

Appendix C

GRE Reliability Review

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In the Matter of the Application for a Route
Permit for the 115-kV Laketown Transmission
Line and Associated Facilities Project in Carver
County, Minnesota

MPUC Docket No. ET2/TL-24-132

Great River Energy and Minnesota Valley Electric Cooperative (MVEC) (together, “the applicants”) are available to coordinate with the Department of Commerce, Energy Environmental Review and Analysis (“DOC-EERA”) to provide any information DOC-EERA may need in its preparation of the Environmental Assessment (“EA”) for the Laketown 115 kilovolt (kV) Transmission Line Project (“Project”). The applicants submit the following information in response to an email request from DOC-EERA staff on December 24, 2024 - “We are requesting an engineering write-up on the reliability portions of each route, proposed and alternatives, to accurately address the issue of reliability.” After further discussion with DOC-EERA staff, Applicants understand that staff is requesting a discussion of loading reliability; other reliability issues with respect to the analyzed alternatives have been or will be discussed separately by Applicants. Specifically, DOC-EERA staff are requesting reliability information for routes and alignments to be evaluated in the EA as identified in the February 5, 2025, Environmental Assessment Scoping Decision for the Project.

The EA will evaluate the route proposed by the applicants in the Route Permit Application (“the Application”). In addition, the EA will evaluate:

- Route Alternative A
- Route Alternative B
- Route Alternative C
- Alignment Alternative D

As identified in Section 1.5 of the Application, the purpose of the Project is to provide electric energy to the new Laketown Substation. The Laketown Substation will provide service to end users within MVEC’s service territory, which includes portions of Carver, Sibley, Scott, Rice, and LeSueur counties. The Project is needed to provide reliable electrical service to current and future end-use customers in the rapidly growing area near the Project.

Reliability of electrical service refers to the ability of both the transmission and distribution systems to maintain continuous and stable power delivery. Reliability includes several factors such as redundancy, exposure to environmental and operational influences, and load adaptability.

The current 115kV transmission system in the Project area includes 28 miles of transmission line and serves four distribution substations: Victoria and Augusta (operated by MVEC), and Lake Bavaria and West Creek (operated by Xcel Energy). The system is segmented by 115 kV breakers at the Scott County and West Waconia substations (both operated by Xcel Energy). MVEC’s projected 2026 megawatt (MW) loads, without the proposed Laketown Substation, are as follows:

- Augusta Substation: 15.8 MW

- Victoria Substation: 14.2 MW

The proposed Laketown Substation will include two 115/12.47 kV distribution transformers (Laketown 1 and Laketown 2) separated by a 115 kV bus-tie breaker. 2026 projected loading, incorporating Laketown Substation, is as follows:

- Laketown Initial Service: 4.3 MW (3.8 MW from Augusta, 0.5 MW from Victoria)
 - Future Load (2035): 13.7 MW split between Laketown 1 and Laketown 2
- Augusta: 12 MW
- Victoria: 13.7 MW

Currently, there are two options for a layout. The first being the local transmission system that would result from construction of the Proposed Route including Alignment Alternative D, Route Alternative A, and Route Alternative C. By placing the 115kV breaker at Laketown, the local transmission system, and in turn MVEC's distribution system, would be split evenly between two separate circuits:

- Circuit 1 - Laketown 1 and Augusta on 13 miles of transmission line exposure
 - Initial load of 16.3 MW
 - Future load of 18.85 MW
- Circuit 2 –Laketown 2 and Victoria on 17 miles of transmission line exposure.
 - Initial load of 13.7 MW
 - Future load of 20.55 MW

This configuration would result in only half of MVEC's distribution substations to be affected by an outage on either side of the transmission system and allow for the ability to quickly backfeed the lost substations from the unaffected transmission line. This configuration was identified in the Application as meeting the reliability needs of the project.

The second option would be the layout of the local transmission system that would result from construction of Route Alternative B. This configuration would result in an uneven distribution of loading on the electrical system in the area:

- Circuit 1 - Laketown 1 on 12 miles of transmission line exposure
 - Initial load of 4.3 MW
 - Future load 11.15 MW
- Circuit 2 - Laketown 2, Augusta, and Victoria on 16 miles of exposed transmission line
 - Initial load of 25 MW
 - Future load of 31.85 MW

This would result in a higher level of exposure to outages and an uneven loss of load in the event of an outage resulting in less reliability. If this Route Alternative B is selected, the Laketown bus-tie breaker would not provide the same reliability benefits. Instead, a future greenfield breaker station along the local 115kV system would be required to provide the same load separation as the other

alternatives. This configuration was identified in the Application as not meeting the reliability needs of the project.

The system configuration resulting from the Proposed Route including Alignment Alternative D, Route Alternative A, and Route Alternative C provides the most balanced load distribution for MVEC's end-users and ensures enhanced resiliency and reliability. Route Alternative B presents reliability concerns due to its uneven load distribution, making it a less favorable option.