

Northern States Power Company –  
Wisconsin

Application for a Certificate of Authority  
for the  
Boot Lake to Chain O Lakes 34.5 kV  
Transmission Line and Substation Project  
To be Located in Vilas County, Wisconsin

PSC Docket No. 4220-CE-186

May 23, 2023



## **EXECUTIVE SUMMARY**

### **Introduction**

Northern States Power Company, a Wisconsin Corporation, dba Xcel Energy (Xcel Energy or Applicant), is proposing to construct a new 15.1-mile 34.5 kilovolt (kV) transmission line between Manitowish Waters and Presque Isle in Vilas County, Wisconsin, that would connect two new substations to be called Boot Lake Substation and Chain O Lakes Substation. The new substations would replace the existing Presque Isle Substation and Rest Lake Substation, both of which are nearing their end of life and do not have the necessary land rights to expand. The proposal is referred to as the Boot Lake to Chain O Lakes Project (Project). The new transmission line would be designed to meet current 69 kV electrical standards but would be operated at its existing 34.5 kV voltage. There is also an existing 3-phase distribution line that runs along County Highway W, between Rest Lake – Winchester – Presque Isle, in noncontiguous segments. The existing distribution line would be removed and ultimately rebuilt on the new 34.5 kV transmission poles as an underbuild design.

The Project requires a Certificate of Authority (CA) from the Public Service Commission of Wisconsin (PSC or Commission) and for permit authorization to discharge dredged and/or filled materials into wetlands and place temporary bridges across navigable waters from the Wisconsin Department of Natural Resources (WDNR). In this joint application to the PSC and WDNR, Xcel Energy is seeking authorization from the PSC and WDNR to construct the new 34.5 kV facilities.

This summary provides an overview of the proposal.

### **Proposed Facilities**

Xcel Energy proposes constructing and placing in operation the following transmission line and substation facilities:

- A new 15.1-mile 34.5 kV transmission line that generally runs along County Highway W between Manitowish Waters and Presque Isle. The proposed route is presented in 23 segments.
- Removal of 8.1 miles of an existing 3-phase distribution line within the proposed Project right-of-way (ROW) that generally runs along County Highway W between Rest Lake – Winchester – Presque Isle in noncontiguous segments. There are also locations where the existing distribution line would be removed from eight distinct segments that are not within the new 34.5 kV transmission line ROW (Removal Segments 1 – 8). In both cases, the 3-phase distribution will ultimately be rebuilt on the new 34.5 kV transmission poles as an underbuild design.
- Removal of 0.3 mile of the Applicant's existing W3634 34.5 kV transmission line between the end of the new proposed transmission line south to the existing Presque Isle Substation (Removal Segment 9).

- Construction of two new 69 kV capable substations (Boot Lake and Chain O Lakes Substations).
- Removal of two existing 34.5 kV substations (Rest Lake and Presque Isle Substations)

### **Purpose and Necessity**

The Applicant is proposing to construct a new 15.1-mile 34.5 kV transmission line in addition to substation upgrades to improve the electric system reliability in the Project area. The proposed Project will improve electrical service by enabling the system to transfer power from either direction, which will help to prevent outages from occurring. The existing electric system consists of two radial transmission systems which only deliver electricity in one direction and is unable to provide power if one of the radial transmission lines has an outage. The following describes the two existing radial systems:

- The first system in the north is a radial 88 kV transmission line coming from Norrie Substation in Ironwood Michigan. The 88 kV transmission line runs east for approximately 23 miles after which there is a step-down substation called Mine Road. This substation steps the voltage down to 34.5 kV. The 34.5 kV transmission line then proceeds south until it terminates at the Presque Isle Substation. This substation will be rebuilt on a new parcel of land and will be named Boot Lake.
- The second radial system toward the south comes from the Weber Lake substation which is roughly 4 miles northwest of Mercer, Wisconsin. This 34.5 kV transmission line begins at Weber Lake which proceeds southeast until it terminates at Rest Lake substation. This substation will be rebuilt and relocated on a new parcel and be named Chain O Lakes.

A connection from one system to the other will allow system operators to keep customers in service when there are planned or forced outages. In addition, having this transmission line will allow Xcel Energy to rebuild the transmission lines from Mine Road to Boot Lake and Weber Lake to Chain O Lakes while keeping customers in service and avoiding hot transmission line work.

Finally, related to the underbuild of the distribution line, approximately 1,500 customers in the Town of Presque Isle and about 2,500 customers in Manitowish Waters are served by single, radial distribution sources. There is no ability to tie either of these areas together; therefore, this Project would allow Xcel Energy to form a field tie between sources and improve distribution reliability so that three phase power could be provided from either direction.

### **Proposed Route**

The proposed route consists of a new 15.1-mile 34.5 kV transmission line between Manitowish Waters and Presque Isle in Vilas County, Wisconsin, ultimately that would connect two new substations called Boot Lake Substation and the Chain O Lakes Substation. The route generally follows County Highway W northeast from the existing Rest Lake Substation for 14 miles until it

turns north and crosses over to the north/west side of County Highway W. The route parallels Thoma Drive, until it crosses the road into the new Boot Lake Substation. After leaving the Boot Lake Substation, the route continues northeasterly until it turns to the east crossing the South Branch of the Presque Isle River. The proposed route connects into the existing W3634 transmission line on the west side of County Highway B about 0.3 mile north of the existing Presque Isle Substation and 0.7 mile north of the intersection of County Highways W and B near the Town of Presque Isle.

### **Route Development**

Xcel Energy identified general potential route corridors between established end points meeting the routing priorities defined in Wis. Stat. § 1.12(6). To develop the proposed route, Xcel Energy utilized a stepwise process which included consultation with the PSC, the WDNR, Vilas County, and other local authorities such as the Town of Presque Isle. The Company also relied heavily on the public participation process as described in Section 7.0, and the transmission line siting priorities established by the state of Wisconsin.

During initial route development Xcel Energy looked at other route options for the new transmission line. Because of the general remote nature, steep terrain, and the number of lakes, streams, and rivers throughout much of the Project area there are few existing linear corridors to follow between the new Chain O Lakes and Boot Lake substations. Some routes were considered early in the process but were eliminated prior to conducting detailed analysis because desktop analysis identified less impactful route alternatives. Xcel Energy used desktop mapping with available geographic data of environmental and infrastructure features as well as aerial photos to develop and evaluate initial routes. Field reviews were also conducted to better understand on the ground conditions for some of these routes. Appendix H provides a table that describes each route option evaluated and the reason why it was not selected to include in this Application.

After evaluation of the options described above and shown in Appendix A, Figure 3 Xcel Energy selected the proposed route.

### **Project Cost**

Estimated Project costs of \$32.6 million (2023\$) reflect total project cost for the proposed transmission line, new substations, existing substation removals, and existing distribution removal. Project costs include: installation and removal costs of transmission lines and distribution costs; substation installation and removal; precertification costs, contingency reserve, and Allowance for Funds Used During Construction.

Estimated costs for construction of new lines and the removal of existing facilities are based on Xcel Energy historical data for similar 34.5 kV transmission and distribution projects. The development of project cost estimates also included on-the-ground site visits of the route

alternatives with representatives from civil and line construction, vegetation management, siting and land rights, engineering and project management, as well as desktop reviews.

### **Regulatory Approvals**

In this Joint Application, Xcel Energy is seeking a CA from the Commission and permit authorization from the WDNR to discharge dredged and/or fill materials into wetlands and place temporary bridges across navigable waters.

The Project also will require approvals and permits from federal and state agencies and local units of government. A list of these permits is contained in Section 1.7.

### **Construction Schedule**

The estimated construction duration of the new transmission line and substations is approximately one year. Construction is expected to begin in the 3<sup>rd</sup> Quarter of 2025 and be in-service by the 3<sup>rd</sup> Quarter of 2026, pending agency permits and authorizations. Relocation of the 3-phase distribution line and removal of the existing poles will be completed concurrently with installation of the new transmission line. The existing substations will be removed after the new transmission line and new substations are in service.

### **Conclusion**

Based on the material included and referenced in this Joint Application and any subsequent material requested by the PSC or WDNR related to this Joint Application, Xcel Energy requests that the PSC issue a CA and any other approvals necessary, authorizing the construction of the Project and associated facilities along the proposed route. Xcel Energy also requests that WDNR issue all the permits and authorizations that may be required to construct the transmission facilities in the manner described in this Joint Application within 30 days after PSC issues its written order on the CA Application.