

Prefiled Direct Testimony
Bleau J. LaFave

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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1 **Witness Information**

2 **Q. Please provide your name, employer, and title.**

3 **A.** My name is Bleau J. LaFave and I am the Director of Long-Term Resources at
4 NorthWestern Energy (“NorthWestern”).
5

6 **Q. Please provide a description of your relevant employment experience and
7 other professional qualifications.**

8 **A.** I have been in my current position as Director of Long-Term Resources since
9 2011. I am responsible for overseeing the long-term natural gas and electric
10 supply strategies for NorthWestern, including large project development and
11 acquisitions. I originally joined NorthWestern as a Project Engineer. Since
12 joining NorthWestern, I have served in many operational and administrative
13 functions addressing matters such as operations management, procurement,
14 logistics, contracts, fleet, facilities, utility engineering, project development,
15 supply development, planning, acquisitions, and customer service. I hold a
16 Bachelor of Science in Mechanical Engineering.
17

18 **Purpose of Testimony**

19 **Q. What is the purpose of your testimony in this docket?**

20 **A.** The purpose of my testimony is to provide an overview of the South Dakota
21 Integrated Resource Plans (“IRP”) and provide information concerning
22 NorthWestern’s transition to the Southwest Power Pool (“SPP”). I also provide
23 testimony supporting the request to recover the costs of the Bob Glanzer
24 Generating Station (“BGGGS”).

1 The IRP overview will include:

- 2 1. Historical review of the South Dakota IRP and Ten-Year Biennial filings;
- 3 2. Overview of the South Dakota Energy Supply Portfolio; and
- 4 3. Overview of generation planning.

5 The addition of BGGs discussion will include:

- 6 1. History and Planning;
- 7 2. Decision Process;
- 8 3. Integration; and
- 9 4. Operation and Maintenance (“O&M”) General Rate Case Impacts

10

11 **South Dakota Integrated Resource Plan Overview**

12 **Q. Has NorthWestern prepared and provided an IRP to the South Dakota**
13 **Public Utilities Commission (“Commission”) recently?**

14 **A.** Yes. NorthWestern prepared and provided to the Commission an IRP in 2018,
15 2020, and 2022.¹

16

17 **Q. What is the purpose of NorthWestern’s IRPs?**

18 **A.** The IRPs provide a disciplined economic evaluation of potential supply (energy
19 and capacity) to meet the next 20 years of NorthWestern’s electric load-serving
20 obligation in South Dakota. The IRPs analyze a range of prospective
21 environmental and market uncertainties that have the greatest potential to impact

¹ NorthWestern’s IRP filings can be found at this site: [Electric Supply Planning | NorthWestern Energy \(https://www.northwesternenergy.com/about-us/gas-electric/electric-supply-resource-procurement-plan\)](https://www.northwesternenergy.com/about-us/gas-electric/electric-supply-resource-procurement-plan)

1 customer needs and long-term procurement options. The conclusions of the
2 IRPs help guide NorthWestern's investments on behalf of its customers in South
3 Dakota. The IRPs are based on then-current available information and are
4 updated from time to time to reflect significant anticipated future events, such as
5 new legislation, regional operational/planning needs, or environmental
6 requirements.

7
8 **Q. How has NorthWestern's IRP process helped to provide long-term rate
9 stability for its customers?**

10 **A.** Each IRP portfolio that is thoroughly studied, discussed, and communicated
11 needs to serve NorthWestern's customers. The process helps focus planning
12 and evaluation efforts to meet reliability and cost effective service to customers.

13
14 **Q. Please summarize the action plans for energy and capacity needs to serve
15 NorthWestern's customers found within each IRP.**

16 **A.** The 2018 IRP concludes the following:

17 1. *Retirement/Replacement.* Using the HDR Fleet Assessment as a basis,
18 NorthWestern will prepare for the retirement and replacement of aging
19 resources throughout its service territory. Specifically, NorthWestern will
20 continue investigating the retirement of the Huron Generating Station 2 in
21 2022, followed by the addition of about 40 megawatts ("MW") in Huron in
22 2024.

23 2. *Mobile units.* NorthWestern will acquire and deploy four 2 MW mobile
24 generation units in 2019. The mobile units will alleviate generation supply

1 reliability concerns for the towns of Clark, Faulkton and other strategic
2 locations across the South Dakota service territory.

3 3. *Capacity.* Expiration of the current capacity agreement with Missouri River
4 Energy Services after the 2018 summer season will create a capacity
5 shortfall beginning in 2019. NorthWestern’s current capacity forecast
6 shows need for capacity of 5 MW in 2019 and around 9 MW in 2028 (more
7 if industrial growth occurs). Mobile generating resources, will meet 9 MW
8 of this short-term capacity need.

9 4. *Grid Reliability.* Beyond the mobile unit additions, NorthWestern will
10 continue to study the added value of locating future resource additions at
11 sites strategically located throughout NorthWestern’s South Dakota
12 service territory in order to help increase electricity supply and
13 transmission grid reliability.

14 5. *Generation Technologies.* NorthWestern will continue to monitor and
15 evaluate generation technologies with the potential to help NorthWestern
16 meet its load-serving obligation at the lowest total cost to its customers.
17 This could include re-evaluating Combustion Turbine Generation (“CTG”)
18 technology as well as considering a pilot project(s) using technologies
19 NorthWestern does not currently employ (e.g., battery storage, especially
20 where electric grid support is needed).

21 6. *Environmental.* NorthWestern’s current planning efforts continue to
22 prioritize compliance with environmental regulations. NorthWestern will
23 continue to monitor proposed rules and will incorporate any additional

1 environmental regulations/requirements into its planning processes as
2 necessary.

3 *7. SPP Operations.* NorthWestern will continue to coordinate with SPP
4 regarding the ancillary services market, generation interconnection
5 process, and other pertinent Independent System Operator topics. SPP
6 requirements for resource capacity contribution and peak load forecasting
7 will be adhered to as those standards continue to develop. Resource
8 planning will necessarily reflect those changes.

9 *8. SPP Transmission Planning.* NorthWestern will continue to monitor and
10 participate in SPP working groups dedicated to the transmission planning
11 process. NorthWestern will also continue to evaluate the results of SPP
12 studies, along with system needs identified in the studies.

13 *9. Ancillary Services Market.* NorthWestern will further investigate the
14 ancillary services market and associated potential revenues by
15 coordinating with Rainbow (NorthWestern's energy marketer for South
16 Dakota) and discussing with other market participants.

17 *10. Aberdeen Generation Station ("AGS") 1 Air Permit.* NorthWestern intends
18 to investigate a potential update to the AGS1 air permit to reduce the
19 impacts on AGS2. The AGS air permit is currently set to expire and will
20 need to be renewed in 2020, which could present an opportunity for
21 adjustment/optimization. The retirement of AGS1 would also assist in
22 facilitating increased dispatch capability of AGS2.

1 11. *Fuel Requirements.* NorthWestern will further investigate natural gas fuel
2 supply capability, dual fuel/no fuel generation technologies, and/or
3 liquefied natural gas configurations.

4 12. *Economic Development Opportunities.* NorthWestern will continue to
5 investigate potential economic development opportunities in South
6 Dakota in order to identify potential synergies with large commercial &
7 industrial customers, municipalities, and others.

8 13. *Joint-Owned Units.* The Big Stone, Coyote, and Neal 4 agreements will
9 continue to be evaluated.

10 14. *Natural Gas Supply.* NorthWestern will investigate additional natural gas
11 supply capabilities at the different generation sites throughout its system.
12 Specifically, allocation capabilities need to be discussed with Northern
13 Natural Gas.

14 15. *Land Rights.* Land availability, local permitting, and other land rights
15 considerations to support new generation additions must be investigated
16 further.

17 16. *Environmental Permitting Requirements.* Specific environmental permits
18 will need to be investigated for the sites under consideration for
19 retirement/replacement.

20 The 2020 IRP concludes the following:

21 1. Continued construction of the replacement generation at Huron, expected
22 to achieve commercial operation at the end of 2021.

- 1 2. Develop and issue a Request for Proposals (RFP) for approximately 40
2 MW of new generation, to replace aging generating units at Aberdeen
3 and Yankton. This RFP is targeted for issuance in the first half of 2021,
4 with the goal of bringing the replacement resources online in 2025.
5 However, this timeline will be subject to the SPP's interconnection
6 process, which has recently been experiencing delays of two to three
7 years, and sometimes longer.
- 8 3. Continued participation in discussions about the future emissions
9 compliance obligations for the Coyote Generating Station, monitoring the
10 likely status of this unit and evaluating the costs and benefits of continued
11 investments in Coyote as compared with alternatives for reliable capacity.

12
13 The 2022 IRP concludes the following:

- 14 1. Transmission Projects: There are a number of significant transmission
15 projects that are in early planning stages. These include the Chamberlin
16 Switchyard Project, Big Stone to Blair line upgrades, and Huron to
17 Highmore line improvements. Each project is classified as a high priority
18 for the transmission planning group and has expected completion dates in
19 2023 and 2025. Please note, project plans and dates are subject to
20 change since these projects are still in early planning stages.
- 21 2. Yankton and Aberdeen Replacement –Aberdeen 1 and Yankton are
22 candidates for retirement and replacement evaluations. These two
23 facilities account for approximately 43 MW in our current portfolio and
24 were chosen for replacement in the last IRP. Between a fire at Huron, the

1 COVID-19 pandemic, and other unforeseen events, NorthWestern
2 decided to strategically postpone the retirement of these facilities to allow
3 the market and supply chain to return to equilibrium.

- 4 3. RFP – To accommodate upcoming retirements and customer load
5 growth, NorthWestern may need to issue an RFP. This IRP outlines what
6 that process may look like should the Company decide to pursue new
7 resources in this manner between 2023 and 2024.

8
9 **Q. What resources did NorthWestern include in its portfolio in the most recent**
10 **IRP?**

11 **A.** NorthWestern has shares in three steam generation coal plants which provide
12 approximately 210 MW of generating capacity averaging about 1.5 gigawatt-
13 hours (“GWh”) of production each year. NorthWestern has an additional 201 MW
14 of internal combustion generation fueled by natural gas or oil for capacity
15 including BGGGS at 58 MW. Renewable generation includes the NorthWestern-
16 owned Beethoven 80-MW wind project and Power Purchase Agreements (“PPA”)
17 between NorthWestern and Titan Wind Farm, Oak Tree Wind (a Qualifying
18 Facility (“QF”), Aurora County Wind (QF), and Brule County Wind (QF).
19 NorthWestern has contracted for an additional 40 MW of peaking capacity in
20 2023. The total portfolio includes 387 MW of summer peaking capacity with a
21 total average forecasted generation capable of 2 GWh each year.
22 NorthWestern’s portfolio as detailed above is summarized in the table that
23 follows:

| Generation Unit | Type | Fuel Type | Owned/Contracted Nameplate Capacity (MW) | Accredited Capacity (MW)* | Accredited Capacity (% of Nameplate Capacity) | COD | Contract Term |
|--|-------|-------------|--|---------------------------|---|-----------|---------------|
| Big Stone (JOU, 474 MW Total) | Steam | Coal | 111 | 111 | 100% | 1975 | 23.4% Owner |
| Neal 4 (JOU, 844 MW Total) | Steam | Coal | 56 | 56 | 100% | 1979 | 8.7% Owner |
| Coyote (JOU, 427 MW Total) | Steam | Coal | 42.7 | 42.5 | 100% | 1981 | 10% Owner |
| Total Coal | | | 210 | 210 | | | |
| Aberdeen 2 (AGS2) | CT | NG / Diesel | 82.2 | 59.3 | 72% | 2013 | Owned |
| Bob Glanzer Generating Station | RICE | NG | 58 | 55.7 | 96% | 2022 | Owned |
| Yankton Generating Station (YGS)** | RICE | NG / Diesel | 13.6 | 0 | 0% | 1974 | Owned |
| Total Natural Gas | | | 154 | 115 | | | |
| Aberdeen 1 (AGS) | CT | Diesel | 28.8 | 20.1 | 70% | 1978 | Owned |
| Clark | RICE | Diesel | 2.8 | 2.1 | 75% | 1970 | Owned |
| Faulkton | RICE | Diesel | 2.8 | 2 | 71% | 1969 | Owned |
| Mobile C | RICE | Diesel | 2 | 1.8 | 90% | 2009 | Owned |
| Mobile B | RICE | Diesel | 1.8 | 1.6 | 89% | 1991 | Owned |
| New Mobiles - Unit 1 | RICE | Diesel | 1 | 1 | 100% | 2019 | Owned |
| New Mobiles - Unit 2 | RICE | Diesel | 1 | 0.9 | 90% | 2019 | Owned |
| New Mobiles - Unit 3 | RICE | Diesel | 1 | 1 | 100% | 2019 | Owned |
| New Mobiles - Unit 4 | RICE | Diesel | 1 | 1 | 100% | 2019 | Owned |
| New Mobiles - Unit 5 | RICE | Diesel | 1 | 1 | 100% | 2019 | Owned |
| New Mobiles - Unit 6 | RICE | Diesel | 1 | 1 | 100% | 2019 | Owned |
| New Mobiles - Unit 7 | RICE | Diesel | 1 | 0.9 | 90% | 2019 | Owned |
| New Mobiles - Unit 8 | RICE | Diesel | 1 | 1 | 100% | 2019 | Owned |
| Big Stone | RICE | Diesel | 0.3 | 0 | 0% | 1975 | 23.4% Owner |
| Total Diesel | | | 47 | 35 | | | |
| Beethoven Wind | VER | Wind | 80 | 17.7 | 22% | 2015 | Owned |
| Titan I Wind (Rolling Thunder I Power Partners, LLC) | VER | Wind | 25 | 3 | 12% | 1/1/2010 | 20 years |
| Aurora County Wind CED LLC | VER | Wind | 20 | 2.3 | 11% | 10/1/2018 | 20 years |
| Brule County Wind CED LLC | VER | Wind | 20 | 1.8 | 9% | 10/1/2018 | 20 years |
| Oak Tree (Oak Tree Energy, LLC) | VER | Wind | 19.5 | 2.5 | 13% | 1/1/2015 | 20 years |
| Total Wind | | | 165 | 27 | | | |
| Total Portfolio | | | 575 | 387 | | | |

* Accredited capacity values reflect the 2022 RAW filing.
** YGS is not currently operational. The facility would require extensive upgrades to safely and reliably bring back online.

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Q. Has NorthWestern added any resources to its portfolio based on the conclusions of these plans?

A. Yes. Since the 2018 IRP, NorthWestern added eight 1-MW mobile units and BGGs.

Q. Please provide details on the resources added and the corresponding IRP(s) in which they were discussed.

A. In the 2018 IRP, the action plan identified the need for four 2 MW mobile units. During the acquisition process, it was determined to purchase eight 1 MW units because of cost, design, and operational capabilities. The smaller equipment

1 allowed maximum flexibility and design for each unit. Regarding BGGGS, I will
2 discuss this resource in detail in the latter part of my testimony.

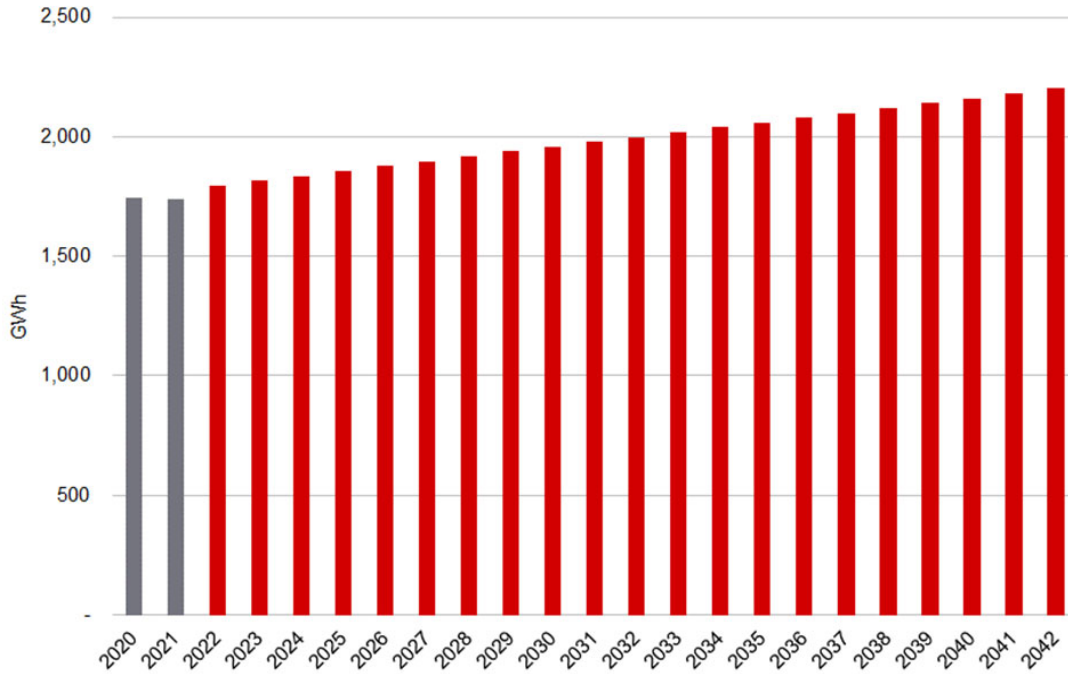
3
4 **Q. Why was the Huron 2 Generation Station not identified in the action plans?**

5 A. As described in the 2020 IRP, there was a fire at Huron 2 in January 2019 that
6 resulted in a total loss of the 43-MW Huron 2 Generating Station. Building the
7 replacement for Huron 2 began in 2020 and the plant was operational as of May
8 27, 2022 and became known as BGGGS.

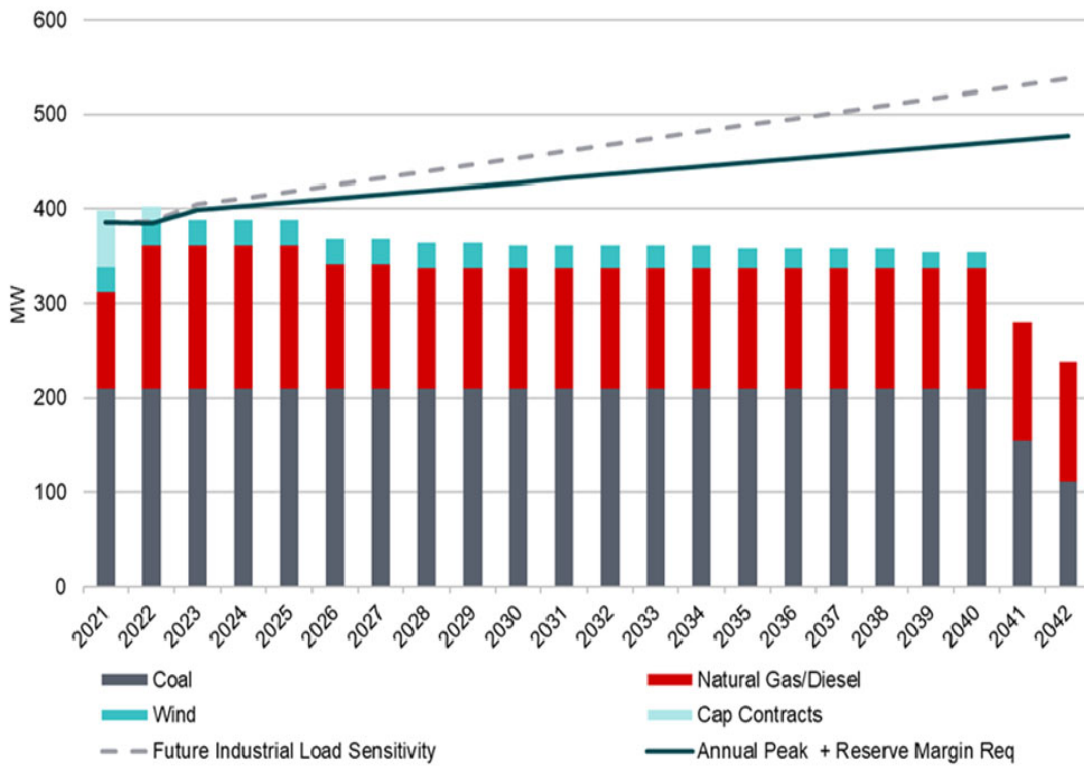
9
10 **Q. What are the historical and projected characteristics of NorthWestern's
11 load growth and load peak?**

12 A. As described in the 2022 IRP, NorthWestern's customer electric load has grown
13 to 1,745 GWh in 2021 which represents approximately 1% per year over the last
14 5 years with a peak load growth at a similar rate as shown in the charts below.

Forecasted Total Annual Energy



Project Peaks



Investment in Generation Resources

1
2 **Q. Briefly describe NorthWestern’s significant generation projects since the**
3 **last South Dakota electric rate filing.**

4 A. Since our 2014 electric rate review, NorthWestern added BGGGS, which is a 58-
5 MW generation facility comprised of six Reciprocating Internal Combustion
6 Engines (“RICE”).

7
8 **Q. Please describe the BGGGS.**

9 A. As noted above, BGGGS is a 58-MW natural gas-fired Caterpillar RICE generation
10 facility with a Selective Catalytic Reduction (“SCR”) post flue treatment. The SCR
11 will allow for significant emissions reductions compared to the prior Huron 2 unit.
12 The facility is comprised of six 9.6 MW Caterpillar RICE units.

13
14 **Q. What was the process that lead to the replacement of Huron 2 to the**
15 **selection of BGGGS?**

16 A. In January 2019, a fire at the Huron generating station destroyed Huron Unit 2
17 (totaling 43 MW). This required NorthWestern to respond quickly to begin the
18 process of replacing the lost generation. NorthWestern engaged Aion Energy
19 LLC and HDR Engineering as the third-party administrator of an RFP. Following
20 the Huron 2 fire, NorthWestern developed and released an RFP in April 2019 to
21 select a replacement resource for the capacity lost at Huron. The RFP was not
22 prescriptive in its resource location; Huron was identified as a preferred location,
23 but was not the only acceptable location. The safety records of the responding
24 bidders, along with their expertise and creditworthiness, were of significant

1 importance to NorthWestern in the selection process. The RFP requested bids
2 ranging from 10 to 60 MW, though there was no explicit exclusion of larger
3 projects. Bids were required to have a forecasted in-service date by the end of
4 2021 and the location preference was South Dakota. The RFP sought flexible,
5 dispatchable capacity.

6
7 The types of bids solicited under the RFP included:

- 8 • (“PPAs”), with a term of 20 years;
 - 9 • Asset sales where the asset has a remaining useful life of at least 20
10 years;
 - 11 • Build Transfer (“B-T”) agreements for construction-ready or projects
12 otherwise fully designed and under construction;
 - 13 • Demand Response (“DR”) or Demand Side Management (“DSM”)
14 programs, and other alternative transaction structures; and
 - 15 • Engineer Procure Construct (EPC) bids for new generation at the Huron
16 site.
- 17

18 The RFP bids were evaluated in three stages:



20 NorthWestern received 40 unique proposals from 10 bidders.

22 The RFP gave preference to bids that demonstrated the following characteristics:

- 23 1. Complete Site Control;
- 24 2. Generator Interconnection Agreement;
- 25 3. Dispatch and Capacity accreditation using SPP methodology; and
- 26 4. Ability for the resource to meet some or all of a 24 hour ride through
27 capacity needs.

1 The most cost-effective bid that NorthWestern received in response to the 2019
2 RFP was a 58-MW natural gas fired Caterpillar RICE unit with a Selective
3 Catalytic Reduction (SCR) post flue treatment, which allows for significant
4 emissions reductions compared to the prior Huron 2 unit. This project could use
5 the existing transmission interconnection with SPP, which allowed NorthWestern
6 to avoid a lengthy interconnection process.

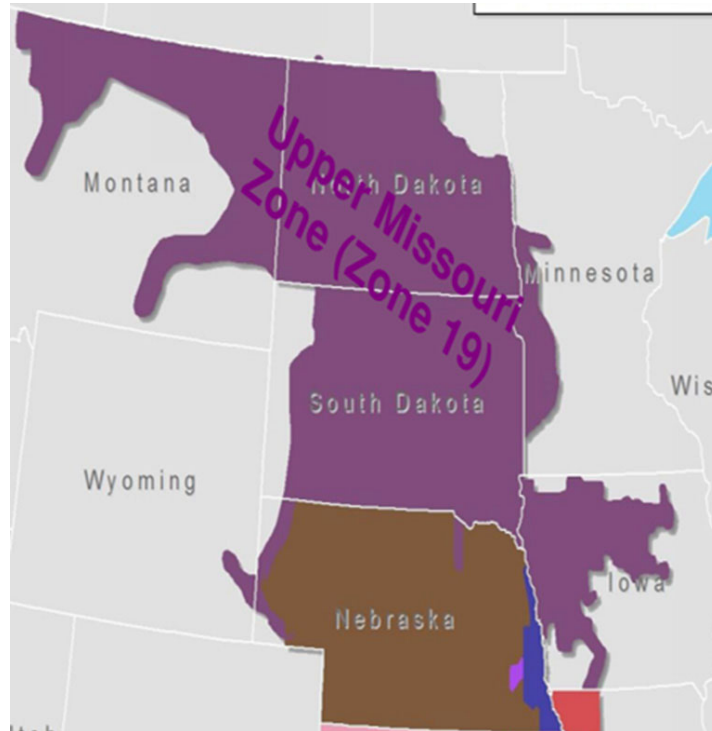
7
8 **Q. How does the BGGs benefit NorthWestern's South Dakota resource**
9 **portfolio?**

10 A. BGGs provides capacity, energy, ancillary services, and local reliability for
11 NorthWestern customers.

- 12 ○ With multiple independent units at BGGs, the accredited capacity for this
13 facility will be very high. The design allows outages associated with one
14 unit to not affect the continuous operation of the balance of the facility.
15 Forced outage calculations, which are already low, used for the
16 accreditation of dispatchable units will benefit from the independent
17 operation of the units.
- 18 ○ The quick economic dispatch of the BGGs units will protect customers
19 from electric price spikes not attributed to the heat rates associated with
20 natural gas.
- 21 ○ The flexible characteristics of the RICE units will allow for additional
22 recovery from SPP that will be credited to NorthWestern customers.

1 effective Oct. 1, 2015. At the same time, NorthWestern joined SPP and is part of
2 the Upper Missouri Zone (“UMZ”) (see the map below).

3



4

5

6 As a member of SPP, NorthWestern is both a Transmission Customer (“TC”) and
7 a Transmission Owner (“TO”) in SPP. SPP determines network transmission
8 rates for the UMZ by combining the transmission revenue requirement for each
9 of the TOs with facilities in the UMZ. Each TO provides its transmission revenue
10 requirement annually under protocols that are included in the SPP Tariff,
11 Attachment H (Annual Transmission Revenue Requirement for Network
12 Integration Transmission Service). SPP collects the revenue from network
13 transmission services provided in the UMZ, and then distributes these revenues
14 to the TOs based on each TO’s share of the UMZ revenue requirement. SPP

1 also allocates through and out transmission service within the UMZ and other
2 zones in SPP to all SPP TOs according to SPP tariff rules.

3
4 **Q. How does SPP define transmission facilities that can be included under its**
5 **tariff?**

6 **A.** According to the SPP tariff, Transmission Facilities shall include all facilities that
7 meet the following criteria:

- 8 1. All existing non-radial power lines, substations, and associated facilities,
9 operated at 60 kilovolts (“kV”) or above, plus all radial lines and associated
10 facilities operated at or above 60 kV that serve two or more eligible
11 customers not Affiliates of each other. Rate treatment for transmission
12 upgrades completed after October 1, 2005 will be determined pursuant to
13 Section 1.3 (h) of this Tariff. For the purpose of the application of this
14 criterion, “open loops” are radial lines. Additionally, at such time an
15 existing radial is incorporated into a looped transmission circuit, that
16 existing radial would be eligible for inclusion in rates on the same basis as
17 the remainder of the facilities in the loop.
- 18 2. All facilities that are utilized for interconnecting the various internal zones
19 to each other as well as those facilities that interconnect SPP with other
20 surrounding entities.
- 21 3. Control equipment and facilities necessary to control and protect facilities
22 qualifying as Transmission Facilities.
- 23 4. For substations connected to power lines qualifying as Transmission
24 Facilities, where power is transformed from a voltage higher than 60 kV to

1 a voltage lower than 60 kV, facilities on the high voltage side of the
2 transformer will be included with the exception of transformer isolation
3 equipment.

4 5. The portion of the direct-current interconnections with areas outside of the
5 SPP Region (DC ties) that are owned by a Transmission Owner in the
6 SPP Region, including those portions of the DC tie that operate at a
7 voltage lower than 60 kV.

8 6. All facilities operated below 60 kV that have been determined to be
9 transmission pursuant to the seven (7) factor test set forth in FERC Order
10 No. 888, 61 Fed Reg. 21,540, 21,620 (1996), or any applicable successor
11 test.

12
13 **Q. What NorthWestern facilities are included under the SPP tariff?**

14 A. NorthWestern's most recently filed Annual Revenue Requirement includes
15 \$39.5m of rate base, primarily made up of 115kV and 69Kv lines and
16 transmission substations. The revenue requirement was approximately \$6.3m,
17 and the rate year runs from April 1, 2023 through March 31, 2024.

18
19 **Q. How are the revenues from SPP included in NorthWestern's rates?**

20 A. All transmission revenues received from SPP are credited to NorthWestern
21 customers in the electric transmission tracker, which is updated quarterly.

22
23 **Q. What trends have you seen with the cost of energy and the cost of**
24 **transmission since joining SPP?**

1 A. Total transmission costs have increased over the period from 2015 to 2022 with
2 energy costs remaining relatively flat.

3 **Q. Does this complete your direct testimony?**

4 **A.** Yes, it does.