

Before the Public Service Commission
of
The State of North Dakota

In the Matter of the Application of
BASIN ELECTRIC POWER COOPERATIVE
For a Consolidated Certificate of Corridor Compatibility
and Route Permit for the
Neset to Northshore 230-kV Transmission Project

Case No. PU-21-49

Pre-filed Testimony
of
Jeremy Severson

1 **I. Introduction and Overview**

2 Q.1. **Mr. Severson, would you please state your name, business address and your**
3 **occupation?**

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

7
8 Q.2. **Would you please state your educational background?**

9 A.2. I earned an Associate in Arts degree from Fergus Falls Community College in 2000
10 and a Bachelor of Science degree in Electrical Engineering from North Dakota State
11 University in 2003.

12
13 Q.3. **Mr. Severson, what is your employment history and work experience?**

14 A.3. I have been employed by Basin Electric Power Cooperative since 2003 in the
15 Transmission Planning Division. I was hired as an Electrical Engineer and later took a
16 position as the Manager of Transmission Rates. I am currently the Manager of
17 Transmission Services, a role I assumed in 2019. My responsibilities includes the
18 supervision of transmission studies that affect Basin Electric and its customers. This
19 includes completing or reviewing any study that would affect the existing and new
20 facilities for Basin Electric.

21
22 Q.4. **What have been your responsibilities in connection with the Neset to**
23 **Northshore 230 kV Transmission Line Project?**

24 A.4. I am responsible for reviewing the transmission studies which were completed by the
25 Southwest Power Pool ("**SPP**") who determined the need for the Project. The
26 purpose of my testimony is to provide information related to SPP's analysis and
27 recommendation of the proposed 230 kV transmission line between the existing
28 Neset substation located near Tioga, North Dakota and the proposed North Shore
29 substation located south of Ross, North Dakota ("**Project**"). I will detail the need for
30 the Project as identified in SPP's Delivery Point Addition Study ("**DPA Study**") as well
31 as Basin Electric's independent studies.

32
33 Q.5. **What information will be provided in your testimony?**

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

3 **II. SPP TRANSMISSION PLANNING PROCESS**

4 Q.6. **Please describe the Southwest Power Pool and its role in the electric grid.**

5 A.6. The Southwest Power Pool ("SPP") is a Regional Transmission Organization ("RTO")
6 approved by the Federal Energy Regulatory Commission ("FERC"). It is an Arkansas
7 non-profit corporation with its principal place of business in Little Rock. FERC has
8 mandated SPP to ensure reliable supplies of power, adequate transmission
9 infrastructure, and competitive wholesale prices of electricity. RTOs are the "air traffic
10 controllers" of the electric power grid. RTOs do not own the electric grid, they
11 independently coordinate grid operations minute-by-minute to ensure that power gets
12 to customers and to minimize power shortages.

13
14 Q.7. **Would you please generally describe SPP's functions?**

15 A.7.

- 16 • *Reliability Coordination:* SPP monitors power flow throughout their footprint
17 and coordinates regional response in emergency situations or blackouts.
- 18 • *Tariff Administration:* SPP provides for use of the region's transmission lines
19 and independently administers an Open Access Transmission Tariff ("SPP
20 **Tariff**") with consistent rates and terms.
- 21 • *Regional Scheduling:* SPP ensures that the amount of power sent is
22 coordinated and matched with power received.
- 23 • *Transmission Expansion Planning:* SPP's planning processes seek to identify
24 system limitations, develop transmission upgrade plans, and track project
25 progress to ensure timely completion of system reinforcements.

26
27 Q.8. **Please generally explain transmission planning in SPP.**

28 A.8. As the RTO, SPP is responsible for transmission planning and expansion within the
29 SPP region. During the SPP transmission planning process, SPP performs reliability,
30 economic, and public policy assessments of the transmission system for its region
31 and works with stakeholders to identify solutions to the identified transmission needs.
32 SPP performs its planning process in accordance with requirements contained in the
33 North American Electric Reliability Corporation ("NERC") Reliability Standards, the

1 SPP Tariff, and SPP Criteria.

2
3 Q.9. **Which SPP transmission planning process did this project arise out of?**

4 A.9. The Project was developed through the Transmission Service Studies process. A
5 request was made to SPP in accordance with the terms of the tariff for a new delivery
6 point addition to the system. This request was entered in the SPP delivery point
7 addition queue and a DPA Study was subsequently performed. This type of request
8 falls under Attachment AQ of the SPP tariff.

9
10 Q.10. **Please describe the Delivery Point Addition Study process.**

11 A.10. The DPA Study Process looks at the impacts that a change could have on the
12 transmission system. Examples of changes that could impact the transmission
13 system requiring additional delivery points may include: load additions, load
14 reductions, as well as moving load from one location to another. The studies entail
15 analyzing a series of cases with and without the proposed changes to the
16 transmission system. The DPA Studies inspect voltage, loading, and short circuit
17 impacts to the existing system. A violation could occur if the system is unable to meet
18 NERC's reliability standards regarding voltage, loading, stability, or short circuit
19 constraints. If there are violations that result due to the network change, then SPP
20 must find a way to mitigate the violations identified in the study.

21
22 Q.11. **What are the standards that must be met in the design of the transmission
23 system?**

24 A.11. FERC has identified NERC as the federal reliability authority for electrical utilities in
25 the United States. NERC Reliability Standards define the reliability requirements for
26 planning and operating the North American bulk power system. The transmission
27 system must be designed so it meets criteria set forth in the NERC Reliability
28 Standards. Specifically these NERC Reliability Standards are listed by NERC as
29 Transmission Planning Standards TPL-001 version 4 ("**TPL-001-4**") and are often
30 referred to as "**TPL Standards**." The NERC criteria require that if there is an outage
31 of one transmission facility in a network, a transmission owner cannot have
32 unplanned service interruptions in that area. This criteria ensures that the
33 transmission provider can provide uninterrupted service should an event occur such
34 as a storm or other failure that removes a single facility from service.

1 Q.12. **What happens once SPP identifies that a transmission project needs to be**
2 **constructed to address needs in the SPP region?**

3 A.12. Once a transmission project has been identified through SPP's transmission planning
4 process, SPP issues a Notification to Construct ("**NTC**") to a Designated
5 Transmission Owners (**DTO**) for an approved transmission expansion project that
6 requires a financial commitment in the near future. A DTO under the SPP Tariff that
7 receives an NTC from SPP is required to build the transmission projects specified in
8 the NTC. In this case, Basin Electric received a NTC and therefore, as DTO, is
9 required to build this Project.

10 **III. THE PROJECT**

11 Q.13. **Did SPP's DPA Study show that there could be violations that would need to be**
12 **mitigated?**

13 A.13. Yes, the DPA Study, which requested a new delivery point as well as additional load
14 growth in the New Town area, resulted in a number of voltage and loading violations
15 in the region.

16
17 Q.14. **What options did SPP look at to mitigate the violations?**

18 A.14. SPP investigated a number of options to mitigate the violations. These included:

- 19 1) A new 230 kV line from Neset to Northshore and a 115 kV line from
20 Northshore to New Town.
- 21 2) A new 230 kV substation near Stanley tapping the Tioga to Blaisdell 230 kV
22 line. A new 230 kV line from the new substation down to Belden. A 30 MVAR
23 capacitor at New Town and a 12 MVAR capacitor at Moe.
- 24 3) A new 230 kV substation near Stanley tapping the Tioga to Blaisdell 230 kV
25 line. A new 230 kV line from the new substation down to Belden. A new 115
26 kV line from Belden to New Town and an 18 MVAR capacitor at New Town.
- 27 4) A new 345 kV line from Neset to Northshore and a 115 kV line from
28 Northshore to New Town.

29
30 Q.15. **Why did SPP choose Option 1?**

31 A.15. SPP stated in their report that option 1 was chosen because it provided the best
32 solution to mitigate the violations and still provide adequate load growth while being
33 an economic option.

1 Q.16. **What was the conclusion of SPP's DPA study?**

2 A.16 As a result of the DPA conclusions, SPP selected the Neset to Northshore 230 kV
3 line and a Northshore to New Town 115 kV line to mitigate the criteria violations as
4 identified in their study. SPP then issued NTC 210560 with a need date of June 1,
5 2019 to Basin Electric as the DTO.

6
7 Q.17. **Will the Project be a part of the SPP?**

8 A.17. Yes, the Project is a networked transmission addition required to meet customer
9 demand. It will be operated under functional control of the SPP tariff. The facility has
10 been designated as a network upgrade due to the load addition. It will be designated
11 under the highway/byway cost allocation method under the SPP tariff.

12 **IV. BASIN ELECTRIC TRANSMISSION STUDIES**

13 Q.18. **Please describe the studies Basin Electric has conducted to determine the**
14 **need for this Project.**

15 A.18. Basin Electric conducts the annual NERC TPL-001-4 assessment on its system. We
16 also conduct two seasonal studies which include a summer and winter assessment
17 specifically related to the Bakken area each year. In addition to these compliance and
18 operating studies, we work closely with SPP on various Attachment AQ studies to
19 verify needs and constraints across the system.

20
21 Q.19. **Have Basin Electric's studies shown issues in the area of the Project?**

22 A.19. Yes, we have seen issues in this area. As part of annual NERC TPL-001-4
23 assessments process, we have identified this area as a weak spot. The recent load
24 forecasts continue to show growth in this region which continues to stress the existing
25 infrastructure. Basin Electric has worked with Mountrail-Williams Electric Cooperative
26 to install Under Voltage Load Shedding ("**UVLS**") schemes in the region as well as
27 place mobile capacitor banks that sit on semi-trailers to accommodate current load.
28 Our study work has shown that these voltage support devices as well as the
29 immediate action UVLS relays are needed to keep the system from collapsing during
30 certain system conditions and a subsequent contingent event.

31
32 Q.20. **How does this Project affect the reliability of the transmission system in this**
33 **area of northwestern North Dakota?**

1 A.20. By 2025, the area load between Tioga and Parshall is expected to be around 400
2 megawatts (**MW**). The transmission analysis indicates the transmission system will
3 not be able to accommodate this level of load growth. The Project will meet the
4 needs of the Mountrail County area for the foreseeable future and will increase the
5 load serving limit in the area to approximately 480 MW. Based on Basin Electric's
6 recent load forecasts, the 480 MW load limit will be adequate to meet the needs of
7 this local area.

8
9 **Q.21. Has Basin Electric reviewed the need for the Project in light of decreased oil
10 prices and a slowdown of drilling?**

11 A.21. Basin Electric and Mountrail-Williams Electric Cooperative have taken a number of
12 temporary steps including mobile capacitor banks and UVLS schemes to protect the
13 needs of the system as they exist today. The amount of load being served in this
14 local region is currently right at or slightly above the existing local area load serving
15 limit without the temporary mitigations in place. This limit is defined by our
16 transmission studies and is the point where the system can operate without violating
17 NERC criteria. Any slowdown in drilling may affect future loads but the need on the
18 system exists today.

19
20 **Q.22. If the Project is not built, what would happen to the electrical transmission
21 system in northwestern North Dakota?**

22 A.22. The existing transmission capacity in this region is insufficient and unless the Project
23 is constructed, future load growth will be curtailed.

24
25 **Q.23. Is the proposed location, construction and operation of the Project such that it
26 will ensure continued system reliability and integrity?**

27 A.23. Yes. The Project will support existing needs and increase transmission system
28 capacity while meeting NERC TPL-001-4 criteria. The Tioga to Parshall area, of
29 concern for this project, will see a rise in its load serving capability to about 480 MW
30 which will accommodate the forecasted load growth.

31 **V. CONCLUSION**

32 **Q.24. Does the Project ensure that the energy needs of the area will be fulfilled in an
33 orderly and timely fashion?**

1 A.24. Yes

2

3 Q.25. **Will this transmission line benefit the area through which Basin Electric is**
4 **proposing to construct?**

5 A.25. Yes. This transmission line will provide a direct benefit for service into the area by
6 continuing reliable service to all area consumers.

7

8 Q.26. **Are there any plans for expansion of this transmission line?**

9 A.26. There is no plan to expand this transmission line beyond this Project but additional
10 transmission may be needed in the area if electric load requirements continue to
11 grow. This Project increases reliability in the specific area and future projects may be
12 needed to bring additional support into the broader region.

13

14 Q.27. **Does this conclude your testimony?**

15 A.27. Yes.