

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
Bobby Nasset

I. Introduction

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

A.1. My name is Bobby Nasset. I am employed as a Senior Civil Engineer for Basin Electric Power Cooperative, 1717 East Interstate Avenue, Bismarck, North Dakota.

Q.2. Please state your educational and professional background.

A.2. I received a bachelor's degree in Civil Engineering from North Dakota State University in 2005. I am a licensed professional engineer in North Dakota.

Q.3. What is your employment history and work experience with Basin Electric?

A.3. I have been employed with Basin Electric for eight years and 18 years as a civil engineer. My experience includes the routing, design and construction administration of numerous high voltage transmission projects throughout the Midwest and design support for operations and maintenance of existing transmission lines.

Q.4. What have been your responsibilities in connection with the Roundup to Kummer Ridge Transmission Project (Project)?

A.4. I am the Project Coordinator and member of the design team. I am responsible for managing the Project budget and schedule , and coordinating the Project efforts for routing, right-of-way (**ROW**) acquisition, engineering, procurement, permitting and construction.

Q.5. Before we discuss the Project, would you please describe Basin Electric?

A.5. Basin Electric is a regional wholesale electric generation and transmission cooperative organized under the laws of the State of North Dakota, and headquartered in Bismarck, North Dakota. Basin Electric provides power to 141 member cooperatives serving three million consumers.

Q.6. What areas do Basin Electric members serve?

A.6. Basin Electric has members in nine states; North Dakota, South Dakota, Nebraska, Montana, Minnesota, Iowa, Colorado, Wyoming and New Mexico, with a service territory comprising 550,000 square miles. The Project will provide a new delivery point for Mountrail-Williams Electric Cooperative, the local electric cooperative.

Q.7. Who controls Basin Electric?

A.7. Basin Electric and its member systems are owned by the members at the end of the line. Each of our Class A members has one seat on the 11-member Board of Directors.

Q.8. What are the business principles on which Basin Electric operates?

A.8. Basin Electric follows the cooperative business model, embracing the seven cooperative principles: open and voluntary membership; democratic member control; members' economic participation; autonomy and independence; education, training, and information; cooperation among cooperatives; and concern for community. Basin Electric pursues a smart and affordable energy strategy and takes advantage of the benefits of renewables while maintaining baseload that ensures the reliability our members expect. Basin Electric's margins must be used to improve or maintain operations, set aside in reserves, or distributed to the membership.

Q.9. What will you discuss in your testimony today?

A.9. In my testimony I will describe the Project design and construction as well as the policy criteria Basin Electric used in designing the Project and will use during construction.

II. Project Description

Q.10. Please provide a general description of the Project and its location.

A.10. The Project consists of approximately 32.5 miles of 345 kV electric transmission line from the existing Roundup substation to the existing Kummer Ridge substation. The Roundup substation is in Dunn County, approximately 2.8 miles north of Killdeer ND. The Kummer Ridge substation is in McKenzie County, approximately 0.7 miles west of Johnson's Corner, North Dakota.

The transmission line route includes 21.6 miles in Dunn County and 10.9 miles in McKenzie County, approximately 6.5 miles of which are located within Fort Berthold Reservation Trust Land. The transmission line route also has 0.25 miles within Bureau of Land Management Property, and 3.2 miles within North Dakota State Trust Lands.

Q.11. **Will the Project be owned by Basin Electric?**

A.11 Yes

Q.12. **Can you describe the schedule for the Project?**

A.12. Basin Electric plans to start construction in the Spring of 2024 pending approval of all permits and complete the work by November 30, 2024. Post-construction activities such as reclamation will likely continue in to 2025.

Q.13. **What is the estimated cost of the Project?**

A.13. The total cost of the Project is estimated to be \$74 million.

III. Route Selection

Q.14. **What was Basin Electric's philosophy when routing the Project?**

A.14. Basin Electric routed the Project to minimize impacts to the environment and to accommodate existing and planned land uses and landowner feedback while managing construction and maintenance costs. Basin Electric includes the following standard criteria and objectives in routing transmission line projects:

- Comply with the Commission's Avoidance and Exclusion criteria;
- Minimize disturbance to cultivated croplands;
- Avoid areas with identified recreational significance when possible;
- Limit interference with oil and gas development;
- Decrease construction and maintenance hazards;
- Span wetlands when possible; and
- Avoid areas less suitable for construction and operation, including river valleys, rugged terrain, steep slopes, areas requiring unusually long spans and areas lacking reasonable access. However, rugged terrain was not avoidable for several areas within the Project route.

Q.15. **Please describe the general characteristics of the Project route and corridor.**

A.15. The area has unique and somewhat challenging terrain for a transmission line project, particularly in the area surrounding the Little Missouri River Valley. Due to access challenges, there is a need for 88 miles of off-ROW access easements to construct and maintain the line.

Due to the challenges in finding access and suitable structure locations, the Project route was selected to closely follow an existing infrastructure corridor, including a 115kV transmission line and several major pipelines. There is a well-established access network from the construction and operation of these facilities that will be utilized to minimize Project disturbances.

Q.16. Why is Basin Electric using a 125-foot to 350-foot corridor?

A.16. Basin Electric standard easement width is 150 feet for 345kV transmission projects, as the ROW width must contain the conductor under all operating conditions for optimized span lengths. However, due to the specific terrain challenges on this project and longer spans ranging up to 2,300 feet, the energized conductor motion extends beyond a standard ROW width. The easement width was increased as needed for the longer spans. For the structures on BLM property, Basin Electric reduced the structure spans to accommodate a 125-foot easement width per the agency's request.

Q.17. Would it be reasonable or feasible to place the transmission line underground?

A.17. Basin Electric procured a consultant report on current practices and costs for high voltage underground transmission for evaluation for this project and other upcoming transmission projects. At the 345kV voltage class for this ampacity, estimated costs are over 20 times higher than overhead construction. Due to the significant costs and complexity of installing and maintaining underground high voltage transmission, it is generally not used in the industry unless overhead transmission is infeasible. Further, underground cable requires extensive excavation which would create significantly more ground disturbance than overhead construction.

Q.18. Will the Project have any impacts to the operation of airports?

A.18. The Dunn County Weydahl Field Airport is located north of Killdeer along US Highway 22. The Federal Aviation Administration (**FAA**) reviewed the initial Project design and determined that the first seven structures would need lighting due to height in relation to their proximity to the Dunn County Airport. Thereafter, Basin Electric redesigned the structure height and placement locations and resubmitted the design for review. The FAA determined that the structures need to be marked with spherical markers but lighting is not required.

Q.19. **How has the design and construction of the Project mitigated routing the Project in avoidance areas?**

A.19. The North Dakota Geological Survey has extensive mapping of landslide deposits in the Project area. As part of Basin Electric's route analysis, we looked first to avoid all mapped landslide deposits, however there is no possible route that would avoid these areas entirely. We selected a route to minimize alignment within the avoidance area, and to follow the route of other infrastructure in the area, including a 115kV transmission line and several major pipeline corridors. This corridor has existing access that will allow us to construct with minimal surface disturbance. Basin Electric also obtained soil borings throughout the Project, to get site specific soil profiles to develop the foundation design.

Q.20. **How does Basin Electric consider the clearing of trees in the route selection process?**

A.20. Basin Electric has spent significant effort in the design and routing the transmission line to minimize tree and vegetation removal. In areas of the corridor where tree removal is required, Basin Electric obtained survey data of the vegetation and modeled it for clearances to the proposed transmission line. This reduced the necessary tree removal from over 105 acres to approximately 10 acres total that require removal to be in accordance with the clearance and safety requirements of the National Electric Reliability Council (**NERC**). Trees and shrubs will be replaced consistent with the Commission's Tree and Shrub Mitigation Specifications, however, in some locations greater than a 50' width of tree removal will be necessary for safe operation of the transmission line.

IV. Project Design

Q.21. **Please describe the proposed transmission structure design.**

A.21. The Project will utilize both monopoles and H-frame structure types. In the Little Missouri Valley area, where longer spans are necessary due to the terrain, the design is utilizing a horizontal conductor configuration with H-frame structures.

For the remainder of the line, Basin Electric will utilize standard steel monopoles, with a delta configuration with three steel davit arms for the conductor and two steel davit

arms for the overhead and optical groundwire.

Structure height requirements depend on the terrain and span lengths, and range from 70 feet to 175 feet tall. The average span length is approximately 1,000 feet, but will include spans up to 2,300 feet in the Little Missouri Valley area. Temporary and permanent guy wires may be used with landowner approval if suitable for the terrain.

Q.22. What factors determine the height of the structures?

A.22. The span lengths are optimized for the topography and National Electric Safety Code (NESC) clearance requirements for 345kV voltage. Topography, conductor sag, and required ground clearance are factors that are used to determine the appropriate structure height.

Q.23. How many structures will be constructed for the Project?

A.23. There are 170 transmission structures including 109 single-pole structures and 61 H-frame structures.

Q.24. What conductor is Basin Electric proposing to use for the Project?

A.24. The Project will have an aluminum conductor with a composite carbon fiber conductor core. The conductor size is 1.72 inch diameter.

Q.25. What type of foundation will be used for the structures?

A.25. The Project will have drilled concrete piers for the majority of the structure foundations. The pier depth and diameter vary depending on the specific structure loading and the soil profiles. The tangent H-frame structures will be directly embedded in the ground.

Q.26. What standards did Basin Electric use to design the Project?

A.26. The Project will be constructed according to standards of the NESC, the USDA Rural Utilities Service, the Institute of Electrical and Electronics Engineers, the American Society of Civil Engineers, the American Institute of Steel Construction, and the American Concrete Institute. Further, Basin Electric has its own standards and design criteria for operational and maintenance consistency.

Q.27. What are the minimum clearances over cultivated land, pasture, roads, and other utility lines?

A.27. Basin Electric adheres to NESC requirements plus a buffer to develop minimum design clearances. The minimum clearance for this project is 30 feet for all ground surfaces under all operating conditions.

V. Construction

Q.28. Please describe the construction activities for construction of the Project.

A.28. The contractor may elect to use multiple crews for any of these phases. Crew size is dependent on the contractor's means and methods and include the following:

- Structure Staking
- Gate installation and access preparation
- Tree clearing
- Foundation installation
- Structure hauling and framing
- Structure setting
- Conductor stringing
- Reclamation

Q.29. What type of labor force will Basin Electric need for the Project?

A.29. Specialized labor will be required for most components of the transmission line. It is likely that this labor will be imported from other areas of the state or from other states.

Q.30. What housing provisions are required for this type of work force?

A.30. There are no anticipated permanent housing impacts. During construction, out-of-town laborers will likely use lodging facilities in and around the cities of Killdeer, New Town, and Watford City.

Q.31. What steps has Basin Electric taken or will take in order to be prepared for an emergency situation that may arise, during or after construction?

A.31. The line route and GPS coordinates of all structure locations are submitted to local emergency agencies prior to construction activity taking place. Thus, first responders will have GPS coordinates to facilitate prompt navigation to the site. The Roundup and Kummer Ridge substations both have a 911 address and this will be

communicated to all contractors working on those sites.

Q.32. What efforts has Basin Electric undertaken or will undertake to ensure the safety of the workforce?

A.32. All construction and maintenance activities will be carried out in compliance with applicable federal and state worker safety regulations. Basin Electric has an Occupational Safety and Health Administration (**OSHA**) based safety program supported by the Energy Coalition for Contractor Safety (**ECCS**) for all contractors that work for the Cooperative. Worker safety and health will be administered by Basin Electric's Transmission Systems Maintenance Division, which is a member of the National Safety Council.

Q.33. Describe the steps Basin Electric will take when construction is complete.

A.33. After construction is complete Basin Electric will conduct a final inspection of the corridor, to identify items that require corrective action. When corrections have been verified, the contractor will be released from further responsibility. Basin Electric's Right-of-Way Division will oversee the reclamation work as needed.

Q.34. Please describe the typical maintenance on transmission lines like those for the Project.

A.34.

- Basin Electric's preventive maintenance program for the Project includes aerial and ground inspections. Aerial inspections would be conducted at least two times each year. Ground patrols would be conducted annually for the first three or four years, and less frequently thereafter. Climbing inspections of structures would be conducted on a 5-year cycle with every fifth structure inspected each year. Inspections and patrols would involve the use of vehicles in areas where there is suitable vehicle access.
- Maintenance activities will include repairing damaged conductors, inspecting and repairing structures, replacing damaged and broken insulators, and tightening hardware.
- Basin Electric would maintain any gates it initially installs and continually uses for access.
- Basin Electric would continue to monitor vegetation for trees that pose a clearance or safety problem to the operation of the transmission line. Specific

requirements of NERC would be followed.

VI. Policy Criteria

Q.35. What is Basin Electric's policy regarding labor relations?

A.35. Basin Electric uses both union and non-union contractors and maintains an equitable and fair relationship with labor unions.

Q.36. What benefits does the Project provide to the local economy?

A.36. The wages and salaries paid to local contractors and workers will provide personal income for residents and workers in Dunn and McKenzie Counties and the region. Basin Electric's business expenditures for equipment, energy, fuel, operating supplies and other products and services will benefit local businesses as well as amounts paid out as state and local taxes.

Q.37. What efforts has Basin Electric made to economize the costs of construction and operation of this Project?

A.37. Basin Electric has an obligation to its member cooperatives to construct facilities to manage costs while maintaining reliability and safety. All materials and services are competitively bid by qualified suppliers. Basin Electric will combine purchases with other projects to take advantage of volume pricing. Basin Electric maintains its own facilities, minimizing the cost of contracted services.

Q.38. What efforts has Basin Electric made to coordinate facilities?

A.38. Basin Electric coordinates with McKenzie Electric Cooperative and other area overhead and underground utility companies along the planned route of the transmission line to meet clearance and operational requirements of existing facilities.

Q.39. Mr. Nasset, based on your knowledge of the Project, do you believe the location, construction and operation of the proposed facilities produce minimal adverse effects on the environment and upon the welfare of the citizens of North Dakota?

A.39. Yes.

Q.40. Will the proposed facility locations ensure continuing system reliability and

integrity and that energy needs are met and fulfilled in an orderly and timely fashion?

A.40. Yes.