

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION BY NORTHERN STATES POWER
COMPANY, DOING BUSINESS AS XCEL ENERGY, AND OTTER TAIL POWER
COMPANY FOR A FACILITY PERMIT FOR A 765 KV TRANSMISSION FACILITY
AND ASSOCIATED FACILITIES IN GRANT, DEUEL, AND BROOKINGS COUNTIES,
SOUTH DAKOTA**

SD PUC DOCKET _____

**PRE-FILED DIRECT TESTIMONY OF JESSE LYON
ON BEHALF OF NORTHERN STATES POWER COMPANY, DOING BUSINESS AS
XCEL ENERGY, AND OTTER TAIL POWER COMPANY**

September 4, 2026

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, employer, and business address.

A. My name is Jesse Lyon. I am employed by Northern States Power Company, doing business as Xcel Energy (Xcel Energy). My business address is 414 Nicollet Mall, Minneapolis, Minnesota.

Q. What is your position with Xcel Energy?

A. I am employed as a Principal Transmission Line Engineer.

Q. Briefly describe your educational and professional background.

A. I obtained a Bachelor of Science and Master of Science degrees in Civil Engineering from Brigham Young University. I have over 16 years of experience involving the design, procurement, and construction of high voltage transmission lines on numerous projects across the United States. I am a registered Professional Engineer in the State of South Dakota. My current duties with Xcel Energy involve the design of high voltage transmission lines ranging from 34.5 kilovolts (kV) to 765 kV, which requires maintaining high quality designs while meeting cost, schedule, regulatory, and permitting requirements. My statement of qualifications is attached as **Schedule 1.**

Q. What is your role with respect to PowerOn: Big Stone South to Brookings County to South Dakota/Minnesota Border Project (Project)?

A. My role on the Project is to provide preliminary transmission line engineering support during the routing and permitting phases, as well as perform the detailed design of the 765 kV transmission line between the Brookings County substation expansion and the South Dakota/Minnesota Border.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your Direct Testimony?

A. The purpose of my Direct Testimony is to:

- Describe the transmission facilities and engineering that will be involved in the Project;
and
- Discuss the Project's reliability and safety.

Q. What exhibits are attached to your Direct Testimony?

A. The following exhibit is attached to my Direct Testimony:

- **Schedule 1**: Statement of Qualifications.

Q. Please identify which sections of the Application you are sponsoring for the record.

A. I am sponsoring the following portions of the Application:

- Section 9.1: Transmission Facilities
- Section 9.4.1: Engineering Design and Regulatory Approvals
- Section 25.1: Reliability
- Section 25.2.1: Design
- Appendix F: Technical Diagrams

III. TRANSMISSION FACILITIES AND ENGINEERING

Q. Describe the proposed right-of-way for the Project's transmission line.

A. As discussed in Section 9.1 of the Application, the proposed right-of-way is the physical area required for the construction, operation, and maintenance of the transmission line. For the 765 kV transmission line, the right-of-way for the Project will be 250 feet wide, 125 feet from each side of the centerline of the Proposed Route. For the 345 kV transmission line, the right-of-way for the Project will be 150 feet wide, 75 feet from each side of the centerline of the facility.

Q. What structures will be used to support the 765 kV transmission line?

A. The Applicants propose to use four-legged self-supporting lattice structures for the Project's 765 kV facilities. Other specialty structures may also be used depending on site-specific needs and/or conditions. The Applicants selected a self-supporting lattice tower design from among multiple 765 kV structure types considered for the Project. The self-

1 supporting lattice tower design best meets the Project requirements based on considerations
2 of cost, engineering, resiliency (can better withstand extreme weather events), and land use
3 impacts (e.g., agricultural use). The typical structure height and span of the 765 kV
4 structures is included in Section 9.1.2.1 of the Application. The 765 kV transmission line
5 will also utilize a six-conductor. The conductors for the 765 kV transmission line are
6 described in Section 9.1.2.2 of the Application.

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8 **Q. Describe the 345 kV transmission line structures.**

9 A. The 345 kV transmission line structures will use a tubular single pole design. The typical
10 structure height and span of the 345 kV structures is discussed in Section 9.1.2.1 of the
11 Application. The 345 kV transmission line will also utilize a two bundle per phase
12 conductor. The conductors are described in Section 9.1.2.2 of the Application. The
13 conductors for the 345 kV transmission line are described in Section 9.1.2.2 of the
14 Application.

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16 **Q. Is engineering for the transmission facilities finalized yet?**

17 A. The Project's engineering is an ongoing process. After a facility permit is issued by the
18 Commission, Applicants will refine the design of the transmission lines as more site-
19 specific information is gathered for properties along the approved route. Throughout the
20 process, the Applicants will work with landowners and confirm that all permit conditions
21 are satisfied.

22 23 **IV. RELIABILITY AND SAFETY**

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25 **Q. Describe the reliability of the Project.**

26 A. Transmission lines and substations are designed to operate for decades and require only
27 moderate maintenance, particularly in the first years of operation. Transmission
28 infrastructure has very few mechanical elements, which results in reliability. It is built to
29 withstand weather extremes that are normally encountered, apart from outages due to
30 severe weather such as tornadoes and heavy ice storms. In general, the average annual
31 availability of transmission infrastructure is very high, in excess of 99 percent.

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Q. Will the Project be designed to meet certain industry standards?

A. Yes. The Project will be designed according to local, state, and National Electrical Safety Code (NESC) standards regarding ground clearance, crossing utilities clearance, building clearance, strength of materials, and right-of-way widths. Construction crews and/or contract crews will comply with local, state, and NESC standards regarding facility installation and standard construction practices. Applicants’ established industry safety-compliant procedures will be followed during and after installation of the transmission line. The proposed transmission line will be equipped with protective devices (circuit breakers and relays located in substations where transmission lines terminate) to safeguard the public in the event of an accident, or if the structure or conductor falls to the ground. Protective equipment will de-energize the transmission line should such an event occur. In addition, the substation facilities will be properly fenced, have proper signage, and will be accessible only by authorized personnel.

Q. Does this conclude your Direct Testimony?

A. Yes.

Dated this 4th day of September, 2026.

/s/ Jesse Lyon

Jesse Lyon