

Before the Public Service Commission
of
The State of North Dakota

In the Matter of the Application of
BASIN ELECTRIC POWER COOPERATIVE
Consolidated Application
for a Certificate of Corridor Compatibility and Route Permit
Roundup to Kummer Ridge 345-kV Transmission Project

Case No. PU- 23-361

Pre-filed Testimony
of
Philip Westby

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Exhibit 9 - Philip Westby Pre-Filed Testimony

Basin Electric Power Cooperative



I. INTRODUCTION AND OVERVIEW

Q.1. Please state your name, business address, and your occupation.

A.1. My name is Philip Westby. I am employed as the Manager of Transmission Services at Basin Electric Power Cooperative. My business address is 1717 East Interstate Avenue, Bismarck, North Dakota.

Q.2. Would you please state your educational background?

A.2. I earned a Bachelor of Science degree in Computer Engineering from North Dakota State University in 2008. I am a licensed professional engineer in North Dakota.

Q.3. Please describe your employment history and work experience.

A.3. I have been employed by Basin Electric Power Cooperative since 2009 in the Transmission Planning Division. I was hired as an Electrical Engineer and was promoted to Manager of Transmission Services in April of 2023. My responsibilities include the supervision of transmission studies that affect Basin Electric and its customers. This includes completing and/or reviewing any study that would affect existing and new facilities for Basin Electric.

Q.4. What have been your responsibilities in connection with the Roundup – Kummer Ridge 345 kV Transmission Line Project?

A.4. I have been involved in the Southwest Power Pool (**SPP**) transmission planning process. I submitted the Roundup to Kummer Ridge 345 kV transmission line project proposal for consideration in the SPP Integrated Transmission Planning process. The purpose of my testimony is to provide information related to the need for the Project.

Q.5. What information will be provided in your testimony?

A.5. I will provide general information on the SPP Transmission Planning Process and how it applies to the Project, as well as Basin Electric's Needs Analysis.

II. TRANSMISSION PLANNING PROCESS

Q.6. Please generally explain transmission planning in SPP.

A.6. As the Regional Transmission Organization (**RTO**), SPP is responsible for

transmission planning and expansion within the SPP region. During the SPP transmission planning process, SPP performs reliability, economic, and public policy assessments of the transmission system for its region and works with stakeholders to identify solutions to the identified transmission needs. SPP performs its planning process in accordance with requirements contained in the North American Electric Reliability Corporation (**NERC**) Reliability Standards, the SPP Tariff, and SPP Criteria.

Q.7. Which SPP transmission planning process did this project arise out of?

A.7. The Project was developed through the annual SPP integrated transmission planning process (**ITP**).

Q.8. Please describe the SPP ITP process.

A.8. The ITP is an annual planning cycle that assesses near- and long-term economic and reliability transmission needs. The ITP produces a 10-year transmission expansion plan each year, combining near-term, 10-year, and NERC transmission planning (**TPL-001-5**) assessments into one study. The process seeks to target a reasonable balance between long-term transmission investments and congestion costs to customers. The ITP works in concert with SPP's existing subregional planning stakeholder process and continues in parallel with the NERC TPL-001-5 compliance process.

Q.9. Please describe Basin Electric's role in the ITP Process and other studies conducted.

A.9. Basin Electric conducts reliability studies on its system, specifically the annual NERC TPL-001-5 assessment. We also conduct two seasonal studies each year which include a summer and winter assessment specifically related to the Bakken area. In addition to these compliance and operating studies, Basin Electric works closely with SPP to verify needs and constraints across the transmission system.

Q.10. What happens once SPP identifies that a transmission project needs to be constructed?

A.10. Once a transmission project has been identified through SPP's transmission planning process, SPP issues a Notification to Construct (**NTC**) to a Designated Transmission

Owner (**DTO**) for an approved transmission expansion project that requires a financial commitment in the near future. A DTO under the SPP Tariff that receives an NTC from SPP is required to build the transmission project specified in the NTC. In this case, Basin Electric received a NTC and therefore, as DTO, is required to build this Project.

III. NEED FOR THE PROJECT

Q.11. What did the 2021 ITP study conclude?

A.11. The 2021 ITP Study had a specific target area focusing on the Bakken area. That target area analysis concluded that the most critical contingency in the area is the Charlie Creek-Patent Gate 345 kV line. This line segment is the only Extra High Voltage (**EHV**) corridor that feeds into the city of Williston from the south and is critical to support voltage in the Watford City and Williston areas. The 2021 ITP Study showed that loss of this line segment results in thermal overloads in the summer peak periods and voltage collapse in the winter peak periods. An ideal solution for the Bakken target area would provide a parallel path to this line in order to lessen the severity of an unexpected outage of the facility. The SPP Study concluded that the Roundup to Kummer Ridge 345 kV line provides an alternate 345 kV south-to-north pathway to the McKenzie County area (west of Lake Sakakawea) for system flows if the Charlie Creek substation experiences bus faults. SPP Issued NTC 220720 to Basin Electric directing us to build this Project.

Q.12. Does the Project provide other benefits besides providing a parallel path for the Charlie Creek to Patent Gate 345 kV contingency?

A.12 Yes, there is upwards of 300 megawatts (**MW**) of radial load at the Kummer Ridge Substation. This load is served via the Patent Gate to Kummer Ridge 345 kV line. If there were an outage on the radial Patent Gate to Kummer Ridge 345 kV line today, there would not be capability to restore all the load to alternative deliveries. Portions of that load would have to remain offline until the Patent Gate to Kummer Ridge 345 kV line could be safely reenergized. The Project provides a network path to this Kummer Ridge load and ensures that the Kummer Ridge load can continue to be served in the event of the loss of the Patent Gate to Kummer Ridge 345 kV line.

Q.13. Have Basin Electric's transmission studies shown issues in the area of the

Project?

A.13. Yes, we have seen issues in this area. As part of annual NERC TPL-001-5 assessments process, we have identified this area as an “at-risk” area in the transmission system. Basin Electric’s recent load forecasts continue to show growth in this region which causes stress to the existing infrastructure. Basin Electric has worked with Southwest Power Pool as the Reliability Coordinator to install a Remedial Action Scheme (**RAS**) in the region. This scheme is being installed to ensure we can continue to serve load until the Roundup to Kummer Ridge line is placed in-service. The RAS is designed to immediately disconnect electrical load during the critical contingency of the Charlie Creek to Patent Gate 345 kV line. Essentially the transmission system in the area is being stressed beyond its capability today.

Q.14. How does this Project affect the reliability of the transmission system in this area of northwestern North Dakota?

A.14. Firstly, the addition of the Roundup to Kummer Ridge line, ensures a second redundant feed to the upwards of 300 MWs being served at the Kummer Ridge Substation. Secondly the Project provides a parallel path during the critical outage of the Charlie Creek to Patent Gate 345 kV line. The transmission analysis indicates the transmission system will not be able to accommodate any more load growth if more transmission is not built into the area. The Project will meet the needs of the northwestern North Dakota area for the foreseeable future and will increase the load serving limits in the area.

Q.15. If the Project is not built, what would happen to the electrical transmission system in northwestern North Dakota?

A.15. The existing transmission capacity in this region is insufficient and unless the Project is constructed, future load growth will be restricted.

IV. ALTERNATIVES

Q.16. What alternatives were considered to meet the need in the region?

A.16. Basin Electric considered a no-action alternative and transmission system alternatives. A no-action alternative will leave the region constrained by limited generation capacity and does not serve the load growth in the area, jeopardizing reliability. For these reasons, Basin Electric rejected the no-action alternative.

Q.17. Please describe system alternatives that Basin Electric considered.

A.17. Basin Electric considered a 115 kV solution to tie between Roundup and Kummer Ridge 345 kV substations. Placing a 115 kV line directly in parallel with the critical Charlie Creek to Patent Gate 345 kV line, would result in in this new 115 kV line being overloaded during the outage of the Charlie Creek to Patent Gate 345 kV line. Because the 115 kV option would not meet the planned or immediate system needs, it was rejected.

Q.18. Did Basin Electric consider a 230 kV option?

A.18. Basin Electric did not consider a 230 kV line as a viable option as there are no 230 kV facilities in the Roundup to Kummer Ridge area,. To add 230 kV facilities for a line in the area would not be cost effective or practical as there is no specific need for that voltage class in the area.

Q.19. How does Basin Electric's typical 115 kV capacity compare to its typical 345 kV capacity?

A.19. Basin Electric's typical 115 kV construction can handle roughly 1,200 Amps or 240 MWs whereas our typical 345 kV construction can handle 3,000 Amps or 1,800 MWs or roughly 7.5 times the capacity as the 115 kV line. This extra capacity ensures the system will remain reliable now and into the future as oil and gas development continues to grow in the region. It also ensures that we are building the least impactful project by not requiring multiple transmission lines to meet the system needs when one larger EHV line can better meet the system requirements.

V. CONCLUSION

Q.20. Is the proposed location, construction, and operation of the Project such that it will ensure continued system reliability and integrity?

A.20. Yes. The Project will support existing needs and increase transmission system capacity to support the forecasted load growth over the 10-year transmission planning horizon while meeting NERC TPL-001-5 reliability criteria.

Q.21. Does the Project ensure that the energy needs of the area will be fulfilled in an orderly and timely fashion?

A.21. Yes

Q.22. **Will this transmission line benefit the area through which Basin Electric is proposing to construct?**

A.22. Yes. This transmission line will provide a direct benefit for service into the area by continuing reliable service to all area consumers. It will provide a backup source to the Kummer Ridge electrical load, which today is served via a radial 345 kv line and it will provide a parallel path to the most critical contingency in the area.

Q.23. **Are there any plans for expansion of this transmission line?**

A.23. There are no plans to expand this transmission line beyond this Project; however, the 2021 ITP study also identified a need for another 345 kV line that goes around the east side of lake Sakakawea (the Leland Olds to Tande transmission project). With these two projects the system can reliably accommodate the forecasted load growth over the 10-year planning horizon.