operation of existing irrigation systems. Annual economic impacts due to poles interfering with the use of farming equipment are in the range of $40 dollars per mile of transmission line. Costs to reconfigure an irrigation system can be in the range of $10,000 - $15,000 dollars for simple modifications and up to $100,000 for significant modifications. If reconfigured irrigation systems limit the ability to properly irrigate or the extent of irrigation, then annual crop losses may occur, with associated economic impacts.[126]

128. If the new 115 kV line were located outside a potential future CSAH 6 ROW (65 feet from the centerline of CSAH 6) on the north side of CSAH 6, irrigation systems on this side (systems 1, 2, and 3) would be impacted. The closest approach of these systems to the CSAH centerline is less than 65 feet. The well for irrigation system 3 is 72 feet from the CSAH 6 centerline.[127]

129. If the new 115 kV line were located outside a potential future CSAH 6 ROW (65 feet from the centerline of CSAH 6) on the south side of CSAH 6, irrigation systems on this side (systems 4, 5, 6, and 7) would likely be impacted. The

[125] Ex. 13 at pp 37-40, Figure 6, Table 12 (EA).
[126] Ex. 13 at pp. 37-40 (EA).
[127] Ex. 13 at pp. 37-40 (EA); Testimony of Terry Carlson, Ex. 24 at p. 3 (Revised ALJ Report), Ex. 20 at pp. 56-71, pp. 74-77 (Public Hearing Transcript); Testimony of Rodney Peterson, Ex. 24 at p. 4 (Revised ALJ Report), Ex. 20 at pp. 77-78 (Public Hearing Transcript).

closest approach of these systems to the CSAH centerline is approximately 65 feet. The well for irrigation system 5 is 82 feet from the CSAH 6 centerline [128]

130. An alignment at 65 feet from the CSAH 6 centerline would introduce impacts, independent of and in addition to impacts to irrigation, due to the inability to cultivate entire fields, i.e., poles would impede the use of farming equipment. An alignment at 65 feet would create relatively more impacts than an alignment closer to the CSAH 6 centerline (e.g., 50 feet, 55 feet).[129]

131. Impacts to agricultural operations could be mitigated by choosing an alignment that is relatively closer to the centerline of CSAH 6 and placing the new 115 kV line on one side of CSAH 6 or the other to avoid potential conflicts with irrigation systems. Impacts to irrigation systems 1, 2, and 3 could be mitigated by placing the alignment on the south side of CSAH 6 (alignments 1 and 3), or by placing the alignment in the range of 50-55 feet from the CSAH 6 centerline on the north side of CSAH 6 (alignments 2, 3, and 4). Impacts to irrigation systems 4, 5, 6, and 7 could be mitigated by placing the alignment on the north side of CSAH 6 (alignments 2 and 4) or by placing the alignment in the range of 50-55 feet from the CSAH 6 centerline on the south side of CSAH 6 (alignments 1 and 3).[130]

132. **Forestry.** There is a tree farm, the Plants Beautiful Nursery (Dittberner Tree Farm), located in the proposed route for the project. The nursery is located in the southwest corner of the intersection of CSAH 6 and MN 29. The nursery sells, via wholesale and retail, a variety of trees as nursery stock.[131]

133. Within the Plants Beautiful Nursery, there are a number of trees, primarily spruce trees, which are within the ROW for the existing 41.6 kV line. If the new 115 kV line were placed on the south side of CSAH 6 in this area, 55 feet from the CSAH 6 centerline, approximately 100 trees would be impacted (i.e., would be removed). The value of these trees in the nursery stock trade is estimated to be $100,000 dollars. An alignment at 65 feet from the CSAH 6 centerline would impact approximately 150 trees, with an estimated value of $150,000 dollars.[132]

134. Impacts to the Plants Beautiful Nursery could be mitigated by placing the new 115 kV line on the north side of CSAH 6 in this area (alignments 2, 3, and 4).[133]

135. **Mining.** There are no known mining resources in the Parkers Prairie project area; accordingly, no impacts to mining operations are anticipated.[134]

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[128] Ex. 13 at pp. 37-40 (EA); Testimony of Terry Carlson, Ex. 24 at p. 3 (Revised ALJ Report), Ex. 20 at pp. 56-71, pp. 74-77 (Public Hearing Transcript); Testimony of Bruce Jahnke, Ex. 19; Ex. 24 at p. 3 (Revised ALJ Report); Ex. 20 at pp. 27-41, pp. 55-56 (Public Hearing Transcript).
[129] Ex. 13 at pp. 37-40, Table 11 (EA).
[130] Ex. 13 at pp. 37-40, pp. 55-57 (EA).
[131] Ex. 25; Ex. 13 at pp. 40-42 (EA).
[132] Id.
[133] Id.

136. **Tourism and Recreation.** Tourism in the Parkers Prairie area includes fishing, boating, camping, golfing snowmobiling, and cross-country skiing. There are no tourist attractions or recreation areas in or near the proposed route; thus no impacts to tourism and recreation are anticipated.[135]

D. Archaeological and Historic Resources

137. Great River Energy has conferred with the Minnesota Historical Society (MHS) concerning the probability of cultural resources (archaeological and historic resources) in the project area. MHS indicate that there are no historic properties and no known or suspected archaeological resources in the project area. A monument related to the District 50 White Oak School was identified west of the Parkers Prairie substation. This monument will not be impacted by the project.[136]

138. No impacts to archaeological or historic resources are anticipated as result of the project. GRE indicates that should such resources be identified during construction of the project, work will be stopped and MHS staff consulted on how to proceed.[137]

E. Natural Environment

139. **Water Resources.** Construction of the Parkers Prairie project will require movement and handing of vegetative cover and soils. Changes in vegetative cover and soils can change runoff and water flow patters such that surface waters, groundwater, and wetlands are adversely impacted.[138]

140. *Surface Waters.* There are no public waters, lakes, rivers, or streams within the proposed route for the project. Cora Lake is in the project area, but east of the proposed route. Thus, impacts to surface waters due to the project are anticipated to be minimal.[139]

141. *Groundwater.* The project area has good availability of ground water and makes possible businesses that rely on withdrawals of groundwater, e.g., irrigated agricultural fields. Excavation for the placement of transmission lines poles for the project is not expected to impact groundwater; thus, no impacts to groundwater are anticipated.[140]

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[134] Ex. 13 at p. 42 (EA).
[135] Ex. 13 at pp. 42-43 (EA).
[136] Ex. 13 at p. 43 (EA).
[137] Id.
[138] Ex. 13 at pp. 44-45 (EA).
[139] Id.
[140] Id.

142. *Wetlands.* There are no wetlands in the proposed route for the project; thus, no impacts to wetlands are expected as a result of the project.[141]

143. **Soil Resources**. Construction of the project will impact soils directly by moving them and indirectly by removing vegetative cover such that they are more susceptible to movement by air and water.[142]

144. Construction of the project is anticipated to result in minor, temporary impacts to soils in the project area. However, to the extent that construction requires the removal of vegetation (e.g., shelterbelts), soil erosion rates could increase in the project area.[143]

145. Impacts to soils (and subsequently to surface waters) can be mitigated by using best management practices for construction of the project. The Minnesota Pollution Control Agency (MPCA) indicates that the project will likely require a construction stormwater permit from the MPCA, including the preparation of a stormwater pollution prevention plan (SWPPP). Best management practices for mitigating soil impacts include seeding to establish cover on exposed soils, using mulch for temporary and protective soil cover, using sediment control fences, and using erosion control blankets.[144]

146. Impacts to soils due to the removal of shelterbelts can be mitigated by utilizing alignments that avoid the removal of shelterbelts, trimming shelterbelts instead of removing them, and replanting the new transmission line ROW with low-growing species that are compatible with the line.[145]

147. **Flora.** The Parkers Prairie project is located in the Eastern Broadleaf Forest province in west central Minnesota. Presettlement vegetation was a mix of tallgrass prairie, aspen-oak land, and savanna. The great majority of this vegetation has been removed as the land has been converted to agricultural use.[146]

148. Along the proposed route for the project there are five areas of trees and brush that could be significantly impacted by the project. Of these five treed areas, four are on the south side of CSAH 6 and one is on the north side. These treed areas consist of shelterbelts for agricultural fields, shelterbelts and plantings around residences, and a tree farm:

[141] Id.
[142] Ex. 13 at pp. 45-46 (EA).
[143] Id.
[144] Id.
[145] Id.
[146] Ex. 13 at pp. 47-52 (EA).

Treed Areas along Proposed Route[147]

Treed Area	Location Relative to CSAH 6	Parcel / Property	Description
1	South	Douma Parcel	Extended Shelterbelt
2	South	Carlson Parcel	Field Shelterbelt
3	South	Jahnke Parcel	Field and Residential Shelterbelt
4	North	Liljegren Parcel	Residential Shelterbelt
5	South	Dittberner Parcel	Nursery / Tree Farm

149. The treed areas along the proposed route currently co-exist with electrical lines along CSAH 6. Trees have been allowed to grow in the ROW for GRE's 41.6 kV line on the south side of CSAH6, and they have been allowed to grow in the ROW for LREC's distribution line on the north side of CSAH 6. GRE indicates that for the new 115 kV line, trees and other tall-growing vegetation will be removed from the transmission line ROW. GRE also indicates that low-growing species and other plantings may be allowed in the 115 kV transmission line ROW.[148]

150. If the new 115 kV line were on the south side of CSAH 6 across from the Parkers Prairie substation, approximately seven oak trees would need to be removed from treed area #1 (alignments 1 and 3). This would be at a distance of 55 feet from the centerline of CSAH 6 and at 65 feet.[149]

151. If the new 115 kV line were on the south side of CSAH 6 along the Carlson parcel (treed area #2), the shelterbelt along this field, approximately 3,400 feet in length, would be removed. This would be true for all alignments on the south side of CSAH 6 (alignments 1 and 3).[150]

152. If the new 115 kV line were on the south side of CSAH 6 along the Jahnke parcel (treed area #3), the shelterbelt along this field, approximately 2,200 feet in length, would be removed. This would be true for all alignments on the south side of CSAH 6 (alignments 1 and 3).[151]

[147] Ex. 13 at pp. 47-52, Table 13
[148] Ex. 13 at pp. 47-52.
[149] Id.
[150] Id.
[151] Id.

153. If the new 115 kV line were on the south side of CSAH 6 along the Jahnke parcel at a distance of 55 feet from the centerline, approximately 72 hardwood trees and nine pine trees would be removed from the shelterbelt associated with the Jahnke residence (alignment 1). If the alignment were on the south side of CSAH 6 at a distance of 65 feet from the centerline, approximately 25 additional hardwood trees would be removed (for a total of 97 hardwood and nine pine trees).[152]

154. If the new 115 kV line were on the north side of CSAH 6 along the Liljegren parcel (treed area #4), this residential shelterbelt, approximately 600 feet in length, would be removed (alignment 2). If the alignment were on the north side of CSAH 6, within the current CSAH 6 ROW (e.g., on the same alignment as the existing LREC distribution line), approximately 0.6 acres of trees would be removed. If the alignment were at a distance of 55 ft. from the centerline, approximately 0.7 acres of trees would be removed. If the alignment were at distance of 65 ft. from the centerline, approximately 0.8 acres of trees would be removed.[153]

155. If the new 115 kV line were on the south side of CSAH 6 along the Dittberner parcel (treed area #5, Plants Beautiful Nursery), the trees in this tree farm and nursery would be removed (alignment 1). If the alignment were on the south side of CSAH 6 at a distance of 55 feet from the centerline, approximately 100 spruce trees would be removed. If the alignment were on the south side of CSAH 6 at a distance of 65 feet from the centerline, approximately 150 spruce trees would be removed.[154]

156. Impacts to flora due to the Parkers Prairie project could be mitigated by choosing an alignment that avoids treed areas, choosing an alignment closer to CSAH 6, and replanting the transmission line ROW (where trees are removed) with low-growing species. Of the alignments evaluated for the project, alignment 4 best avoids treed areas. Alignments 2 and 3 avoid some treed areas but impact others; alignment 1 impacts the greatest number of treed areas.[155]

157. **Fauna.** The Parkers Prairie project is located in the Eastern Broadleaf Forest province in west central Minnesota. Habitat for fauna within this province has been substantially reduced by settlement and agriculture. The project area is part of a larger migratory corridor for forest birds and waterfowl. Fauna within the project area includes deer, small mammals, frogs and salamanders, waterfowl, shorebirds, and perching birds.[156]

[152] Id.
[153] Id.
[154] Id.
[155] Ex. 13 at pp. 47-52, pp. 55-57 (EA).
[156] Ex. 13 at pp. 53-54 (EA).

158. Fauna within the project area are anticipated to have the ability to remove themselves from the potential dangers of project construction and to exist while temporarily displaced from the area. Potential impacts due to construction and displacement are anticipated to be minimal.[157]

159. If the new 115 kV line is placed on an alignment that requires the removal of shelterbelts, then impacts to fauna will likely result due to the loss of habitat. The extent of these impacts is uncertain and dependent in part on the extent of shelterbelt loss.[158]

160. Avian species could be impact by the project through collision with transmission line conductors; these impacts are anticipated to be minimal. Any impacts would be incremental, i.e., there are already electrical conductors on both sides of CSAH 6. Because the project area is used primarily for irrigated agriculture, the relative likelihood that avian species will utilize the project area is small when compared to surrounding habitat offerings, e.g., potholes, lakes, forested areas.[159]

F. Rare and Unique Natural Resources

161. The U.S. Fish and Wildlife Service indicates that there are no federally listed species or proposed critical habitat within the project area. The Minnesota Department of Natural Resources indicates that there are no known occurrences of rare natural resources in the project area. No impacts to rare and unique natural resources are anticipated as a result of the project.[160]

G. Design Options

162. If the alignment for the new 115 kV line were on the north side of CSAH 6, the existing distribution line would be underbuilt or placed underground. These options could mitigate aesthetics impacts of the project by placing all electrical lines along CSAH 6 on one set of poles (underbuilding) or by removing one of the electrical lines that currently runs along CSAH 6 (undergrounding).[161]

163. GRE indicates that for some structures, guy wires may be needed to minimize structure deflections, e.g., guying of structures where the line changes direction or crosses a road. Guying would require that a box-shaped easement be obtained for the guy wire and anchor. Guy wires could extend into fields along CSAH 6 and may cause impacts to agricultural operations. Impacts associated with guying could be mitigated by using structures that do not require guying (self-supporting

[157] Id.
[158] Id.
[159] Id.
[160] Ex. 13 at p. 54 (EA).
[161] Ex. 13 at p. 11 (EA).

structures), e.g., directly embedded laminate wood poles or steel poles on concrete foundations.[162]

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

164. The majority of the proposed route for the Parkers Prairie project parallels CSAH 6 and two existing electrical lines. This paralleling minimizes aesthetic impacts, the extent of the ROW (easement) required from private landowners, and the proliferation of infrastructure corridors.[163]

165. GRE indicates that its preference is to place the new 115 kV line approximately five feet outside the existing CSAH 6 road ROW (55 feet from the CSAH 6 centerline). This placement allows the line to share ROW with CSAH 6 and reduces the ROW (easement) required from private landowners along CSAH 6.[164]

166. The existing ROW width for CSAH 6 is 100 feet (50 feet on either side of the road centerline). The Otter Tail County highway department indicates that it anticipates reconstructing CSAH 6 at some time in the future, and it requests that a right-of-way (ROW) of 120 feet be reserved for this reconstruction. The department indicates that a county utility permit will be required in order for the 115 kV transmission line ROW to be accommodated within the CSAH 6 ROW. The department estimates that if the new 115 kV line were within a future CSAH 6 ROW (less than 60 feet from the CSAH 6 centerline), the costs to move the transmission line poles such that reconstruction could occur is in the range of $800,000 dollars.[165]

I. Electrical System Reliability

167. The purpose of the project is to address potential low voltage issues in the rural areas west of Parkers Prairie, Minnesota, which are currently served out of the Parkers Prairie substation. GRE indicates that during non-normal operations, low voltages could impact or damage electrical appliances and lighting. Reliable electrical service under all operating conditions is anticipated to be improved by the project.[166]

J. Costs

168. GRE estimates the cost of the project, on GRE's proposed alignment (alignment 1 in the EA) to be approximately $1.47 million dollars. Costs are attributable to the

[162] Ex. 13 at p. 11 (EA); Ex. 2 at pp. 7-1 to 7-2 (RPA).
[163] Ex. 13 at pp. 9-11, p. 20, Appendix B, Map B-1 (EA).
[164] Ex. 13 at p. 9 (EA).
[165] Ex. 13, Appendix B, Map B-1; Ex. 21; Ex. 24 at pp. 2-3 (Revised ALJ Report); Ex. 20 at pp. 41-55 (Public Hearing Transcript).
[166] Ex. 13 at p. 2 (EA).

construction of the transmission line and the expansion of the Parkers Prairie substation:

Estimated Project Costs[167]

Owner	Route Length	Estimated Pre- and Post-Construction Costs (dollars)	Estimated Construction Costs 115 kV Line (dollars)	Estimated Substation Costs (dollars)	Total Project Costs (dollars)
GRE	2.1 miles	$465,000	$681,000	$75,000	$1,221,000
LREC	NA	NA	NA	$250,000	$250,000
Total	2.1 miles	$465,000	$681,000	$325,000	$1,471,000

169. GRE indicates that annual operation and maintenance costs for a 115 kV line are in the range of $1,100 - $1,350 dollars per mile.[168]

170. If the alignment permitted by the Commission requires structures or construction measures different than those for GRE's proposed alignment, the cost of the project would be greater than GRE's estimate. Estimated costs of specialty structures and construction measures are as follows:

Estimated Costs of Specialty Structures and Construction Measures[169]

Structure / Measure	Costs (dollars or dollars/mile)
Angled road crossing – laminate posts, no guying	$76,000
Right angle road crossing – steel posts	$110,000
Distribution line underbuild	$90,000/mile
Distribution line underground	$80,000/mile

171. Potential impacts of the project can be mitigated, to a great extent, by selection of an alignment that avoids impacts. Four potential alignments for the project are discussed in the EA for the project (GRE's proposed alignment is alignment 1). Alignments which cross CSAH 6 have the potential to mitigate and balance

[167] Ex. 13 at p. 13, Table 2 (EA).
[168] Ex. 13 at p. 13 (EA).
[169] Ex. 13 at p.56, Table 14 (EA).

impacts. Alignments which cross CSAH 6 and alignments on the north side of CSAH 6 – requiring the underbuilding or undergrounding of the existing distribution line – make the project relatively more expensive:

Estimated Project Costs for Alignment Alternatives[170]

Alignment	Project Costs (dollars)	Difference from Alignment 1 Project Costs (dollars)
1	1,471,000	---
2	1,660,000 (underbuild) 1,639,000 (underground)	189,000 168,000
3	1,587,500 (underbuild) 1,715,000 (underground)	116,500 244,000
4	1,812,000 (underbuild) 1,791,000 (underground)	341,000 320,000

K. Irreversible and Irretrievable Commitments of Resources

172. All routes and alignments analyzed for the project have human and environmental impacts, some of which are unavoidable if the project is permitted and built. The project will require few irreversible and irretrievable commitments of resources. These resources are limited to construction resources, e.g., concrete, steel, hydrocarbon fuels.

L. Summary of Human and Environmental Impacts

173. For many categories of impacts, the potential impacts of the project are anticipated to be minimal and independent of the alignment of the new 115 kV transmission line, including potential impacts to public health and safety, public services, electronic communications, water resources, soils, and fauna.[171]

174. An alignment at greater than 60 ft. from the CSAH 6 centerline significantly increases potential impacts to irrigated agricultural fields and trees/shelterbelts, relative to an alignment in the range of 50-55 ft. An alignment on the north side of CSAH 6, at greater than 60 ft. from the CSAH 6 centerline, would significantly impact irrigated agricultural fields on the north side of the road. An alignment on the south side of CSAH 6, at greater than 60 ft. from the CSAH 6 centerline

[170] Ex. 13 at pp. 55-57, Table 15 (EA).
[171] Ex. 13 at p. 3 (EA).

would moderately to significantly impact irrigated agricultural fields on the south side of the road.[172]

175. The timeline for reconstruction of CSAH 6 by Otter Tail County is indefinite, with reconstruction being considered, at the earliest, sometime after 2032.[173]

176. Alignment 1 mitigates impacts to residences (across the road from three residences; on the same side as one residence) and to irrigation systems, as irrigators on the south side of CSAH 6 are relatively farther from the CSAH 6 centerline. Relative to other alignments studied, alignment 1 has the greatest impact to trees and shelterbelts. Alignment 1 is the least expensive to construct.[174]

177. Alignment 2 would require the existing distribution line on the north side of CSAH 6 to be underbuilt on the new 115 kV line or placed underground. The alignment impacts residences (across the road from one residence; on the same side as three residences). The alignment mitigates impacts to trees/shelterbelts – it avoids trees on the south side of CSAH 6, but impacts one shelterbelt on the north side of CSAH 6. Alignment 2 avoids impacts to irrigation systems only to the extent that it can be placed at an alignment in the range of 50-55 ft. from the CSAH 6 centerline. Alignment 2 is relatively more expensive than Alignment 1.[175]

178. Alignment 3 would require that a portion (approximately 0.45 miles) of the existing distribution line on the north side of CSAH 6 be underbuilt on the new 115 kV line or placed underground. The alignment mitigates impacts to residences (across the road from three residences; on the same side as one residence). The alignment mitigates impacts to irrigation systems by proceeding primarily on the south side of CSAH 6. Potential impacts to irrigation systems when the alignment crosses CSAH 6 can be mitigated by placing the alignment in the range of 50-55 ft. from the CSAH 6 centerline and by using non-guyed structures. Alignment 3 impacts trees/shelterbelts on the south side of CSAH 6, but also mitigates impacts to a residential shelterbelt and a tree farm. Alignment 3 is relatively more expensive than Alignment 1.[176]

179. Alignment 4 would require the existing distribution line on the north side of CSAH 6 to be underbuilt on the new 115 kV line or placed underground. The alignment impacts residences (across the road from two residences; on the same side as two residences). Alignment 4 avoids impacts to irrigation systems only to the extent that it can be placed at an alignment in the range of 50-55 ft. from the

[172] Findings 62, 64, 65, 66, 128, 129, 130, 131, 133, 153, 154, 155.
[173] Finding 63.
[174] Ex. 13 at pp. 55-57 (EA).
[175] Id.
[176] Id.

CSAH 6 centerline. This alignment mitigates impacts to all trees/shelterbelts along CSAH 6. Alignment 4 is relatively more expensive that Alignment 1 and the most expensive of the alignment options considered.[177]

Based on the Findings of Fact the Commission makes the following:

CONCLUSIONS OF LAW

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

2. The Public Utilities Commission has jurisdiction over the subject matter of this proceeding pursuant to Minnesota Statute 216E.03, subdivision 2.

3. The project qualifies for review under the alternative permitting process of Minnesota Statute 216E.04 and Minnesota Rule 7850.2800.

4. The Applicant, the Department of Commerce, and the Public Utilities Commission have complied with all procedural requirements required by law.

5. The Department of Commerce has completed an EA for this project as required by Minnesota Statute 216E.04, subdivision 5, and Minnesota Rule 7850.3700.

6. In accordance with Minnesota Rule 7850.3900, the EA and record created at the public hearing address the issues identified in the EA scoping decision.

7. The route proposed by Great River Energy, evaluated in the EA, and the subject of the public hearing is permittable per the criteria of Minnesota Statute 216E.03, subdivisions 7(a) and (b) and Minnesota Rule 7850.4100.

8. An alignment at greater than 60 ft. from the CSAH 6 centerline, as requested by the Otter Tail County highway department, is inconsistent with the routing criteria of Minnesota Statute 216E.03, subdivisions 7(a) and (b) and Minnesota Rule 7850.4100, as such an alignment significantly increases the potential impacts of the project without providing a definite timeline for reconstruction of CSAH 6, such that the county's request can reasonably be accommodated.

9. Of the alignments evaluated in the EA and public hearing, alignments 1 and 3 best satisfy the routing criteria of Minnesota Statute 216E.03, subdivisions 7(a) and (b) and Minnesota Rule 7850.4100. Of these, alignment 3 is superior, as it mitigates impacts to trees/shelterbelts through a known and relatively inexpensive mitigation measure, crossing the road.

[177] Id.

Based on the Findings of Fact and Conclusions of Law contained herein, and the entire record of this proceeding, the Commission hereby makes the following:

ORDER

1. A route permit for the proposed route, as requested in the route permit application, is hereby issued to Great River Energy (GRE) to construct approximately 2.1 miles of new 115 kV overhead transmission line, expand and modify the Parkers Prairie substation, connect the new 115 kV line through a switch structure to GRE's existing LR-IA line, and remove the existing 41.6 kV line along County Road 6 and southward along Minnesota State Highway 29 in Parkers Prairie Township in Otter Tail County, Minnesota.

2. The route width for the new 115 kV line is 300 feet, centered on County Road 6 (150 ft. on each side of the road) from the Parkers Prairie substation to the connection with GRE's existing LR-IA line. The route width for the connection with the LR-IA line is 300 feet, centered on the LR-IA line and extending 150 ft. north of structure LR-IA-317 and 150 ft. south of structure LR-IA-321.

3. The anticipated alignment for those portions of the line south of County Road 6 is 52-55 ft. south of the CSAH 6 centerline. The anticipated alignment for those portions of the line north of County Road 6 is 50-55 ft. north of the CSAH 6 centerline.

4. The route permit shall be issued in the form attached hereto, with a map showing the approved route and anticipated alignment.

Approved and adopted this _____ day of _____ 2012.

BY ORDER OF THE COMMISSION

_____

Burl W. Haar,
Executive Secretary

In the Matter of the Route Permit Application by
Great River Energy for the Parkers Prairie 115 kV Transmission
Line Project in Otter Tail County, Minnesota

EXHIBIT LIST

PUC Docket No. ET2/TL-11-867
OAH Docket No. 7-2500-22631-2

Exhibit Number	Author	Date	Description	eDockets Number
1	Applicant	8/25/11	Notice of Intent to File Application Pursuant to Alternative Permitting Process	20118-65721-01
2	Applicant	10/24/11	Route Permit Application	201110-67619-01 201110-67619-02 201110-67619-03 201110-67619-04 201110-67619-05
3	Applicant	11/11/11	Notice of Route Permit Application Submission	201111-68279-01
4	DOC EFP	11/17/11	Comments and Recommendations to the Commission on Route Permit Application Acceptance	201111-68426-01
5	DOC EFP	11/29/11	Notice of Public Information and Scoping Meeting	201111-68721-01
6	Commission	12/7/11	Commission Order Accepting Application as Complete	201112-69045-01
7	DOC EFP	12/30/11	Affidavit of Publication for Public Information and Scoping Meeting	201112-69833-01
8	DOC EFP	1/5/12	Public Comments (Oral) Received on the Scope of the Environmental Assessment	20121-69970-01

Exhibit Number	Author	Date	Description	eDockets Number
9	DOC EFP	1/5/12	Public Comments (Written) Received on the Scope of the Environmental Assessment	20121-69970-02
10	Applicant	1/12/12	Letter on Project Alternative Received During Scoping Comment Period	20121-70218-01
11	DOC	1/17/12	Scoping Decision for Environmental Assessment	20121-70357-01
12	DOC EFP	1/17/12	Notice of Scoping Decision	20121-70375-01
13	DOC EFP	3/19/12	Environmental Assessment	20123-72712-01
14	DOC EFP	3/20/12	Notice of Public Hearing and Availability of Environmental Assessment	20123-72757-01
15	DOC EFP	3/21/12	Mailing of Environmental Assessment to Public Agencies	20123-72766-01
16	DOC EFP	4/2/12	Notice in EQB Monitor of Public Hearing and Availability of Environmental Assessment	20124-73284-01
17	DOC EFP	3/22/12	Notice by Certified Mail of Public Hearing and Availability of Environmental Assessment	20124-73339-01
18	DOC EFP	4/13/12	Affidavit of Publication for Public Hearing and Availability of Environmental Assessment	20124-73590-01
19	Public	4/10/12	Submission by Bruce Jahnke	20125-74313-01

Exhibit Number	Author	Date	Description	eDockets Number
20	OAH	5/1/12	Public Hearing Transcript	20125-74314-01
21	OAH	5/23/12	Written Comment Submitted by Otter Tail County Highway Department	20125-74941-01
22	OAH	5/24/12	Summary of Testimony at Public Hearing and Summary of Written Comments	20125-74958-01
23	OAH	5/25/12	Amendment to the Summary of Testimony at Public Hearing and Summary of Written Comments	20125-75037-01
24	OAH	5/29/12	Revised Summary of Testimony at Public Hearing and Summary of Written Comments	20125-75075-01
25	OAH	5/31/12	Written Comment Submitted by Plants Beautiful Nursery	20125-75226-01

STATE OF MINNESOTA PUBLIC UTILITIES COMMISSION

ROUTE PERMIT FOR CONSTRUCTION OF A HIGH-VOLTAGE TRANSMISSION LINE AND ASSOCIATED FACILITIES

IN OTTER TAIL COUNTY

ISSUED TO
GREAT RIVER ENERGY, A MINNESOTA COOPERATIVE CORPORATION

PUC DOCKET NO. ET2/TL-11-867

In accordance with the requirements of Minnesota Statutes Chapter 216E and Minnesota Rules Chapter 7850, this route permit is hereby issued to:

GREAT RIVER ENERGY, A MINNESOTA COOPERATIVE COOPERATION

Great River Energy, a Minnesota generation and transmission cooperative cooperation, is authorized by this route permit to remove the existing 41.6 kilovolt (kV) transmission line that serves the Parkers Prairie substation, to construct approximately 2.1 miles of new 115 kV transmission line between the Parkers Prairie substation and Great River Energy's existing LR-IA line, and to expand and modify the Parkers Prairie substation to accommodate the new 115 kV transmission line.

The transmission line and associated facilities shall be built within the route identified in this permit, as portrayed on the official route maps, and in compliance with all other conditions specified in this permit.

Approved and adopted this _____ day of _____ 2012

BY ORDER OF THE COMMISSION

_____

Burl W. Haar,
Executive Secretary

CONTENTS

ATTACHMENTS

Complaint Handling Procedures for High Voltage Transmission Lines
Permit Compliance Filings
Compliance Filing Procedures for High Voltage Transmission Lines

ROUTE MAPS

1 ROUTE PERMIT

The Minnesota Public Utilities Commission (Commission) hereby issues this route permit to Great River Energy, a Minnesota cooperative corporation (Permittee) pursuant to Minnesota Statute 216E.03 and Minnesota Rules 7850. This permit authorizes the Permittee to construct approximately 2.1 miles of new 115 kV transmission line and associated facilities in Otter Tail County, Minnesota, as identified in the attached route permit maps, hereby incorporated into this document.

2 PROJECT DESCRIPTION

The Permittee is authorized to remove an existing 41.6 kV transmission line and to construct a new 115 kV transmission line and associated facilities, described as follows:

- Removal of the existing 41.6 kV transmission line that serves the Parkers Prairie substation, from the substation eastward (approximately two miles) and then southward (approximately 1,650 feet) along Minnesota State Highway 29;

- Construction of a new 115 kV transmission line from the Parkers Prairie substation to a connection with Great River Energy's existing Inman – Alexandria 115 kV line (LR-IA line) (approximately 2.1 miles);

- Installation of a new 115 kV, 2000 amp, three-way switch to connect the new 115 kV line to the existing LR-IA line;

- Replacement of two to four structures on the existing LR-IA line to accommodate the new switch and the connection of the new 115 kV line to the existing LR-IA line; and

- Expansion of the existing Parkers Prairie substation site southward (approximately 40 feet) to accommodate a new 115/12.5 kV transformer and associated equipment.

2.1 Project Location

The project is located in Parkers Prairie Township (T118N, R37W), Sections 8, 9, 10, 15, 16, and 17, in Otter Tail County, Minnesota.

2.2 Associated Facilities and Substations

The project will expand the existing Parkers Prairie substation to accommodate a new 115/12.5 kV transformer and associated equipment. The transformer and associated equipment are required to facilitate interconnection of the new 115 kV transmission line. The Parkers Prairie substation is owned and operated by Lake Region Electric Cooperative (LREC), a member cooperative of the Permittee. Expansion of the substation will require movement of the substation fenced area southward approximately 40 feet. The land required for this expansion is owned by LREC; no land or easements will need to be acquired from public or private landowners for the expansion of the substation site.

2.3 Structures and Conductors

The Permittee shall use single pole wood structures with horizontal post or braced post insulators. Structures will be approximately 60 to 85 feet in height with an average span of 300 to 400 feet between structures (less in areas where underbuilding is required). Replacement structures on the Permittee's existing LR-IA line shall be single pole structures of either wood or steel. The Permittee's three-way switch structure shall be a single pole of either wood or steel and will be approximately 100 feet in height.

The Permittee may use guy wires to minimize structure deflections. The Permittee may use self-supporting structures to facilitate the three-way switch and interconnection with the Permittee's LR-IA line. Where the new 115 kV line crosses from the south to the north side of CSAH 6, the Permittee shall use self-supporting structures, unless agreement is reached with respective landowners that guyed structures will not impact irrigated agricultural operations, in which case guyed structures may be used.

On the north side of CSAH 6, where the new 115 kV line will occupy the same location (right of way) as the existing LREC distribution line, the Permittee shall underbuild the distribution line or place it underground (for some or all of its length), at the Permittee's discretion.

The transmission line shall be equipped with protective devices to safeguard the public if an accident occurs.

The transmission line shall be designed to meet or exceed local and state codes, the National Electric Safety Code (NESC), and North American Electric Reliability Corporation (NERC) requirements. This includes standards relating to clearance to ground, clearance to crossing utilities, clearance to buildings, clearance to vegetation, strength of materials, clearances over roadways, right-of-way widths, and permit requirements.

3 DESIGNATED ROUTE

The approved route and anticipated alignment are shown on the route maps attached to this permit and further designated as follows:

The new 115 kV transmission line would exit the modified and expanded Parkers Prairie substation and cross directly to the south side of CSAH 6. The line would then proceed along the south side of CSAH 6 approximately 6,500 feet before crossing to the north side of CSAH 6. The line would then proceed on the north side of CSAH 6 approximately 4,200 feet, across Minnesota State Highway 29 and across a Canadian Pacific rail line, to a connection with the Permittee's existing LR-IA line.

3.1 Route Width and Alignment

The designated route width for the new 115 kV transmission line shall be 300 feet, centered on CSAH 6. In that area of the route east of Minnesota State Highway 29, the route width shall be centered on the projected centerline of CSAH 6. To accommodate the connection of the new 115 kV transmission line to the Permittee's existing LR-IA line, the route width for the

connection shall be 300 feet, centered on the existing LR-IA line and extending 150 ft. north of structure LR-IA-317 and 150 ft. south of structure LR-IA-321.

For those portions of the new 115 kV line south of CSAH 6, the alignment shall be 52-55 feet south of the CSAH 6 centerline. For those portions of the line north of CSAH 6, the alignment shall be 50-55 feet north of the CSAH 6 centerline.

The route width noted above provides the Permittee with flexibility for minor adjustments of the specific alignment or right-of-way to accommodate landowner requests and unforeseen conditions. The final alignment (i.e., permanent and maintained rights-of-way) will be located within this designated route unless otherwise authorized below.

The designated route identifies an alignment that minimizes the overall potential impacts to the factors identified in Minnesota Rule 7850.4100 and which was evaluated in the environmental review and permitting process. Consequently, this permit anticipates that the actual right-of-way will generally conform to the alignment shown in the attached maps, unless changes are requested by individual landowners, unforeseen conditions are encountered, or are otherwise provided for by this permit.

Any alignment modifications within this designated route shall be located so as to have comparable overall impacts relative to the factors in Minnesota Rule 7850.4100 as does the alignment identified in this permit, and shall be specifically identified, documented, and approved as part of the plan and profile submitted pursuant to Section 4.1 of this permit.

Route width variations outside the designated route may be allowed for the Permittee to overcome potential site specific constraints. These constraints may arise from any of the following:

1) Unforeseen circumstances encountered during the detailed engineering and design process.

2) Federal or state agency requirements.

3) Existing infrastructure within the transmission line route, including but not limited to roadways, railroads, natural gas and liquid pipelines, high voltage electric transmission lines, or sewer and water lines.

4) Planned infrastructure improvements identified by state agencies and local government units (LGUs) and made part of the record for this permit.

Any alignment modifications arising from these site specific constraints that would result in right-of-way placement outside the designated route shall be located so as to have comparable overall impacts relative to the factors in Minnesota Rule 7850.4100 as does the alignment identified in this permit and shall also be specifically identified, documented, and approved as part of the plan and profile submitted pursuant to Section 4.1 of this permit.

3.2 Right-of-Way Placement

Where the transmission line route parallels existing highway and other road rights-of-way, the transmission line right-of-way shall occupy and utilize the existing right-of-way to the maximum extent possible, consistent with the criteria in Minnesota Rule 7850.4100, the other requirements of this permit, and for highways under the jurisdiction of the Minnesota Department of Transportation (MnDOT), MnDOT rules, policies, and procedures for accommodating utilities in trunk highway rights-of-way.

3.3 Right-of-Way Width

The new 115 kV transmission line will be built with single pole structures, which will require a 100 foot right-of-way, 50 feet on each side of the transmission line centerline. Additional right-of-way may be required from landowners to accommodate guy wires and anchors.

4 GENERAL CONDITIONS

The Permittee shall comply with the following general conditions during construction of the transmission line and associated facilities and the life of this permit.

4.1 Plan and Profile

At least thirty (30) days before right-of-way preparation for construction begins on any segment or portion of the project, the Permittee shall provide the Commission with a plan and profile of the right-of-way and the specifications and drawings for right-of-way preparation, construction, transmission structure specifications and locations, and restoration for the transmission line. The documentation shall include maps depicting the plan and profile including the right-of-way, alignment, and structures in relation to the route and alignment approved per the permit.

The Permittee may not commence construction until the thirty (30) days has expired or until the Commission has advised the Permittee in writing that it has completed its review of the documents and determined that the planned construction is consistent with this permit. If the Permittee intend to make any significant changes in the plan and profile or the specifications and drawings after submission to the Commission, the Permittee shall notify the Commission at least five (5) days before implementing the changes. No changes shall be made that would be in violation of any of the terms of this permit.

4.2 Construction Practices

The Permittee shall follow those specific construction practices and material specifications described in Great River Energy's route permit application to the Commission, dated October 24, 2011, and as described in the environmental assessment and Findings of Fact, unless this permit establishes a different requirement, in which case this permit shall prevail.

4.2.1 Field Representative

At least fourteen (14) days prior to commencing construction, the Permittee shall advise the Commission in writing of the person or persons designated to be the field representative for the Permittee with the responsibility to oversee compliance with the conditions of this permit during construction.

The field representative's address, phone number, email, and emergency phone number shall be provided to the Commission and shall be made available to affected landowners, residents, public officials and other interested persons. The Permittee may change the field representative at any time upon written notice to the Commission.

4.2.2 Local Governments

During construction, the permitee shall minimize any disruption to public services or public utilities. To the extent disruptions to public services occur, these would be temporary and the permitee will work to restore service promptly.

Where any impacts to utilities have the potential to occur, permitee will work with both landowners and local agencies to determine the most appropriate transmission structure placement.

The Permittee shall cooperate with county and city road authorities to develop appropriate signage and traffic management during construction.

4.2.3 Cleanup

All waste and scrap that is the product of construction shall be removed from the area and properly disposed of upon completion of each task. Personal litter, including bottles, cans, and paper from construction activities shall be removed on a daily basis.

4.2.4 Noise

Construction and routine maintenance activities shall be limited to daytime working hours, as defined in Minnesota Rule 7030.0200, to ensure nighttime noise level standards will not be exceeded.

4.2.5 Vegetation Removal in the Right-of-Way

The Permittee shall minimize the number of trees to be removed in selecting the right-of-way specifically preserving to the maximum extent practicable windbreaks, shelterbelts, living snow fences and vegetation in areas such as trail and stream crossings, where vegetative screening may minimize aesthetic impacts, to the extent that such actions do not violate sound engineering principles or system reliability criteria.

Tall tree species located within the transmission line right-of-way that endanger the safe and reliable operation of the transmission facility will be removed.

In many cases certain low and slow growing species that do not exceed a mature height of 15 feet can be planted in the right-of-way to blend the difference between the right-of-way and adjacent wooded areas, to the extent that the low growing vegetation will not pose a threat to the transmission facility or impede construction.

4.2.6 Aesthetics

The Permittee shall consider input pertaining to visual impacts from landowners or land management agencies prior to final location of structures, rights-of-way, and other areas with the potential for visual disturbance. Care shall be used to preserve the natural landscape, minimize tree removal and prevent any unnecessary destruction of the natural surroundings in the vicinity of the project during construction and maintenance. Structures shall be placed at the reasonable distance, consistent with sound engineering principles and system reliability criteria, from intersecting roads, highway, or trail crossings and could cross roads to minimize or avoid impacts.

4.2.7 Erosion Control

The Permittee shall follow standard erosion control measures outlined in Minnesota Pollution Control Agency (MPCA) guidance and best management practices regarding sediment control practice during construction include protecting storm drain inlets, use of silt fences, protecting exposed soil, immediately stabilizing restored soil, controlling temporary soil stockpiles, and controlling vehicle tracking.

The Permittee shall implement reasonable measures to minimize runoff during construction and shall promptly plant or seed, erect sediment control fences (e.g. biorolls, sandbags, and silt fences), apply mulch (e.g. hay or straw) on exposed soils, and/or use erosion control blankets and turf reinforcement mats to provide structural stability to bare surfaces and slopes.

When utilizing seed to establish temporary and permanent vegetative cover on exposed soil, the Permittee shall select specific site characteristic seed, certified to be free of noxious weeds.

Contours shall be graded as required so that all surfaces drain naturally, blend with the natural terrain, and are left in a condition that will facilitate re-vegetation, provide for proper drainage, and prevent erosion. All areas disturbed during construction of the facilities shall be returned to their pre-construction condition.

Where larger areas of one acre or more are disturbed or in other areas designated by the MPCA, the Permittee shall prepare the required Stormwater Pollution Prevention Plan (SWPPP) and obtain a National Pollutant Discharge Elimination System (NPDES)/State Disposal System (SDS) construction stormwater permit from the MPCA.

4.2.8 Wetlands and Water Resources

Structures shall be located to span watercourses, wetlands, and floodplains to the extent practicable and consistent with sound engineering principles. Minimal grading of areas around pole locations may be required to accommodate construction vehicles and equipment.

The Permittee shall endeavor to access wetlands and riparian areas using the shortest route possible in order to minimize travel through wetland areas and prevent unnecessary impacts wherever possible.

Construction in wetlands and riparian areas shall be scheduled during frozen ground conditions, when practicable. When construction during winter is not possible, construction mats (wooden mats or a composite mat system) shall be used to protect wetland vegetation. All-terrain construction vehicles designed to minimize soil impact in damp areas may also be used.

No staging or stringing set up areas shall be placed within or adjacent to wetlands or water resources, as practicable. The structures shall be assembled on upland areas before they are brought to the site for installation.

Soil excavated from the wetlands and riparian areas shall be contained and not placed back into the wetland or riparian area. The Permittee shall also utilize erosion control methods identified in Section 4.2.7 (Erosion Control), as warranted. Areas disturbed by construction activities shall be restored to pre-construction conditions (soil horizons, contours, vegetation, etc.).

4.2.9 Temporary Work Space

The Permittee shall limit temporary easements to special construction access needs and additional staging or lay-down areas required outside of the authorized right-of-way. Space shall be selected to limit the removal and impacts to vegetation.

Temporary lay down areas outside of the authorized transmission line right-of-way will be obtained from affected landowners through rental agreements and are not provided for in this permit.

Temporary driveways may be constructed between the roadway and the structures to minimize impact by using the shortest route possible. Construction mats may also be used to minimize impacts on access paths and construction areas.

4.2.10 Restoration

The Permittee shall restore the right-of-way, temporary work spaces, access roads, abandoned right-of-way, and other public or private lands affected by construction of the transmission line. Practices to restore areas impacted by construction and maintenance activities are also described in Section 4.2.7 of this permit.

Restoration within the right-of-way must be compatible with the safe operation, maintenance, and inspection of the transmission line.

Within 60 days after completion of all restoration activities, the Permittee shall advise the Commission in writing of the completion of such activities. The Permittee shall compensate landowners for any yard/landscape, crop, soil compaction, drain tile, or other damages that may occur during construction.

4.2.11 Notice of Permit

The Permittee shall inform all employees, contractors, and other persons involved in the transmission line construction of the terms and conditions of this permit.

4.3 Periodic Status Reports

The Permittee shall report to the Commission on progress regarding finalization of the route, design of structures, and construction of the transmission line. The Permittee need not report more frequently than monthly.

4.4 Complaint Procedures

Prior to the start of construction, the Permittee shall submit to the Commission the procedures that will be used to receive and respond to complaints. The procedures shall be in accordance with the requirements set forth in the complaint procedures attached to this permit.

4.5 Notification to Landowners

The Permittee shall provide all affected landowners with a copy of this permit and the complaint procedures at the time of the first contact with the landowners after issuance of this permit. At the time of first contact, the Permittee shall also provide all affected landowners with a copy of the *Rights-of-Way and Easements for Energy Facility Construction and Operation* fact sheet provided by the Department of Commerce.

The Permittee shall contact landowners prior to entering the property or conducting maintenance along the route. The Permittee shall avoid construction and maintenance practices, specifically the use of herbicides or other pesticides, which are inconsistent with the landowner's or tenant's use of the land (See also, Section 4.2.5).

The Permittee shall work with landowners to locate the high-voltage transmission line to minimize the loss of agricultural land, forest, and wetlands, and to avoid homes and farmsteads.

4.6 Completion of Construction

4.6.1 Notification to Commission

At least three days before the line is to be placed into service, the Permittee shall notify the Commission of the date on which the line will be placed into service and the date on which construction was complete.

4.6.2 As-Builts

Within 60 days after completion of construction, the Permittee shall submit copies of all the final as-built plans and specifications developed during the project.

4.6.3 GPS Data

Within 60 days after completion of construction, the Permittee shall submit to the Commission, in the format requested by the Commission, geo-spatial information (ArcGIS compatible map files, GPS coordinates, associated database of characteristics, etc.) for all structures associated with the transmission line, each switch, and each substation connected.

4.7 Electrical Performance Standards

4.7.1 Grounding

The Permittee shall design, construct, and operate the transmission line in a manner that the maximum induced steady-state short-circuit current shall be limited to five milliamperes (mA), root mean square (rms) alternating current between the ground and any non-stationary object within the right-of-way, including but not limited to large motor vehicles and agricultural equipment. All fixed metallic objects on or off the right-of-way, except electric fences that parallel or cross the right-of-way, shall be grounded to the extent necessary to limit the induced short-circuit current between ground and the object so as not to exceed one mA rms under steady state conditions of the transmission line and to comply with the ground fault conditions specified in the NESC. The Permittee shall address and rectify any induced current problems that arise during transmission line operation.

4.7.2 Electric Field

The transmission line shall be designed, constructed, and operated in such a manner that the electric field measured one meter above ground level immediately below the transmission line shall not exceed 8.0 kV/m rms.

4.7.3 Interference with Communication Devices

If interference with radio or television, satellite, wireless internet, GPS-based agriculture navigation systems, or other communication devices is caused by the presence or operation of the transmission line, the Permittee shall take whatever action is prudently feasible to restore or provide reception equivalent to reception levels in the immediate area just prior to the construction of the line.

4.8 Other Requirements

4.8.1 Applicable Codes

The Permittee shall comply with applicable requirements of the NESC including clearances to ground, clearance to crossing utilities, clearance to buildings, right-of-way widths, erecting power poles, and stringing of transmission line conductors. The transmission line facility shall also meet the NERC reliability standards.

4.8.2 Other Permits

The Permittee shall comply with all applicable state rules and statutes. The Permittee shall obtain all required local, state and federal permits for the project and comply with the conditions of these permits. A list of the required permits is included in the route permit application and the environmental assessment. The Permittee shall submit a copy of such permits to the Commission upon request.

4.8.3 Pre-emption

Pursuant to Minnesota Statutes 216E.10, subdivisions 1 and 2, this route permit shall be the sole route approval required to be obtained by the Permittee and this permit shall supersede and preempt all zoning, building, or land use rules, regulations, or ordinances promulgated by regional, county, local and special purpose government.

4.8.4 Delay in Construction

If the Permittee have not commenced construction or improvement of the route within four years after the date of issuance of this permit, the Commission shall consider suspension of the permit in accordance with Minnesota Rule 7850.4700.

4.9 Archeological and Historic Resources

If any previously unrecorded archaeological sites are discovered during construction of the project, the Permittee shall immediately stop work at the site and shall mark and preserve the site(s) and notify the Commission and the State Historic Preservation Office (SHPO) of the discovery. The Commission and the SHPO shall have three (3) working days from the time the agency is notified to conduct an inspection of the site if either agency chooses to do so. On the fourth day after notification, the Permittee may begin work on the site unless the SHPO has directed that work shall cease. In such event, work shall not continue until the SHPO determines that construction can proceed.

If human remains are encountered during construction, the Permittee shall immediately halt construction at that location and promptly notify local law enforcement authorities and the State Archaeologist. Construction at the human remains location shall not proceed until authorized by local law enforcement authorities or the State Archaeologist.

If any federal funding, permit, or license is involved or required, the Permittee shall notify the SHPO as soon as possible in the planning process to coordinate section 106 (36 C.F.R. part 800) review.

Prior to construction, construction workers shall be trained about the need to avoid cultural properties, how to identify cultural properties, and procedures to follow if undocumented cultural properties, including gravesites, are found during construction.

4.10 Avian Mitigation

The Permittee's standard transmission design shall incorporate adequate spacing of conductor(s) and grounding devices in accordance with Avian Power Line Interaction Committee standards to

eliminate the risk of electrocution to raptors with larger wingspans that may simultaneously come in contact with a conductor and grounding devices.

5 SPECIAL CONDITIONS

There are no special conditions for this permit.

6 PERMIT AMENDMENT

This permit may be amended at any time by the Commission. Any person may request an amendment of the conditions of this permit by submitting a request to the Commission in writing describing the amendment sought and the reasons for the amendment. The Commission will mail notice of receipt of the request to the Permittee. The Commission may amend the conditions after affording the Permittee and interested persons such process as is required.

7 TRANSFER OF PERMIT

The Permittee may request at any time that the Commission transfer this permit to another person or entity. The Permittee shall provide the name and description of the person or entity to whom the permit is requested to be transferred, the reasons for the transfer, a description of the facilities affected, and the proposed effective date of the transfer.

The person to whom the permit is to be transferred shall provide the Commission with such information as the Commission shall require to determine whether the new permittee can comply with the conditions of the permit. The Commission may authorize transfer of the permit after affording the Permittee, the new permittee, and interested persons such process as is required.

8 REVOCATION OR SUSPENSION OF THE PERMIT

The Commission may initiate action to revoke or suspend this permit at any time. The Commission shall act in accordance with the requirements of Minnesota Rule 7850.5100 to revoke or suspend the permit.

MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLIANCE FILING PROCEDURE
FOR PERMITTED ENERGY FACILITIES

1. Purpose

To establish a uniform and timely method of submitting information required by Commission energy facility permits.

2. Scope and Applicability

This procedure encompasses all compliance filings required by permit.

3. Definitions

Compliance Filing – A sending (filing) of information to the Commission, where the information is required by a Commission site or route permit.

4. Responsibilities

A) The permittee shall eFile all compliance filings with Dr. Burl Haar, Executive Secretary, Public Utilities Commission, through the Commission's electronic filing system (eDockets). The system is hosted by the Department of Commerce at: https://www.edockets.state.mn.us/EFiling/home.jsp

General instructions are provided on the website. To eFile a document a permittee must be registered and obtain a user ID and password.

B) All filings must have a cover sheet that includes:

1. Date
2. Name of submitter / permittee
3. Type of permit (site or route)
4. Project location
5. Project docket number
6. Permit section under which the filing is made
7. Short description of the filing

C) Filings that are graphic intensive (e.g., maps, plan and profile) must, in addition to being eFiled, be submitted as paper copies and on CD. Copies and CDs should be sent to: (1) Dr. Burl W. Haar, Executive Secretary, Minnesota Public Utilities Commission, 121 7th Place East, Suite 350, St. Paul, MN, 55101-2147, and (2) Department of Commerce, Energy Facility Permitting, 85 7th Place East, Suite 500, St. Paul, MN, 55101-2198. Additionally, the Commission may request a paper copy of any eFiled document.

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PERMIT COMPLIANCE FILINGS[1]

PERMITTEE(S): Great River Energy
PERMIT TYPE: HVTL Route Permit
PROJECT LOCATION: Otter Tail County
PUC DOCKET NUMBER: ET2/TL-11-867

Filing Number	Permit Section	Description	Due Date
1	4. 1	Plan and profile of right-of-way (ROW)	30 days before ROW preparation for construction
2	4.2.1	Contact information for field representative	14 days prior to construction
3	4.2.10	Restoration complete	60 days after completion of all restoration activities
4	4.3	Periodic status reports	Monthly
5	4.4	Complaint procedures	Prior to start of construction
6	Complaint Handling Procedures	Complaint reports	By the 15th of each month
7	4.5	Notification to landowners	First contact with landowners after permit issuance
8	4.6.1	Notice of completion and date of placement in service	Three days prior to energizing
9	4.6.2	Provide as-built plans and specifications	Within 60 days after completion of construction
10	4.6.3	GPS data	Within 60 days after completion of construction
11	4.9	Notification of previously unrecorded archaeological sites	Upon discovery

[1] This compilation of permit compliance filings is provided for the convenience of the permittee(s) and the Commission. However, it is not a substitute for the permit; the language of the permit controls.

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MINNESOTA PUBLIC UTILITIES COMMISSION
COMPLAINT HANDLING PROCEDURES
FOR
HIGH VOLTAGE TRANSMISSION LINES

1. Purpose:

To establish a uniform and timely method of reporting complaints received by the permittee concerning permit conditions for site preparation, construction, cleanup and restoration, operation, and resolution of such complaints.

2. Scope:

This document describes complaint reporting procedures and frequency.

3. Applicability:

The procedures shall be used for all complaints received by the permittee and all complaints received by the Commission under Minn. Rule 7829.1500 or 7829.1700 relevant to this permit.

4. Definitions:

Complaint: A verbal or written statement presented to the permittee by a person expressing dissatisfaction or concern regarding site preparation, cleanup, restoration, or other transmission line route permit conditions. Complaints do not include requests, inquiries, questions, or general comments.

Substantial Complaint: A written complaint alleging a violation of a specific route permit condition that, if substantiated, could result in permit modification or suspension pursuant to the applicable regulations.

Unresolved Complaint: A complaint which, despite the good faith efforts of the permittee and a person(s), remains to both or one of the parties unresolved or unsatisfactorily resolved.

Person: An individual, partnership, joint venture, private or public corporation, association, firm, public service company, cooperative, political subdivision, municipal corporation, government agency, public utility district, or any other entity, public or private, however organized.

5. Complaint Documentation and Processing:

A) The permittee shall designate an individual to summarize complaints for submission to the Commission. This person's name, phone number and e-mail address shall accompany all complaint submittals.

B) A person presenting a complaint should to the extent possible, include the following information in their communications:

1. Name of complainant, address, phone number, and e-mail address.
2. Date of complaint
3. Tract or parcel number
4. Whether the complaint relates to (1) a route permit matter, (2) a transmission line and associated facility issue, or (3) a compliance issue.

C) The permittee shall document all complaints by maintaining a record of all applicable information concerning the complaint, including the following:

1. Docket number and project name
2. Name of complainant, address, phone number, and e-mail address
3. Precise property description or parcel number
4. Name of permittee representative receiving complaint and date of receipt.
5. Nature of complaint and the applicable route permit conditions(s).
6. Activities undertaken to resolve the complaint.
7. Final disposition of the complaint.

6. Reporting Requirements:

The permittee shall report all complaints to the Commission according to the following schedule:

Immediate Reports: All substantial complaints shall be reported to the Commission the same day received, or on the following working day for complaints received after working hours. Such reports are to be directed to the Commission's Consumer Affairs Office at 1-800-657-3782 or consumer.puc@state.mn.us. Voice messages are acceptable. For email reporting, the email subject line should read "EFP Substantial Complaint" and include the appropriate project docket number.

Monthly Reports: By the 15th of each month, a summary of all complaints, including substantial complaints received or resolved during the preceding month, shall be eFiled to Dr. Burl W. Haar, Executive Secretary, Public Utilities Commission, using the Minnesota Department of Commerce eDockets system (see eFiling instructions attached to this permit).

If no Complaints were received during the preceding month, the permittee shall submit (eFile) a summary indicating that no complaints were received.

The permittee shall commence and continue to file monthly reports from the time of permit issuance through the 12 months following the notice of project completion. Thereafter, the permittee shall file a complaint report with the Commission within 14 days of the receipt of a new complaint through the term of the permit.

7. Complaints Received by the Commission or Department of Commerce:

Complaints received directly by the Commission or Department from aggrieved persons regarding site preparation, construction, cleanup, restoration, operation, and maintenance shall be promptly sent to the permittee.

8. Commission Process for Unresolved Complaints:

Commission staff shall perform an initial evaluation of unresolved complaints submitted to the Commission. Complaints raising substantial transmission line route permit issues shall be processed and resolved by the Commission. Staff shall notify the permittee and appropriate person(s) if it determines that the complaint is a substantial complaint. With respect to such complaints, each party shall submit a written summary of its position to the Commission no later than ten days after receipt of the staff notification. The complaint will be presented to the Commission for a decision as soon as practicable.

9. Permittee Contact for Complaints and Complaint Reporting

The permittee will eFile the permittee's contact person for complaints within 14 days of the order granting a route permit. The permittee will include the contact person and their associated contact information (mailing address, phone number, and email address) in the permit mailing to landowners and local governments.

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HVTL ROUTE MAPS

Permitted Route

- Transmission Line Route
- Anticipated Alignment

Existing Utilities

- Distribution Substation
- Distribution Line
- 41.6 kV Transmission Line
- 115 kV Transmission Line

0 200 400 Feet

Data Sources Vary Between MNDOT, MNDNR, MNGEO and Great River Energy.
2010 Color Orthophotos from Farm Services Administration.
Parcel Data from Otter Tail County GIS.
Map Projection:
UTM, NAD83, Zone15, Meters

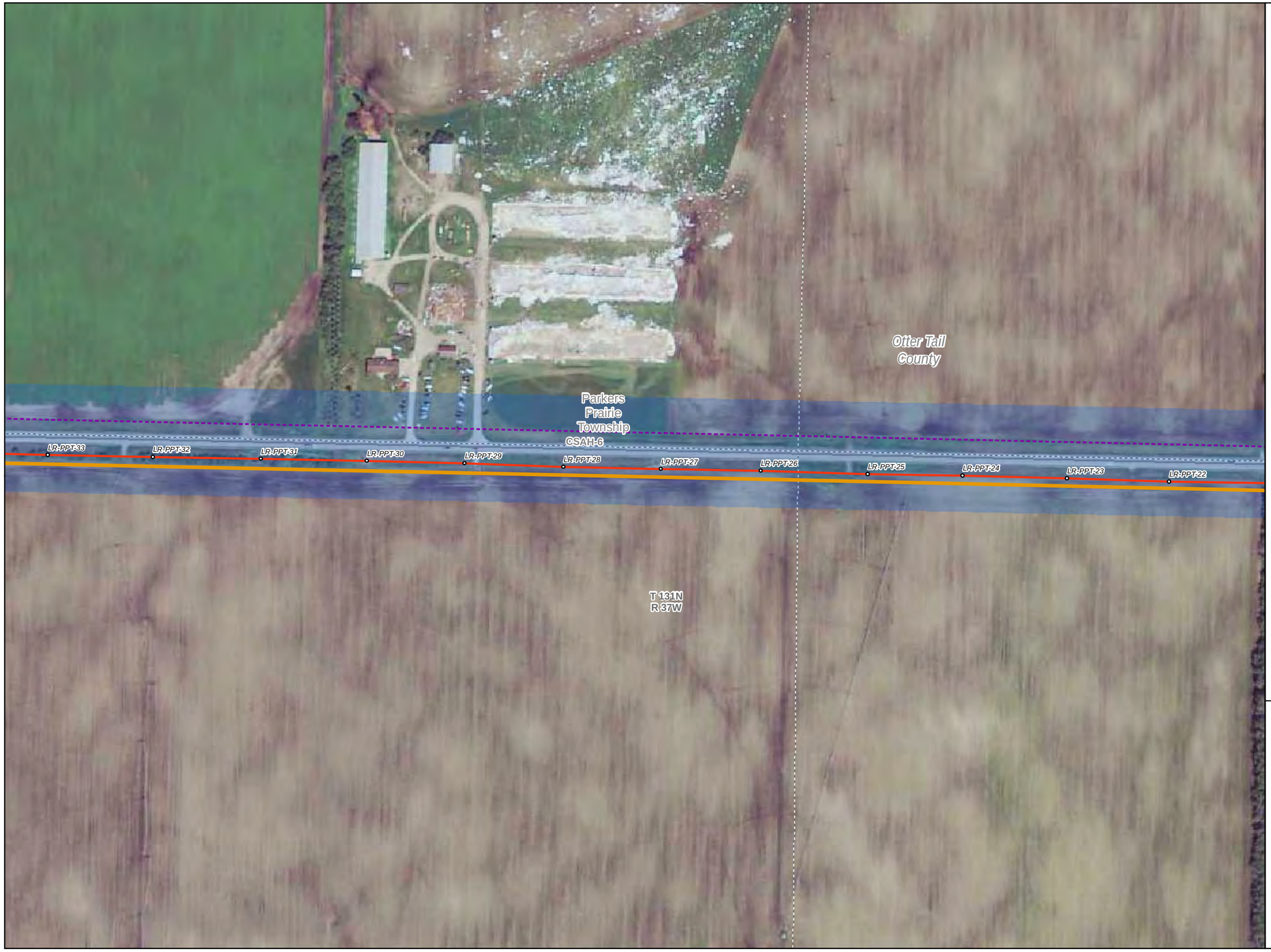
N

PUC Docket No. ET2/TL-11-867

Parkers Prairie 115 kV Project

Map 1 of 4

Route Permit Map



Permitted Route

- Transmission Line Route
- Anticipated Alignment

Existing Utilities

- Distribution Substation
- Distribution Line
- 41.6 kV Transmission Line
- 115 kV Transmission Line

0 200 400 Feet

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Map Projection:
UTM, NAD83, Zone15, Meters

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PUC Docket No. ET2/TL-11-867

Parkers Prairie 115 kV Project

Map 2 of 4

Route Permit Map

Permitted Route

- Transmission Line Route
- Anticipated Alignment

Existing Utilities

- Distribution Substation
- Distribution Line
- 41.6 kV Transmission Line
- 115 kV Transmission Line

0 200 400 Feet

Data Sources Vary Between MNDOT, MNDNR, MNGEO and Great River Energy.
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Map Projection:
UTM, NAD83, Zone15, Meters

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PUC Docket No. ET2/TL-11-867

Parkers Prairie 115 kV Project

Map 3 of 4

Route Permit Map

Permitted Route

- Transmission Line Route
- Anticipated Alignment

Existing Utilities

- Distribution Substation
- Distribution Line
- 41.6 kV Transmission Line
- 115 kV Transmission Line

0 200 400 Feet

Data Sources Vary Between MNDOT, MNDNR, MNGEO and Great River Energy.
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PUC Docket No. ET2/TL-11-867

Parkers Prairie 115 kV Project

Map 4 of 4

Route Permit Map