Prefiled Direct Testimony and Exhibits
Michael R. Cashell

Before the South Dakota Public Utilities Commission
of the State of South Dakota

In the Matter of the Application of
NorthWestern Corporation, d/b/a NorthWestern Energy

For Authority to Increase Electric Utility Rates
in South Dakota

Docket No. EL14-_____

December 19, 2014

TABLE OF CONTENTS

EXHIBITS

Witness Information

Q. Please state your name and business address.

A. My name is Michael R. Cashell. My business address is 40 East Broadway, Butte, Montana 59701.

Q. By whom are you employed and in what capacity?

A. I am NorthWestern Energy's ("NorthWestern") Vice President - Transmission.

Q. Please summarize your education and employment experience.

A. I graduated from the Montana Tech of the University of Montana in Butte, Montana, receiving a Bachelor of Science Degree in Engineering Science in 1986. I also attended the University of Idaho's Public Utilities Executive Course in 1997. I have been certified as a North American Electric Reliability Corporation ("NERC") System Operator. I have worked in the electric and natural gas utility industry for over 28 years, employed first by the Montana Power Company ("MPC") and now by NorthWestern. My experience is primarily in the areas of transmission operations and maintenance, substation operations and maintenance, balancing authority area operation, tariff and contract administration, bulk power supply and operations, hydro-electric and thermal electric generation plant optimization, and independent power production.

Q. What are your responsibilities as Vice President – Transmission?

A. I am responsible for all aspects of NorthWestern's electric and natural gas transmission systems and substations in Montana and South Dakota, including the systems' safe, reliable and efficient operation, transmission services, operations, planning, engineering, and maintenance. I am also responsible for the activities related to transmission and transportation contracts, interconnection agreements, and transmission service under NorthWestern's Federal Energy Regulatory Commission ("FERC") Open Access Transmission Tariff ("OATT") for our wholesale and retail customers, procurement of ancillary services products and compliance activities related to all FERC regulation and NERC reliability and cyber security standards. Compliance activities and responsibilities include all Western Electricity Coordinating Council ("WECC") criteria in Montana and Midwest Reliability Organization ("MRO") criteria in South Dakota.

Purpose of Testimony

Q. What is the purpose of your testimony in this proceeding?

A. In regard to NorthWestern's South Dakota Electric Transmission System, my testimony provides:

- A physical description of the system;
- A discussion of major interconnections with other utilities;
- An explanation of our physical and contractual relationship with the Western Area Power Administration ("WAPA") and our dependence on transmission service and balancing authority operations from WAPA;

- A more detailed description of our 115 kV north-south backbone transmission system as well as our 69 kV and 34.5 kV loop systems that serve our major load centers;
- An historical perspective of the significant reasons for investment and changes on the system over the past five years;
- A discussion of system reliability and how it is measured on the overall distribution and transmission system;
- An explanation of our investment/improvement strategies both in the recent past and the immediate future, including plant additions and major projects; and
- A discussion of recent compliance activities and performance under NERC/MRO reliability criteria.

Overview of South Dakota Electric Transmission Operations

Q. Please provide a system overview.

A. The South Dakota Electric Transmission System Map is shown as Exhibit__(MRC-1). We provide transmission service for our customers on a system that spans from north of the Aberdeen area at Ellendale, North Dakota where our 115 kV system interconnects with Montana-Dakota Utilities ("MDU") and south approximately 260 miles to Yankton, South Dakota where our 115 kV system interconnects with WAPA at Gavin's Point Dam. In addition, there are approximately 76 miles of 115 kV lines that represent interties off of the 115 kV mainline at the following locations: Aberdeen to Groton (interconnection with

WAPA), Huron to Broadland (interconnection with WAPA), Mitchell to the McCook County Line (interconnection with Northern States Power ("NSP", dba Xcel Energy), and Mitchell to Letcher Substation (interconnection with WAPA).

Also, we have the following ownership interest in generation interconnection facilities related to our joint ownership in coal-fired generation facilities:

- Big Stone Plant – 18.2 miles of 230 kV;
- Neal 4 Plant – 2.05 miles of 161 kV and 345 kV; and
- Coyote Plant – 23.1 miles of 345 kV.

Finally, there are 69 kV and 34.5 kV facilities that serve as the main transmission in and around our major load centers. There is also a 34.5 kV facility that travels north-south from Aberdeen to Yankton and, in many places, in the same right-of-way as the 115 kV system. The overall line mileage is as follows:

- 115 kV – 337 miles;
- 69 kV – 263 miles; and
- 34.5 kV – 654 miles for a total of 1,254 miles.

Q. How was the transmission system constructed and how is it operated?

A. The NorthWestern Transmission System is located within the Balancing Authority of WAPA. WAPA, through the Network Integration Transmission Service Agreement ("NITSA") it has with NorthWestern, provides important integration of our generation and transmission facilities as well as the provision of certain

ancillary services required to provide reliable service to our customers. We have received notice from WAPA to terminate the NITSA as part of WAPA's (and presumably NorthWestern's) transition to the Southwest Power Pool ("SPP"). The NITSA termination is expected to be effective October 31, 2015. Importantly, the single largest operational and maintenance cost associated with the transmission system is in FERC Account 565 Transmission of Electricity by Others. This expense is primarily related to the NITSA with WAPA in which transmission service is provided to NorthWestern. From 2008 to 2013 this cost ranged between $4.5 million to $6.3 million. As noted in the Prefiled Direct Testimony of Bleau LaFave ("LaFave Direct Testimony"), when NorthWestern transitions to SPP, most of these costs will be replaced by costs for services provided by SPP. We anticipate taking very similar service from SPP as we have from WAPA under the NITSA. The LaFave Direct Testimony describes the SPP services in much greater detail.

Q. Would you explain why NorthWestern is planning to move to SPP?

A. As noted in the LaFave Direct Testimony, the two main drivers for joining SPP are FERC Order 1000 and the migration of the existing Integrated Transmission System to SPP. I will describe FERC Order 1000 as it is primarily a transmission-related requirement.

Q. What is FERC Order 1000 and how does it drive your decision to join SPP?

A. FERC Order No. 1000 is a Final Rule that reforms FERC's electric transmission planning and cost allocation requirements for public utility transmission providers. On July 21, 2011, FERC issued Order No. 1000, which has two central components: (1) transmission planning and (2) cost allocation. The transmission planning component requires NorthWestern to join a regional planning group that satisfies certain identified criteria. It also requires that NorthWestern coordinate through this regional group with an even larger group of neighboring utilities at an inter-regional level. With respect to cost allocation, Order No. 1000 requires that the regional planning entity that NorthWestern participates in have a process for allocating the costs of new transmission facilities. The current arrangements for planning and cost allocation with WAPA and the Mid-Continent Area Power Pool do not qualify as compliant with the requirements of FERC Order 1000.

Q. How is NorthWestern's transmission system operated?

A. From an operations standpoint, NorthWestern has a System Operations Control Center ("SOCC") in Huron from which we operate, monitor, and control the transmission system at 69 kV and below as well as some of the distribution system. The operation, monitoring, and control of the 115 kV systems are performed by WAPA.

In general, our Transmission System has been developed over time to accomplish the following: 1) import generation from our remote, jointly-owned coal-fired projects to our system; 2) connect our major load centers in our various

operating areas – the Aberdeen Area, Huron Area, Mitchell Area, and Yankton Area; and 3) provide 69 kV and 34.5 kV "loops" through each of the operating areas. The system is designed to provide, where feasible, more than one transmission feed to each operating area in order to maintain high levels of reliability. In many cases we have "emergency service" interconnections for areas that are served with radial feeds. These emergency services are not utilized for normal operations due primarily to the higher cost of energy from those sources. They do, however, provide access to other sources for reliability purposes under non-normal operating conditions.

Transmission System Reliability, Operations and Maintenance

Q. How do you measure and track reliability on the system?

A. We record, track, and measure overall reliability on the total delivery system to our customers. We also have parsed the data to separate Transmission and Distribution reliability indices. However, since the transmission and distribution systems operate together for overall service to our customers, it is best to discuss and review overall reliability. The Prefiled Direct Testimony of Mike Sydow ("Sydow Direct Testimony") explains reliability on the transmission and distribution delivery system.

Q. Please describe NorthWestern's maintenance activities and philosophy.

A. NorthWestern accomplishes its transmission maintenance activity, emergency response and capital programs through an internal workforce that is

supplemented by utilizing contractors. Generally, this responsibility lies with Mike Sydow, General Manager – South Dakota and Nebraska Operations. The Sydow Direct Testimony describes the maintenance activities for both transmission and distribution facilities. However, there are some key components of transmission system maintenance that I want to highlight below:

Transmission Vegetation Management:

The 115 kV transmission lines are patrolled quarterly by operating area personnel inspecting the integrity of the lines and proximity of vegetation and recording vegetation clearances. However, if vegetation is within ten feet of the facilities, immediate action is taken to clear it. Annual 115 kV line inspections are also performed by area managers, and clearance activity is driven by vegetation proximity to the 115 kV facilities. Annually, all vegetation is managed so that clearances are at least 20 feet. We have placed additional emphasis on "removals" when addressing transmission line clearance. Removals usually include clearing at the ground level and trading a physical removal for a replacement tree planted elsewhere. We continue to look for and address trees (especially trees that are aging or deformed) that have the potential to fall into or over transmission lines. We have also addressed continuous groves (shelter belts) through extensive brush and tree clearance practices. Stumps are treated to prevent re-growth. Vegetation Management, in general, is a high-impact requirement within NERC and MRO mandatory reliability criteria.

Transmission Pole Inspection/Test/Treat:

Transmission pole inspection "test and treat" work is essential to maintaining the integrity of the transmission pole plant. The work includes a visual inspection of the pole to address shell rot, woodpecker holes, crevasses, fire damage, shell damage, and checking and treating for the presence of fungus and insects. Poles are sometimes wrapped at the ground level to deter and prevent rot. Records are maintained by transmission line segment regarding when inspection, testing, and treating occurred. From an asset management standpoint, transmission pole replacement is preferred over reinforcement when rot is evident. Reinforcement is utilized when damage is mostly superficial or when 100% of the pole strength can be regained in a lightly aged pole. Since 2007, we have inspected and treated the following percentages of our transmission system line miles by voltage:

115 kV - 68% of 298 line miles (there are 39 line miles of steel structures)

69 kV - 97% of 263 line miles

34.5 kV - 16% of 654 line miles

Total - 46.3% of 1,215 line miles

Q. Please summarize the overall condition of NorthWestern's South Dakota electric transmission system.

A. Overall, NorthWestern's transmission system in South Dakota is in sound condition. We properly maintain the system, address aging infrastructure through our capital expenditure programs, and provide routine maintenance and

inspection. A significant portion of the transmission system was rebuilt in the 1970s and 1980s. As a result, the aging infrastructure is important to closely track and replace as needed.

Q. Does NorthWestern approach staffing for transmission projects differently than for distribution projects?

A. Yes. The Sydow Direct Testimony describes how NorthWestern plans staffing for the distribution system and some light transmission maintenance work. Generally, NorthWestern typically contracts out non-routine transmission projects due to efficiencies gained by transmission contractor experience and skill sets, equipment availability, and the contractors' ability to remain onsite and focused on a transmission project over several consecutive weeks or months. We use internal crews to perform portions of transmission projects when schedules permit, skill sets exist, and equipment resources are available.

Several examples of contracted projects include:

- In the early 1990s, aged wooden 115 kV poles were replaced with steel poles in the Aberdeen to Redfield and WAPA Letcher to Mitchell line segments (although NorthWestern performed the framing);
- In 2009, repairs were made to five tangent 115 kV structures in the James River Basin between Aberdeen and Groton that were damaged by river icing; and

- In 2011, 4.1 miles of a 69 kV line west of Watertown, were rebuilt, and the project included a quarter-mile of tree removals and the removal of an old tangent pole line.

Transmission System Investment

Q. What are the main drivers for NorthWestern's investment in its transmission system?

A. The improvements and additions to the transmission system are undertaken for various reasons including: 1) to meet increased capacity needs due to system and customer growth, 2) to address aging infrastructure, 3) to improve system reliability and incorporate technology enhancements, and 4) to ensure compliance with required federal or regional mandates.

Q. Please provide some examples of major electric transmission projects – what they were and why they were needed.

A. Examples are as follows:

1. Rebuilding our 115 kV line from Aberdeen south was a multi-segment project to replace old, two-pole tangent structures from the WAPA Huron Substation to Redfield (30 miles) and from Redfield to the Siebrecht Substation (38.6 miles), and increase conductor size. The poles for this project were replaced over about a 10-year period beginning in the mid-1980s, starting at WAPA and working north. NorthWestern utilized a monopole steel design from Redfield to Aberdeen as the economics of steel made that option more cost

effective. The older and smaller conductor was replaced due to both reliability and capacity concerns.

2. The Yankton East Transmission Project, which is currently under way, involves the installation of a switching station and 11.3 miles of 115 kV line extension to a new substation. Overall, this is a $21 million project. The primary goals of the project include improving the reliability of electrical service to area customers as well as providing additional capacity due to electric load growth on the east side of Yankton. The city of Yankton is now served by a single transmission substation located about four miles west of Yankton. A single-event outage or an equipment failure could result in wide-scale power outages in the Yankton area. In addition, the existing electric infrastructure is approaching capacity on the east side of the city which limits NorthWestern's ability to reliably support increased electric load growth. Adding a new transmission substation on the east side of Yankton will improve electric reliability by adding a second electric source to the system. It will also provide additional electrical capacity and necessary infrastructure to serve new industrial growth. It is expected that the new Yankton East Transmission project and switching station will be in service in 2015.

Q. What transmission system investment has been made from 2010 to 2014?

A. Between 2010 and 2014, NorthWestern has invested approximately $29 million in its South Dakota electric transmission system. Over these past five years, the

capital investment for major transmission has averaged about $5.8 million annually. This is in excess of the transmission system annual depreciation which is currently approximately $4.1 million.

Mandatory Reliability Compliance

Q. Please provide information regarding your NERC/MRO compliance responsibilities for the electric transmission system.

A. NorthWestern is registered for seven NERC functions in the MRO. We are a Distribution Provider (DP), Load Serving Entity (LSE), Purchase Selling Entity (PSE), Resource Planner (RP), Transmission Owner (TO), Generator Owner (GO), and Generator Operator (GOP). Because of these registrations, we are in the mandatory audit rotation every six years. We are responsible for compliance with a total of 44 standards in the MRO.

Q. What is NorthWestern's track record as far as NERC reliability compliance audits?

A. NorthWestern's last and only audit in the MRO took place in August 2011. It was conducted off-site and no violations were found. We were commended by the MRO for the thoroughness of our compliance documentation and were given accolades for being the first entity in the MRO to have the entrance and exit conference on the same day.

Q. Will the move to SPP change NorthWestern's Mandatory Reliability requirements?

A. Possibly. There may be changes to our compliance requirements depending on how the role of the Transmission Provider may differ for NorthWestern in SPP. Also, there may be some overlap or differences between compliance in SPP versus compliance in the MRO. We will likely have compliance responsibilities in both areas and this will become clearer as we progress to SPP.

Q. Does this conclude your testimony?

A. Yes, it does.