Prefiled Direct Testimony and Exhibits
Bradley S. Wenande

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. EL23-_____

June 15, 2023

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EXHIBITS

Witness Information

Q. Please state your name and business address.

A. My name is Bradley S. Wenande. My business address is 3210 Douglas Ave, Yankton, South Dakota 57078.

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

A. I am NorthWestern Energy's ("NorthWestern" or "Company") Director of SD/NE Operations.

Q. Please summarize your education and employment experience.

A. I am a 1993 graduate of South Dakota School of Mines and Technology. I hold a Bachelor of Science degree in Electrical Engineering. My experience is primarily in the areas of distribution, transmission, and substation engineering/operations/maintenance, business unit management (including personnel, financial accountability, safe work performance, reliability performance), and labor relations/negotiations.

Q. What are your responsibilities as Director of SD/NE Operations?

A. I am responsible for all aspects of NorthWestern's electric and natural gas distribution systems in South Dakota and Nebraska, including the systems' safe, reliable, and efficient operation; operations planning, engineering, and maintenance.

Purpose of Testimony

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

A. My testimony:

- Provides an overview of NorthWestern's South Dakota Electric Transmission and Distribution system;
- Identifies the South Dakota NorthWestern operations workforce and organization;
- Demonstrates NorthWestern's commitment to safe work;
- Provides overall reliability information;
- Identifies processes that guide Operations and Maintenance ("O&M") and capital investments necessary for continued reliable service; and
- Demonstrates NorthWestern's commitment to future performance.

Overview of South Dakota Electric Operations

Q. Please provide a distribution system overview.

A. The South Dakota electric service territory is shown in Exhibit__(BSW-1). NorthWestern provides distribution service from Barnard to the north, Yankton to the south, Blunt to the west, and Bemis to the east. Our distribution system includes:

- Primary voltages of 2.4 kilovolt ("kV"), 4.16 kV, 7.2 kV, 12.470 kV, 14.4 kV, 24.9 kV, 19.9 kV, and 34.5 kV;
- 1,619 miles of overhead distribution lines;
- 723 miles of underground distribution lines;

- 64,400 electric customers.

Q. Please provide a transmission system overview.

A. The South Dakota Electric Transmission System Map is shown on Exhibit__(BSW-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 the Western Area Power Administration ("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") d/b/a 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. Overall, NorthWestern has 1,265 miles of transmission lines.

Our South Dakota system is interconnected with the transmission facilities of Otter Tail Power Company; MDU; Xcel Energy Inc.; and WAPA. We also have emergency interconnections with the transmission facilities of East River Electric Cooperative, Inc. and West Central Electric Cooperative. We are a transmission-owning member in the Southwest Power Pool ("SPP"), with our transmission facilities residing in zone 19 of the SPP footprint. Each year, we review all new or modified transmission assets and transfer functional control of assets that qualify under the SPP Open Access Transmission Tariff to SPP. This annual update goes into effect on April 1st each year. To date, we have transferred control of 333 line miles of 115 kV facilities and over 158 line miles of 69 kV facilities. Along with SPP, our South Dakota facilities have ties to Midwest Independent System Operator ("MISO"). We have grandfathered agreements in MISO, which provide us the access to move the power from the Coyote, Big Stone, and Neal power plants to our customers. Along with operating the transmission system, SPP also coordinates regional transmission planning for all of its members on an annual basis through its Integrated Transmission Planning ("ITP") process. Our annual participation in the ITP process includes model development, system needs assessment, and solution development to address identified needs.

Q. Please describe NorthWestern's South Dakota Operations/Substation workforce and organization.

A. The South Dakota Operations workforce is comprised of:

- 64 – craft workers
- 7 – Controller / Dispatchers
- 7 – Engineer / Estimators
- 9 – Supervisor / Superintendents
- 4 – Safety / Vegetation / Real Estate support staff
- 3 – Operations business unit leaders

NorthWestern reorganized its South Dakota Operations in 2017 to a functional-based organization. The new organizational structure placed Supervisor and Engineering resources into locations where they previously had not been present. This deepened the overall bench strength of the organization, reducing risk of institutional knowledge loss when any one employee left the Company. This structure aligned operations in South Dakota with those in NorthWestern's Montana service territory. This provided greater opportunity to share best practices and support functions across both jurisdictions.

NorthWestern's South Dakota Operations workforce is structured and positioned for efficient day-to-day service and emergency response. We augment our full-time Operations staff by using contractors who perform capital investment work and some planned or emergency maintenance. It is not cost-effective to staff for the "peaks" of our operations or to own the specialized equipment that contractors offer.

Exhibit__(BSW-2) shows locations where the 64 craft employees are stationed, performing day-to-day O&M and capital work and responding to emergencies. This exhibit demonstrates NorthWestern's emergency response preparedness in terms of distance, classifications and assistance or backup potential.

Implementation of an Automated Metering Infrastructure ("AMI") platform in 2019 – 2020 impacted Operations staffing. With this automated technology in place, NorthWestern eliminated the Meter Reader classification in South Dakota. Some of these employees moved into other roles within the Company while others elected to retire or leave the organization.

NorthWestern has a staffing plan in place to address future Operations employee attrition. This plan takes many factors into account such as known retirements as indicated by employees, projected retirement dates if not indicated by employees, organizational structure and work load considerations for each location (apprentice versus journey level), lead time required for transfer of knowledge, costs of “overlap” when the current and replacement employees are working and customer service expectations. This plan is updated annually and is generally evolving as staffing concerns change throughout the course of the year.

NorthWestern’s collective bargaining agreement covers January 1, 2022 through December 31, 2025. It includes a Seasonal Laborer classification, which acts as the pipeline to fill the open craft positions identified in the staffing plan and attract new talent to the Company. This allows for an “on the job” interview prior to candidates being offered regular full-time employment.

In large-scale outage events, NorthWestern has the ability to request assistance from a number of sources. This includes our Montana operations staff, various line contractors as well as other regional utilities through mutual assistance groups. Over the years, we have both requested assistance from and provided assistance to these other utilities. Agreements have been established to facilitate response to mutual aid requests.

Electric Distribution System Safety and Reliability

Q How does NorthWestern address safety in the workplace?

A. Maintaining a safe work culture is one of our highest priorities at NorthWestern. Our leadership team seeks to guide employees to internalize safety, not only for their own benefit but for that of their coworkers. The Company drives this through a number of objectives and approaches:

- Each employee starts their day with 15 minutes of dynamic warm-ups through the MoveSafe program. MoveSafe has been trained to all employees with the ultimate goal of reducing strain and sprain injuries.
- Distribution Operations employees have been trained on the principles of Human Performance Improvement ("HPI"). This program, in short, equips us with the understanding that:
  - Humans are fallible;
  - Error likely situations are predictable, manageable and preventable; and
  - Events (incidents) can be avoided by understanding the reasons why mistakes occur and applying lessons from the past.
- Development of a safety plan with requirements for employees at all levels (tasks, involvement, reviews and accountability).
- A wide variety of online and in-person training.
- Incident investigation and review at all levels of the organization (applying HPI principles).
- Executive team periodically hosts a "Safety stand-up" all-hands safety discussion.
- Monthly safety meetings at each major location.
- Encouraging local safety committee activities.

- Investing in advanced fleet, tools, equipment and personal protective equipment.
- Recognizing and addressing safe and unsafe behaviors through teaching, observing, coaching and, if necessary, discipline.

Exhibit__(BSW-3) provides a snapshot of South Dakota Operations safety results dating back to 2015. As you will see, safety performance early in this period was exemplary, with no lost-time and few recordable incidents through 2019. In 2020, the COVID-19 pandemic struck, dramatically shifting our daily operations. To protect the health of our work force, meetings among employees and employee groups were limited. This unfortunately included many of the safety efforts described above as well as normal daily interactions between employees, supervisors and management. You can see the pandemic's negative impact to NorthWestern's safety results in the exhibit. The Company resumed normal operations in early – mid 2022. During the pandemic, NorthWestern relied heavily on the social and emotional capital of the work groups to sustain effectiveness. By the end of the emergency status, much of that capital had been expended. Leadership has since been working diligently to restore the safety culture to pre-pandemic levels.

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

A. We measure, record, and track, overall reliability on the total delivery system to our customers in accordance with the Institute of Electrical and Electronics

Engineers ("IEEE") Standard 1366: Guide for Electric Power Distribution Reliability Indices. Exhibit__(BSW-4) depicts NorthWestern's outage, System Average Interruption Duration Index ("SAIDI"), System Average Interruption Frequency Index ("SAIFI"), and Customer Average Interruption Duration Index ("CAIDI") performance history. Also included is a chart representing Major Event Days and Catastrophic Days.

In simple terms, SAIDI represents the average outage in minutes for each customer served. SAIFI is the average number of interruptions that a customer would typically experience in a year. CAIDI is the average outage duration any given customer would experience. CAIDI is also typically thought of as the average restoration time. Significant items to note on the charts include:

Outages:

- More outages occur at the distribution level than the transmission level. Factors contributing to this are:
    - Multiple transmission feeders into critical substations provide redundant energy sources.
    - Transmission automation and protection schemes have the capability of isolating faulted lines or substations, preserving service continuity or returning to service more quickly.
- The number of outages from 2016 through 2022 has fluctuated year over year but has been on a downward trend since 2019 – 2020.

- Major Event Days ("MEDs") were recorded in each year of 2016 – 2022. The majority of these were weather driven events. Notably, SPP grid conditions, along with the extreme cold weather, were at the heart of the February 2021 MED.
- Catastrophic Event Days were recorded twice in 2022, driven by derechos in eastern South Dakota. Catastrophic days are measured as seven times the MED value threshold.
- In addition to weather, outage counts in 2019 and 2020 were impacted by an increase in transmission and equipment failure outages. Reliability in the Chamberlain area was a specific area of concern during this period.

<u>SAIDI</u> (in minutes):

- South Dakota averaged 88.26 minutes without MEDs and 119.26 minutes with MEDs between 2016 and 2022.
    - Edison Electric Institute ("EEI") identifies first quartile SAIDI performance at <u>less than 95.9 minutes without MEDs, or less than 150.8 minutes with MEDs.</u>
    - 2021 and 2022 SAIDI performance, with and without MEDs, was in first quartile.

<u>SAIFI</u> (frequency):

- The South Dakota SAIFI charts, with and without MEDs, demonstrate that the number of customers experiencing outages is trending downward from its peak in 2019.

<u>CAIDI</u> (in minutes):

- South Dakota's 2016 – 2022 CAIDI average without MEDs was 78.9 minutes. Including MEDs, the average was 89.4 minutes.
  - EEI identifies first quartile CAIDI performance at <u>less than 95.9 minutes without MEDs, or less than 118.2 minutes with MEDs.</u>
- CAIDI performance excluding MEDs was in first quartile for the 2016 – 2022 reporting period with the exception of 2021. Performance including MEDs was in first quartile for the entirety of the same window of time.
- CAIDI excluding MEDs in 2022 was reduced from 2020 – 2021 results to be in line with 2018 – 2019 figures.
- Major events have significant impact to outage duration as demonstrated by the 2022 CAIDI including MED data.

Q How does NorthWestern plan to maintain or improve reliability in the future?

A. NorthWestern has several initiatives in place or in development that will have a beneficial impact to reliability for our customers going forward. These include:

- NorthWestern joined the SPP in 2015. SPP is a regional transmission organization mandated to, among other things, ensure reliable supplies of power and adequate transmission infrastructure.
- The Company is developing a roadmap to further employ the AMI technology platform. This will include outage awareness and response through our connectivity with electric meters. Proactive response to meters out of power will decrease outage durations.
- We are developing a Distribution Operations Control Center ("DOCC"), which will utilize Advanced Distribution Management System ("ADMS") software to drive automation further into our distribution system. Once up and running, Controllers at the DOCC will be able to monitor and respond to the distribution system on a 24/7 basis. With additional SCADA visibility and operability on the system, they will be able to respond to and minimize the number of customers impacted by outages.
- The Company today monitors worst performing transmission and distribution circuits and substations. With this data, solutions to improve performance are engineered and implemented. For example, we recently completed a project to improve performance of the 69 kV line from Mount Vernon to Chamberlain.
- Since the electric grid emergency events of February 2021, NorthWestern has developed a load shed plan specific to our system. Unlike the 2021 event, this plan allows us to systematically shed load, limiting the impact to critical facilities and infrastructure. System Operators have been

trained to execute the plan when called upon. Testing exercises through SPP have proven the plan to be functional and effective in meeting the targeted load reduction.

- The Company will be kicking off construction of a joint transmission switchyard with East River Electric, near Chamberlain. This switchyard will give NorthWestern a redundant feed to the Chamberlain area, bolstering reliability in the region. This project is on track for completion in 2023.

Maintenance and Capital System Needs

Q. Please describe how NorthWestern determines and addresses O&M system needs.

A. O&M work and related expense are driven by several factors including regulation (codes, laws, and rulings), reliability performance (outage experiences), various inspections (checks for proper operation/condition) and preventative maintenance (service, repairs).

NorthWestern determines O&M system needs by:

- Identifying worst-performing lines and equipment through outage tracking.
- Identifying compliance issues through awareness training and day-to-day observations.
- Tracking equipment performance/expense.
- Identifying and assessing potential public and employee safety issues.

- Testing substation transformers (winding, oil, gas, etc.).
- Inspecting distribution lines to identify deficiencies that are subsequently addressed through priority ratings. Examples of deficiencies include broken insulators, cracked porcelain cutouts and arrestors, broken tie wires, split cross arms, loose or missing grounds, and rotten anchor rods.
- Performing quarterly transmission line patrols to identify and repair deficiencies.
- Performing substation checks that include a check on voltage regulators. The checks can reveal control problems, internal linkage problems, or oil contamination and leaks.
- Administration of a vegetation management program that addresses trees growing near the transmission or distribution system. This program is on a schedule for all circuits over a seven-year cycle. An internal vegetation expert oversees this program which is completed through use of contract line clearance professionals. We will also "hot spot" areas in need of immediate trimming when at locations not included in the cycle trimming planned for that season.

NorthWestern addresses O&M system needs by:

- Correcting outage conditions, including "animal guarding", which reduces the likelihood of an animal-related outage (squirrel, bird, etc.).
- Replacing line components (wire ties, insulators, porcelain cutouts, arrestors, anchors, or ground wires) on lines exhibiting poor reliability.

- Replacing pad-mounted equipment experiencing severe casing rust.
- Performing maintenance on substation equipment (changing contacts, filtering/changing oil, replacing bushings, and replacing insulators) exhibiting wear or poor test results.
- Making physical changes when line clearances do not meet codes.
- Locating underground facilities to prevent "dig-ins" where public or employee safety is at risk. NorthWestern will perform a "standby" function when excavation is taking place near High Profile lines such as high voltage underground cable. This process places a Company representative on the job site, observing and assuring the excavation around our facilities is completed safely. A mix of internal and contract resources are used to carry out the locating task.
- Engineering line solutions that reduce exposure risk (vehicular, electrical contact) for the public and employees.
- Ensuring adequate vegetation clearances for safety and reliability (tree trimming and removal).

In summary, O&M is addressed by identifying and prioritizing the work. Each Division has a work plan based on known and anticipated O&M activities. Expense budgets are managed by forecasting the prioritized work each month and then executing on that plan.

Q. Please describe how NorthWestern determines and addresses capital system needs.

A. NorthWestern maintains a five-year capital investment plan. Capital projects are introduced to this plan from a number of sources. Distribution Operations employees with local situational awareness may submit project ideas. Other sources include our Asset Management team who often bring forward capacity-related projects. Our Substation, Transmission and Production groups also generate projects for consideration.

Some capital system needs are addressed through an inspection process. This is the case for our pole replacement programs. A portion of our transmission and distribution pole plant is inspected each year. The inspection results then drive pole replacement or reinforcement activities that take place the following year.

Each project brought forward for consideration is assigned a ranking using criteria such as safety, regulatory requirement, customer need, outage restoration time, division priority, and equipment condition. Projects are then prioritized by ranking total score. Those falling within the funded priority level are considered for approval into the budget cycle. Those with rankings outside of the funded priority level are moved out in the five-year plan.

Each Division is assigned oversight of an annual capital budget and projects are managed at that level. Local resources are heavily involved in the engineering and project management phases of projects. The overall capital budget and budget process is managed by our Central Construction department.

Q. Please provide a summary of major capital electric projects completed or initiated during the past five years – including a discussion of why they were needed.

A. Projects in for our South Dakota operations include:

- AMI – This project replaced all electric meters in South Dakota. The AMI platform established two-way communication with meters that were formerly manually read. The ability to capture meter data on an immediate basis and remotely turn service on and off has provided immediate benefits. These include situational awareness from meter data and reduced expenses from meter reading labor and fewer truck rolls. Customer experience will be heightened through expanded use of the AMI platform in the future.
- Aberdeen 115 kV system – Multiple projects have improved our 115 kV system near Aberdeen since 2018. Our Industrial Park Substation was upgraded, three miles of new 115 kV line were constructed to complete a loop between substations and a new switchyard was built to improve reliability. These projects replaced aging infrastructure while upgrading and expanding the transmission system in the area.
- Transmission worst circuit program – This project addressed two underperforming 69 kV segments in South Dakota. One from Huron to

Highmore and the other from Mount Vernon to Chamberlain. Project scope included LiDAR survey, pole replacement and circuit rebuild work.

- Groton Switchyard – The switch yard was rebuilt with new control building and two new 69 kV breakers. Communications, relaying and metering were upgraded as well. Age and condition of the control building and breakers drove the project.
- LED conversion – This is a multi-year project to replace NorthWestern-owned HID street lights and reddy guards to LED technology. This includes structure and underground cable replacement where necessary. Replacement of the HID street lights is needed due to their becoming obsolete and to realize the benefits of more efficient lighting. Approximately 17,000 lights will be converted over the three-year project that started in 2022.
- West Port to Columbia distribution rebuild – Ten miles of overhead distribution feeder were rebuilt due to reliability concerns and age / condition of the line. The new design incorporates both overhead and underground distribution due to clearance concerns.
- Yankton East Substation – Yankton East Substation was expanded by adding three distribution circuits at the site. The project was driven by aging equipment and reliability performance of East Plant Substation. East Plant Substation had the highest number of customers on a single circuit in South Dakota. The third feeder reduced the total number of customers relying on one circuit and improved the reliability of the system.

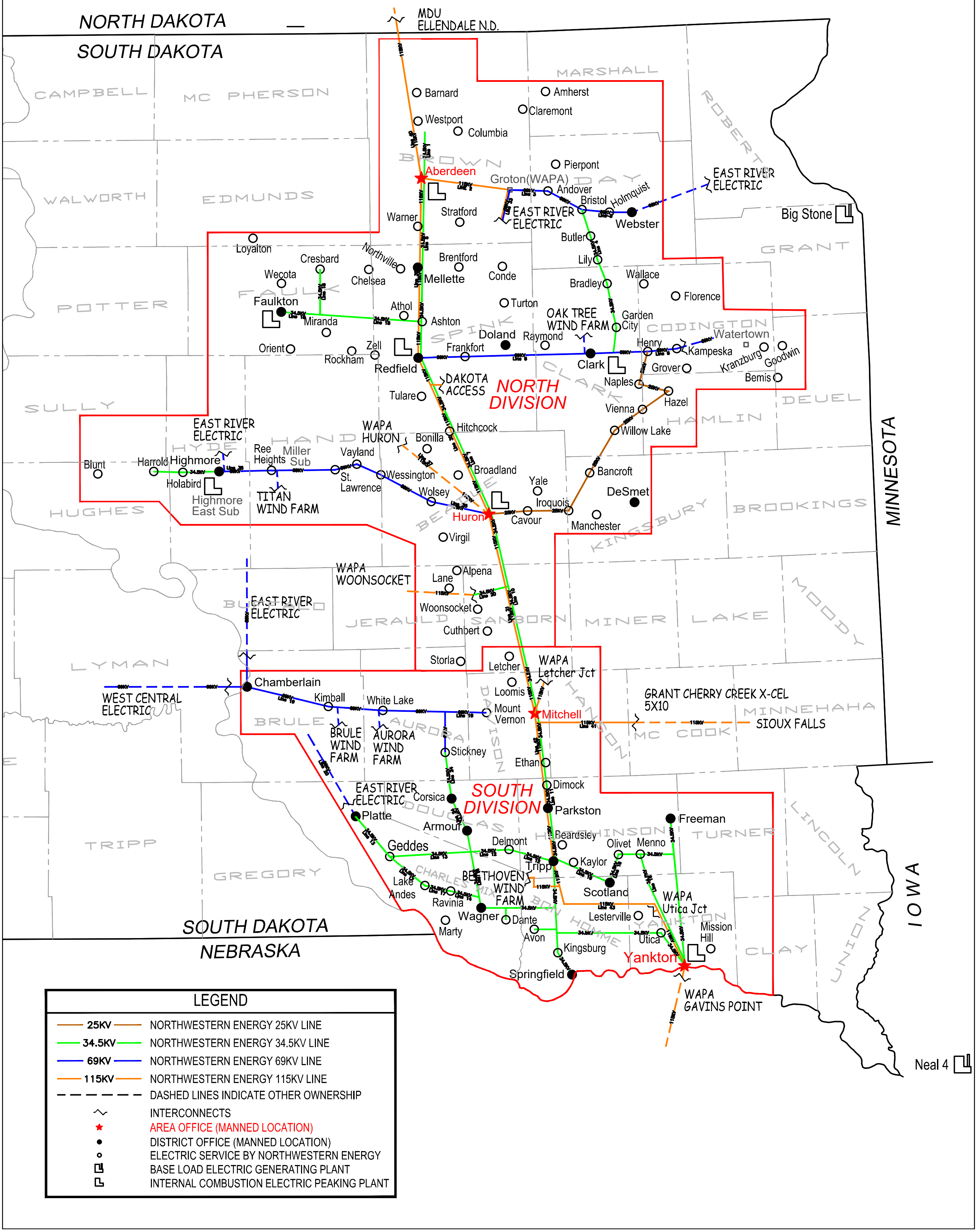
- Distribution pole replacement program – An outside contractor inspects distribution pole plant each year. The inspection provides condition ratings for each pole. Those that do not meet condition standards are replaced. This proactive approach eliminates reactive work and outages from poles failing while in service.
- Underground cable replacement program – This is a proactive project to replace bare concentric underground primary cable and live-front transformers. This removes some of the oldest infrastructure from the distribution system and eliminates reactive work and outages from cable failures.
- ADMS – This involves the implementation of ADMS software platform at NorthWestern as discussed in the reliability section of this testimony. This includes formation of the DOCC and development of training for new Controller classification.
- Chamberlain Junction Switch Yard – This project is slated for 2023 construction. NorthWestern and East River Electric identified a joint solution to area transmission shortfalls and are working together to construct this project. This eliminates the radial nature of NorthWestern's 69 kV line between Mount Vernon and Chamberlain.

Q. Does this conclude your testimony?

A. Yes, it does.

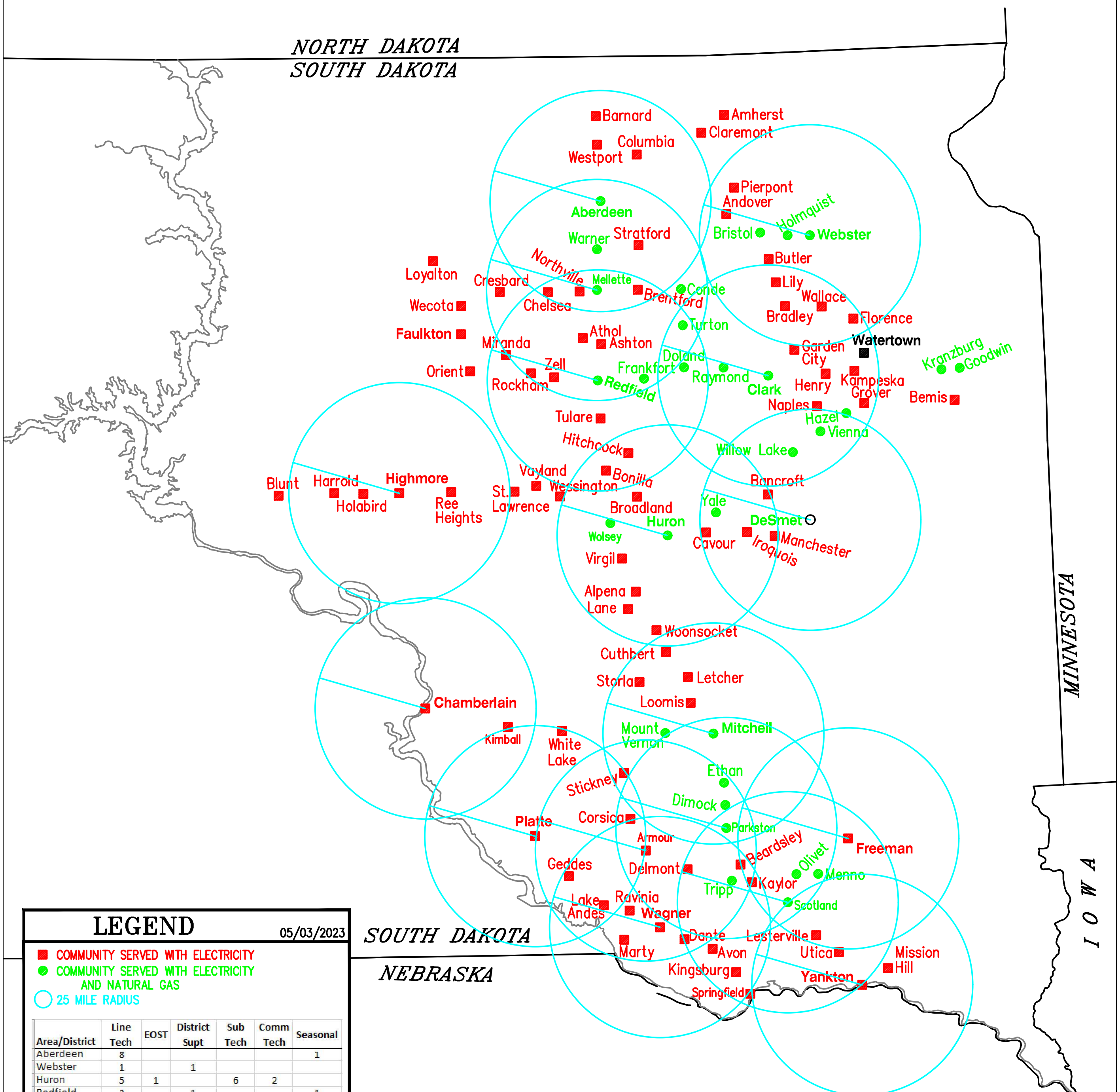
NORTHWESTERN ENERGY - SD ELECTRIC PROPERTIES

Coyote 1



NORTHWESTERN ENERGY
ELECTRIC PROPERTIES

(Field Operations Staff - 4 Classifications)
(25 Mile Radius)

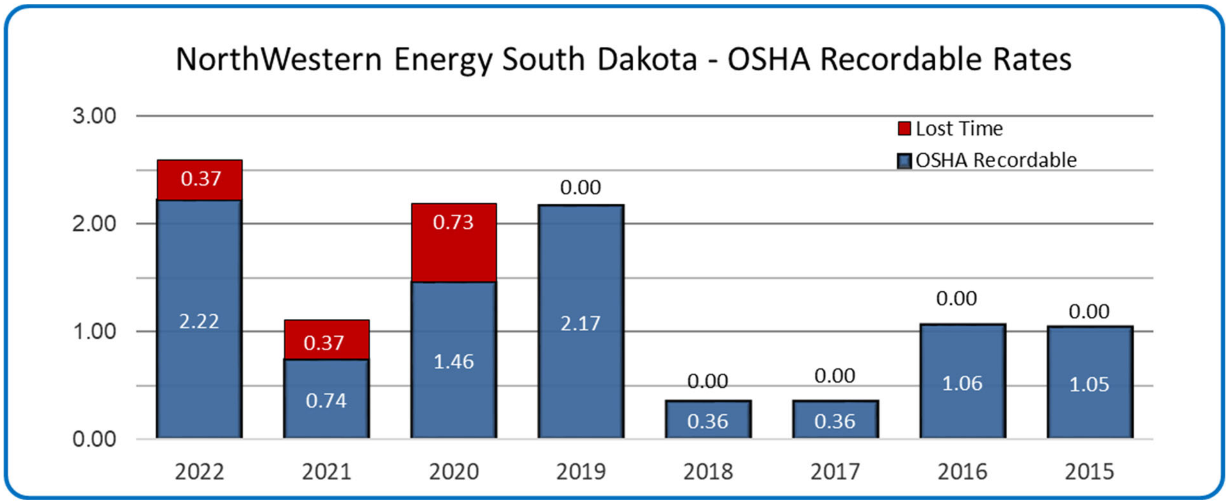


LEGEND

05/03/2023

- COMMUNITY SERVED WITH ELECTRICITY
- COMMUNITY SERVED WITH ELECTRICITY AND NATURAL GAS
- 25 MILE RADIUS

Area/District	Line Tech	EOST	District Supt	Sub Tech	Comm Tech	Seasonal
Aberdeen	8					1
Webster	1		1			
Huron	5	1		6	2	
Redfield	3		1			1
Clark			1			
Highmore	1					
Mellette			1			
DeSmet			1			
Mitchell	7	1				
Chamberlain	1					
Armour	5		1			1
Platte			1			
Parkston			1			
Yankton	6	1				2
Avon	1					
Freeman			1			
Scotland			1			
	38	3	10	6	2	5


NorthWestern Energy South Dakota - OSHA Recordable Rates
3.00
2.00
1.00
0.00
Lost Time
OSHA Recordable
0.37
2.22
0.37
0.74
0.73
1.46
0.00
2.17
0.00
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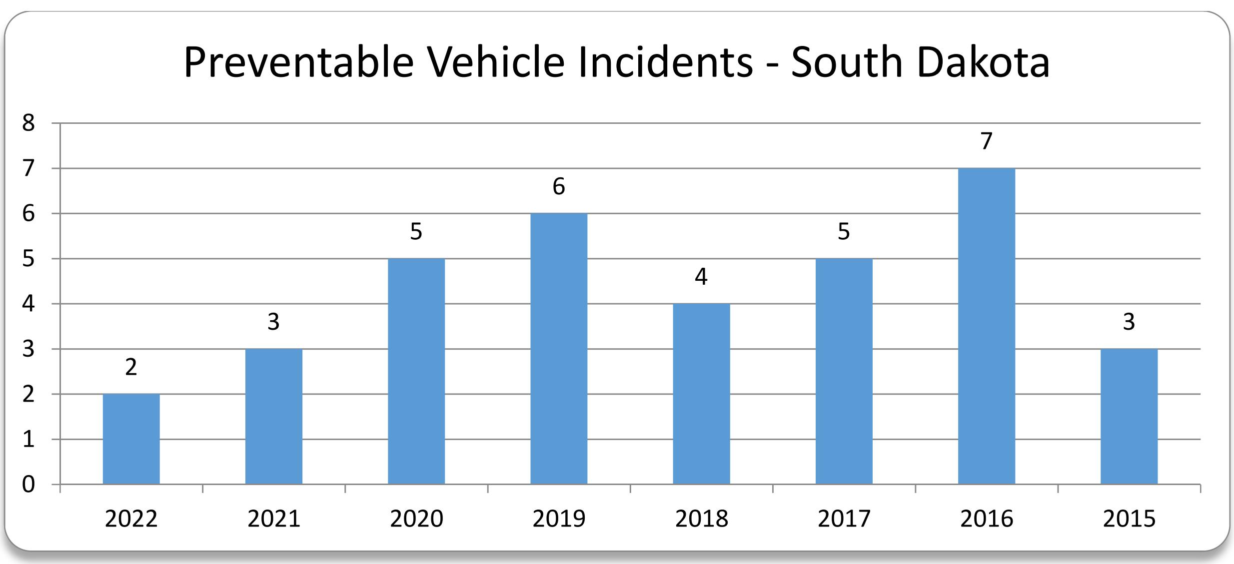
Preventable Vehicle Incidents - South Dakota
8
7
6
5
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4
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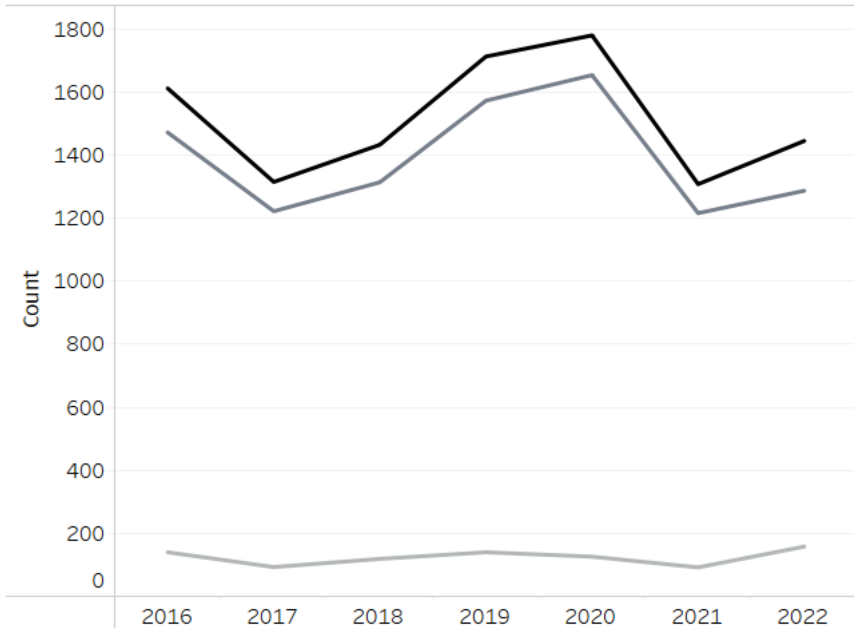
7
3
2022
2021
2020
2019
2018
2017
2016
2015

South Dakota Outages

Electric Outages excluding MEDs

Outage Count by Responsible System (T/D)

Dates Incl..	State Name	Division Name	Outage Category	Metric	Show Details
1/1/2016 - 12/31/2022	SOUTH DAKOTA	All	Multiple values	Outage Count	Show Details



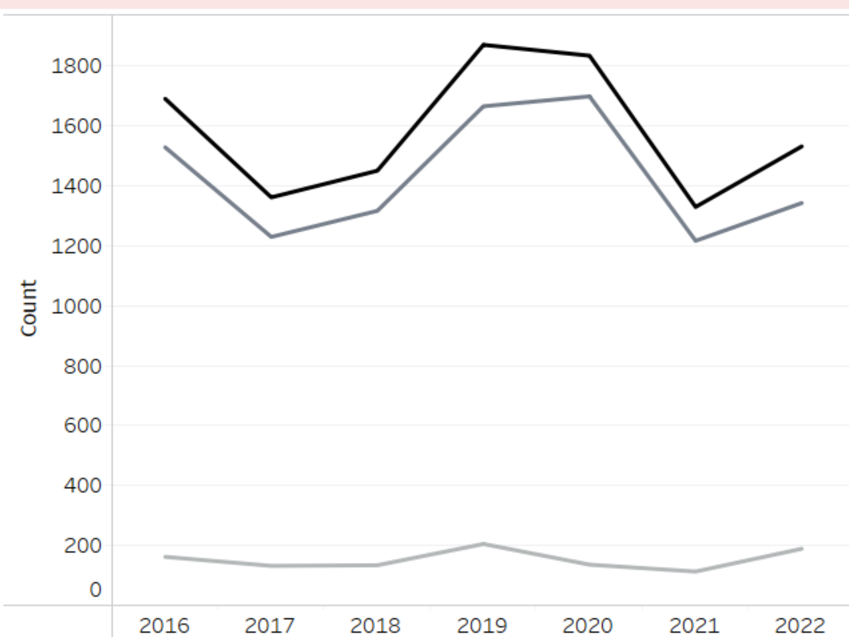
	Distribution	Transmission	Total
2016	1,472	140	1,612
2017	1,222	93	1,315
2018	1,314	119	1,433
2019	1,573	140	1,713
2020	1,654	126	1,780
2021	1,216	92	1,308
2022	1,287	158	1,445

Total
Distribution
Transmission

Electric Outages including MEDs

Outage Count by Responsible System (T/D)

Dates Incl..	State Name	Division Name	Outage Category	Metric	Show Details
1/1/2016 - 12/31/2022	SOUTH DAKOTA	All	Multiple values	Outage Count	Show Details



	Distribution	Transmission	Total
2016	1,529	162	1,691
2017	1,230	132	1,362
2018	1,317	134	1,451
2019	1,666	205	1,871
2020	1,699	136	1,835
2021	1,217	113	1,330
2022	1,343	189	1,532

Total
Distribution
Transmission

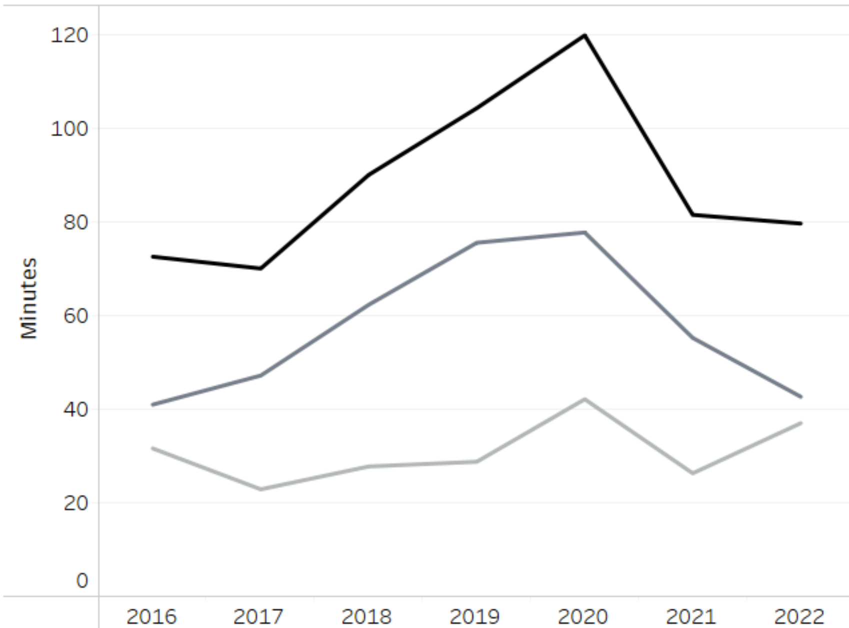
South Dakota SAIDI

Electric Outages excluding MEDs

Regional SAIDI by Responsible System (T/D)

NorthWestern Energy

Dates Incl..	State Name	Division Name	Outage Category	Metric	Show Details
1/1/2016 - 12/31/2022	SOUTH DAKOTA	All	Multiple values	Regional SAIDI	Show Details



	Distribution	Transmission	Total
2016	40.96	31.59	72.55
2017	47.17	22.86	70.03
2018	62.29	27.75	90.04
2019	75.53	28.75	104.28
2020	77.72	42.10	119.83
2021	55.20	26.29	81.49
2022	42.65	36.99	79.63

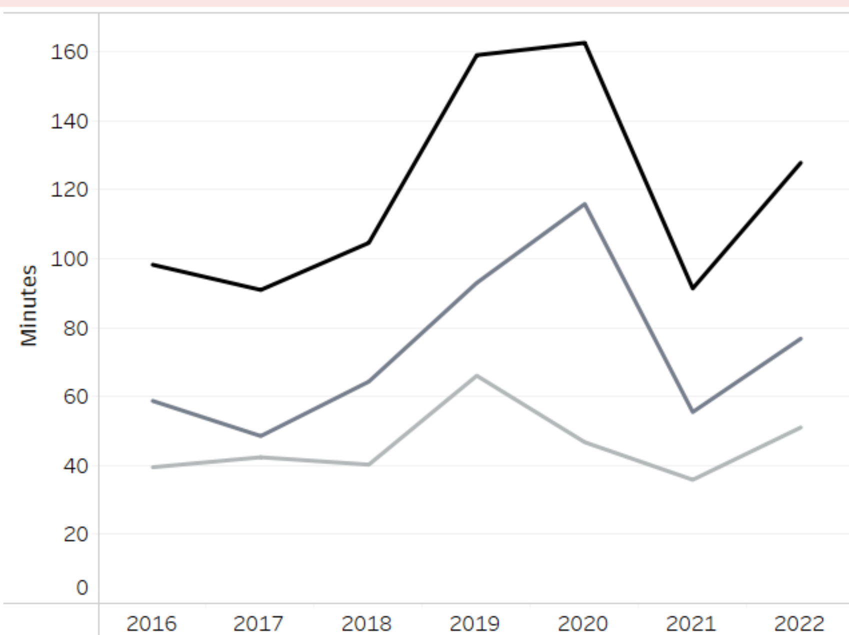
Total
Distribution
Transmission

Electric Outages including MEDs

Regional SAIDI by Responsible System (T/D)

NorthWestern Energy

Dates Incl..	State Name	Division Name	Outage Category	Metric	Show Details
1/1/2016 - 12/31/2022	SOUTH DAKOTA	All	Multiple values	Regional SAIDI	Show Details



	Distribution	Transmission	Total
2016	58.7	39.5	98.3
2017	48.6	42.4	91.0
2018	64.3	40.3	104.6
2019	93.0	66.1	159.1
2020	115.9	46.8	162.6
2021	55.5	35.9	91.4
2022	76.8	51.0	127.8

Total
Distribution
Transmission

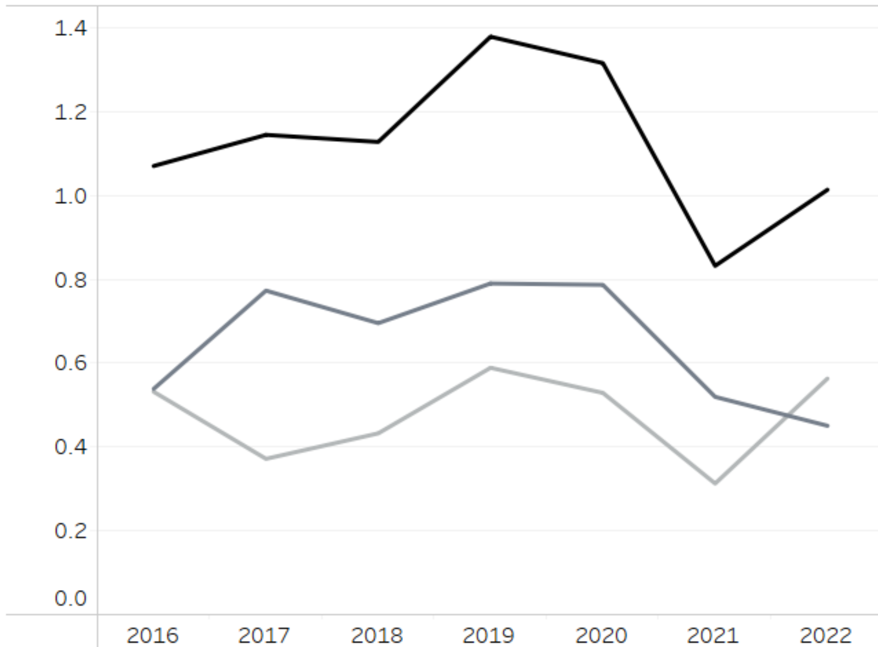
South Dakota SAIFI

Electric Outages excluding MEDs

Regional SAIFI by Responsible System (T/D)

NorthWestern Energy

Dates Incl..	State Name	Division Name	Outage Category	Metric	Show Details
1/1/2016 - 12/31/2022	SOUTH DAKOTA	All	Multiple values	Regional SAIFI	Show Details



	Distribution	Transmission	Total
2016	0.539	0.532	1.070
2017	0.773	0.372	1.144
2018	0.695	0.432	1.128
2019	0.790	0.589	1.379
2020	0.787	0.529	1.316
2021	0.519	0.313	0.832
2022	0.450	0.563	1.014

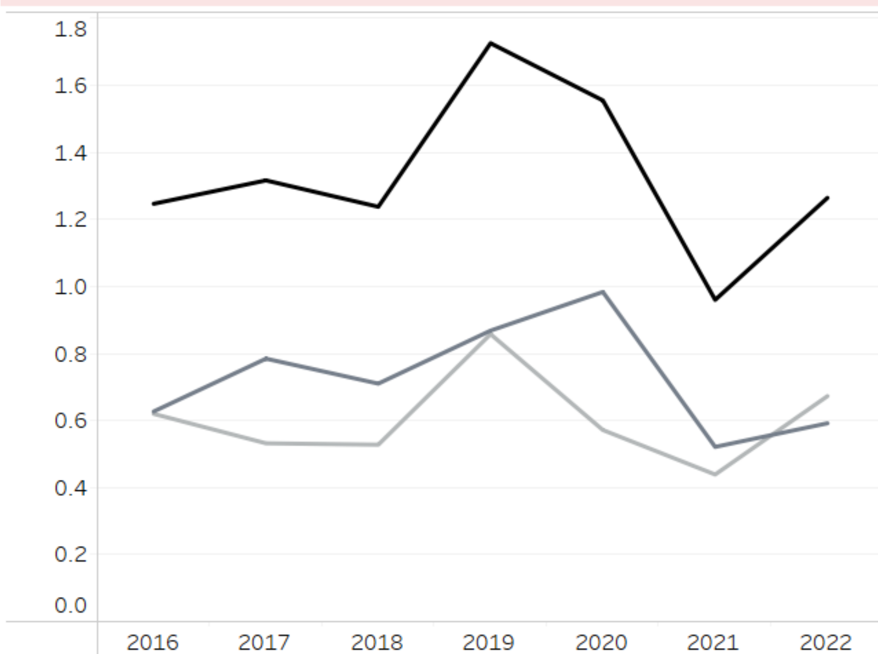
■ Total
■ Distribution
■ Transmission

Electric Outages including MEDs

Regional SAIFI by Responsible System (T/D)

NorthWestern Energy

Dates Incl..	State Name	Division Name	Outage Category	Metric	Show Details
1/1/2016 - 12/31/2022	SOUTH DAKOTA	All	Multiple values	Regional SAIFI	Show Details



	Distribution	Transmission	Total
2016	0.627	0.620	1.247
2017	0.784	0.532	1.316
2018	0.710	0.528	1.238
2019	0.868	0.857	1.726
2020	0.983	0.572	1.555
2021	0.521	0.439	0.960
2022	0.592	0.673	1.264

■ Total
■ Distribution
■ Transmission

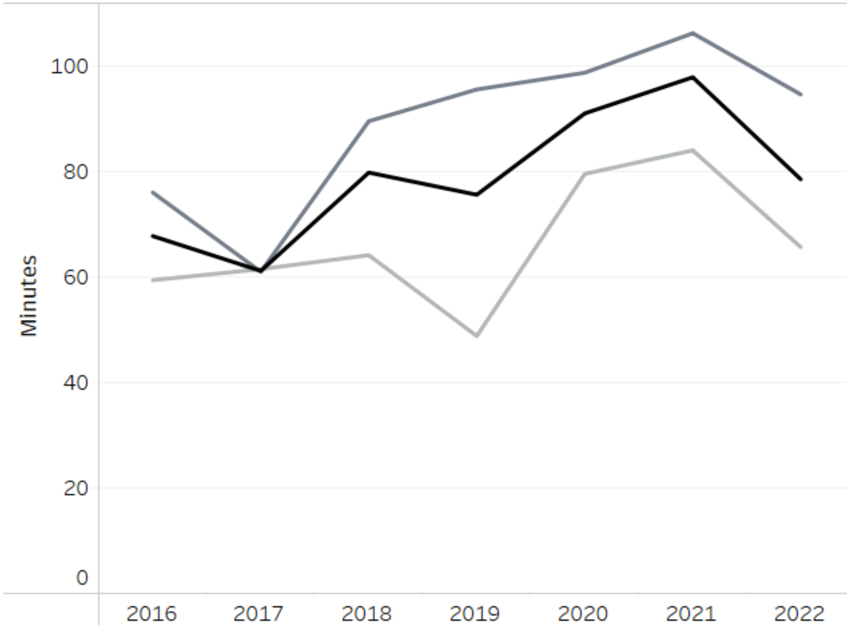
South Dakota CAIDI

Electric Outages excluding MEDs

Regional CAIDI by Responsible System (T/D)

NorthWestern Energy

Dates Incl..	State Name	Division Name	Outage Category	Metric	Show Details
1/1/2016 - 12/31/2022	SOUTH DAKOTA	All	Multiple values	Regional CAIDI	Show Details



	Distribution	Transmission	Total
2016	76.06	59.43	67.80
2017	61.03	61.53	61.19
2018	89.59	64.18	79.85
2019	95.62	48.83	75.64
2020	98.79	79.60	91.07
2021	106.29	84.06	97.93
2022	94.67	65.69	78.57

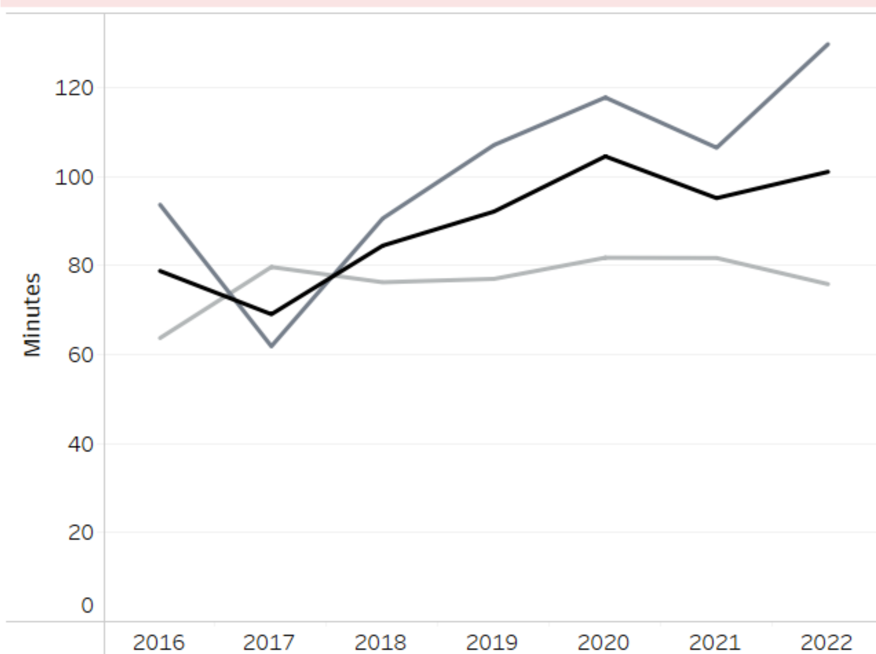
Total
Distribution
Transmission

Electric Outages including MEDs

Regional CAIDI by Responsible System (T/D)

NorthWestern Energy

Dates Incl..	State Name	Division Name	Outage Category	Metric	Show Details
1/1/2016 - 12/31/2022	SOUTH DAKOTA	All	Multiple values	Regional CAIDI	Show Details



	Distribution	Transmission	Total
2016	93.73	63.75	78.83
2017	61.90	79.72	69.10
2018	90.64	76.29	84.52
2019	107.15	77.05	92.19
2020	117.84	81.81	104.60
2021	106.54	81.75	95.21
2022	129.82	75.88	101.12

Total
Distribution
Transmission

Major Event Day (MED)

			Days	Outage Count	regional SAIDI	regional SAIFI	regional CAIDI
Catastrophic Event	2022	May	1	155	126.0	0.429	293.7
		July	2	128	73.9	0.303	244.1
Major Event Day	2016	June	1	25	14.7	0.071	207.1
		July	1	29	7.1	0.072	98.5
		December	1	25	3.8	0.033	116.6
	2017	December	1	47	20.9	0.172	121.8
	2018	August	1	18	14.6	0.110	132.5
	2019	March	1	26	6.7	0.039	170.2
		April	2	91	30.1	0.196	153.3
		July	2	41	18.0	0.111	162.0
	2020	June	2	55	42.8	0.239	179.0
	2021	February	1	22	9.9	0.128	77.5
	2022	June	1	24	8.3	0.058	143.2
		July	1	22	24.9	0.120	208.5
		November	1	41	15.0	0.073	204.7

- Major Event Day: A day on which the energy delivery system experienced stresses beyond that normally expected (such as severe weather) in which the daily SAIDI exceeds a Major Event Day threshold value as defined in by IEEE standard 1366.
- Catastrophic Event: An outage event when the energy delivery system experienced devastating stresses beyond that normally expected (such as extreme weather) in which the cumulative SAIDI exceeds a Catastrophic threshold value of 7x the MED value. Activities that occur during Catastrophic Events are separately analyzed and reported. These days are not included in any index or threshold calculation.