May 9, 2023

MEMORANDUM

TO: Commissioners, Will Rosquist, Lucas Hamilton, Brad Tschida, Brooke Umsted, Grant Fink, Tim Nerstad, Alexandra Ghosh, Haley Gobert, Neil Templeton, Daniel Polkow, Laura Vachowski, Tina Shorten, Dagan Lynch

FROM: Gary Duncan

SUBJECT: NorthWestern Energy 2022 Earnings, Electricity by Source and Cost of Electricity per Mwh.

PURPOSE

To update the Commission on NorthWestern Energy's 2022 earnings, sources of electricity, and the cost of the electricity per Mwh by source.

BACKGROUND & ANALYSIS

NorthWestern Energy filed its 2022 PSC Annual Report on April 30, 2023. It contains some interesting information regarding earnings and the sources of electricity utilized by NorthWestern.

2022 Earnings

NorthWestern provided its Montana regulated earnings on the electric and gas Schedules 27. NorthWestern presents earnings as adjusted for past Commission orders and Administrative Rules.

For the electric utility for 2022, NorthWestern showed an increase in rate base from $2.765 million to $2.850 million or an increase of 3.1%. It adjusted net earnings for 2022 were $166.5 million or an increase of 1.9% over the 2021 net earnings of $163.5 million. Its returns on rate base and return on equity declined slightly from 2021, from 5.91% to 5.84% and from 7.35% to 7.20% respectively. I would note that in the pending settlement agreement in the NorthWestern general rate case, the stipulated electric return on equity (excluding the 10.0% return on equity for CU4) is 9.65% while the return on rate base (excluding the 8.25% for CU4), is 6.72%.

For the gas utility for 2022, NorthWestern showed an increase in rate base from $523.1 million to $579.9 million or an increase of 10.9%. It adjusted net earnings for 2022 were $34.5 million or a decrease of 3.8% from the 2021 net earnings of $35.9 million. Its returns on rate base and return on equity declined from 2021, from 6.86% to 5.96% and from 9.27% to 7.35% respectively. I would note that in the pending settlement agreement in the NorthWestern general rate case, the gas stipulated return on equity is 9.55% while the gas return on rate base is 6.67%.

2022 Electricity by Source and Type of Resource

NorthWestern provides Schedule 34 in its Annual Report. The schedule shows NorthWestern's 2022 sources of electricity and the Mwh provided by each source. I took the information from

the schedule and grouped each source as to whether it was a thermal, wind, hydro, or solar resource. This information is provided in Attachment A. Note that the schedule identified 6.832 million Mwh by type of resource. However, in the portion of the schedule (34a) dealing with purchased power it is not readily apparent as to which type of resources is employed by each source. Thus, 1.219 million Mwh of purchased electricity is not identified as to what type of resource generated the electricity.

2022 NorthWestern Sources of Electricity – Cost and Cost per Mwh

To arrive at 2022 generation costs per source and costs per Mwh, information was obtained from the current NorthWestern general rate case filing and from NorthWestern responses to Montana Consumer Counsel Discovery in Docket No, 2022.07.078, from the 2022 PCAAM update filing Docket No. 2022.09.083 and from the aforementioned 2022 NorthWestern PSC Annual Report.

Generation Assets – Fixed Costs

As part of its general rate case Docket 2022.07.078, NorthWestern filed revenue requirements for each of its five rate- based generating assets (Spion Kop Wind, Two Dot Wind, 30% share of Colstrip Unit 4 (CU4), the Hydro facilities, and Dave Gates Generating Station (DGGS).) The total revenue requirement for the five assets was $268.2 million. These costs are set in the general rate case and remain "fixed" until Northwestern files its next rate case. These fixed costs are recovered by NorthWestern through its supply rate which is charged on a kilowatt hour basis. The supply rate contains three parts. First the supply rate recovers the fixed generation costs which were set in the most recent rate case. Second, the supply rate recovers the variable power costs established through the Power Costs and Credit Mechanism (PCCAM). Third the supply rate has a property tax component. For example, the May 1, 2023 Residential Supply Rate for NorthWestern is $.082217 per kWh. The generation fixed cost recovery is approximately $.036360 per kWh, the variable PCCAM cost recovery is $.040993 per kWh, and the tax recovery is $.004864 per kWh. The fixed generation cost recovery is billed for every kWh consumed by a residential customer. It is completely independent of the amount of electricity actually being generated by the five rate-based generation assets. For example, if CU4 goes down and is producing zero electricity for some period, NorthWestern is still recovering the fixed costs for CU4 established in the last rate case through the supply rate.

Generation – Variable Costs

The variable costs for NorthWestern's five rate-based generation assets are established and recovered through the PCCAM. The variable costs for CU4 and DGGS are respectively, the costs of the coal and natural gas used to run the plants. The variable costs contained in the PCCAM for the Hydros, Spion Kop, and Two Dot are actually credits which come through the Production Tax Credit mechanism.

Generation – Total Costs

The total costs for each generation asset is the sum of the fixed and variable generation costs. For purposes of this memorandum the fixed generation costs for each of the five generation assets, as filed by NorthWestern, were utilized for the analysis. NorthWestern and the intervening parties

who signed the pending settlement agreement have agreed on a total generation revenue requirement of $261.5 million versus the $268.2 million originally filed. However, no breakdown for each generation asset is provided as part of the settlement agreement which means falling back on the original filing. These filed revenue requirements represent a 2021 test year with known and measurable changes for 2022 as advocated by NorthWestern.

Attachment B

This attachment shows the calculation of the total generating costs for each of the five NorthWestern rate-based generating assets. These total costs are then divided by the actual 2022 Mwh produced by each of the assets to arrive at a cost per Mwh. In addition, from information taken from the 2022 PCCAM actual costs (see Attachment C) Attachment B also calculates the cost per Mwh for Judith Basin Wind Farm, Basin Creek, for the total of all Qualifying Facilities (QFs), and the cost per Mwh for the power market purchases. The attachment also shows the Energy Imbalance Market (EIM) credits and the credit to the PCCAM for power sales. However, there is no information to assign these credits to any given source so just the totals are shown.

Attachment C

This attachment shows the PCCAM costs by category for each of the 12 months of 2022. I would point to one particular entry which is Energy Market Purchases for the month of December 2022. Note that the cost of those purchases soared to $43.3 million. December was extremely cold with a period of serious below zero temperatures.

Conclusion

This memorandum is purely for the presentation of information which I hope you find interesting and enlightening. No conclusions are drawn from this data. If you have questions or comments please let me know.

ATTACHMENT A

NorthWestern- Montana Electric Supply -PSC 2022 Annual Report - Schedule 34

Thermal Resources		2022 Mwh
Colstip Unit 4	NWE Rate Based	1,667,380
Dave Gates Generating Station	NWE Rate Based	408,222
Billings Generation Inc. (YELP)	Qualifying Facility (QF)	459,075
Colstrip Limited Energy (CELP)	Qualifying Facility (QF)	291,746
Basin Creek	Purch. Power - Long Term Serv.	78,619
Total Thermal		**2,905,042**

Wind Resources		2022 Mwh
Spion Kop	NWE Rate Based	120,949
Two Dot	NWE Rate Based	39,347
71 Ranch	Qualifying Facility (QF)	11,849
Big Timber Wind	Qualifying Facility (QF)	89,488
Cycle Horseshoe Bend	Qualifying Facility (QF)	5,778
DA Wind	Qualifying Facility (QF)	11,551
Fairfield Wind	Qualifying Facility (QF)	36,755
Gordon Butte Wind	Qualifying Facility (QF)	40,520
Judith Gap/Invenergy Energy	Purch. Power - Short Term Serv.	505,944
Musselshell Wind 1	Qualifying Facility (QF)	28,790
Musselshell Wind 2	Qualifying Facility (QF)	33,671
Oversight Resources	Qualifying Facility (QF)	10,985
South Peak Wind	Qualifying Facility (QF)	308,859
Stillwater Wind	Qualifying Facility (QF)	301,650
Total Wind		**1,546,136**

Hydro Resources		2022 Mwh
Black Eagle	NWE Rate Based	98,099
Cochrane	NWE Rate Based	220,609
Hauser	NWE Rate Based	128,167
Holter	NWE Rate Based	225,770
Madison	NWE Rate Based	65,416
Morony	NWE Rate Based	228,312
Mustic	NWE Rate Based	38,248
Rainbow	NWE Rate Based	294,013
Ryan	NWE Rate Based	397,394
Thompson Falls	NWE Rate Based	496,704
Barney Creek	Qualifying Facility (QF)	1
Boroadview East/Two Dot	Qualifying Facility (QF)	5,043
Cascade Creek	Qualifying Facility (QF)	4
Flint Creek Hydro	Qualifying Facility (QF)	8,783
Hanover Hydro	Qualifying Facility (QF)	275

Hydrodynamics Strawberry Creek	Qualifying Facility (QF)	1,220	
KEC Fighting Creek	Qualifying Facility (QF)	1,855	
Lower South Fork	Qualifying Facility (QF)	54	
Pine Creek	Qualifying Facility (QF)	1,225	
Pony Hydro	Qualifying Facility (QF)	672	
Ross Creek Hydro	Qualifying Facility (QF)	1,617	
South Dry Hydro	Qualifying Facility (QF)	365	
State of MT-DNRC/Broadwater Dam	Qualifying Facility (QF)	39,303	
Wisconsin Creek	Qualifying Facility (QF)	600	
Total Hydro		**2,253,749**	
Solar Resources		**2022 Mwh**	
Black Eagle Solar	Qualifying Facility (QF)	5,328	
Boulder	Qualifying Facility (QF)	993	
Great Divide Solar	Qualifying Facility (QF)	6,056	
Greenfield	Qualifying Facility (QF)	92,243	
Green Meadow Solar	Qualifying Facility (QF)	5,556	
Magpie Solar	Qualifying Facility (QF)	5,483	
Montana Sun, LLC	Qualifying Facility (QF)	2,612	
River Bend Solar	Qualifying Facility (QF)	3,531	
South Mills Solar 1	Qualifying Facility (QF)	5,886	
Total Solar		**127,688**	
Summary by Generation Source		**2022 Mwh**	**Percentage**
Thermal		2,905,042	42.5%
Wind		1,546,136	22.6%
Hydros		2,253,749	33.0%
Solar		127,688	1.9%
Total of Known Sources		**6,832,615**	**100.0%**
Other Purchased Power - Type of Generation Not Identified		**1,219,226**	
Total Energy		**8,051,841**	

ATTACHMENT B

NorthWestern Energy 2022 Sources of Electricty - Cost per Megawatt Hour

Rate Based Generation	2022 Mwh	Total Cost	Total Cost Per Mwh	Fixed Cost	Fixed Cost Per Mwh	Variable Cost	Variable Cost Per Mwh
CU4	1,667,380	$103,830,811	$62.27	$71,470,867	$42.86	$32,359,944	$19.41
Dave Gates	408,222	$51,049,731	$125.05	$28,539,863	$69.91	$22,509,868	$55.14
Hydros	2,192,732	$152,731,605	$69.65	$153,879,397	$70.18	($1,147,792)	($0.52)
Spion Kop	120,949	$7,751,932	$64.09	$11,324,368	$93.63	($3,572,436)	($29.54)
Two Dot	39,347	$1,632,262	$41.48	$3,024,753	$76.87	($1,392,491)	($35.39)
Total Owned Generation	4,428,630	$316,996,341	$71.58	$268,239,248	$60.57	$48,757,093	$11.01
Judith Gap	505,944	$16,822,706	$33.25			Purchased Power Costs - PCCAM	
Basin Creek	78,619	$8,987,665	$114.32			Purchased Power	$130,460,048
Qualifying Facilities	1,819,422	$75,649,824	$41.58			Capacity Costs	$18,747,627
Purchased Power	1,219,226	$157,472,601	$129.16			Transmission	$2,144,926
						Operating Reserves	$6,120,000
Total	8,051,841	$575,929,137	$71.53			Total	$157,472,601
EIM Credits		($21,711,185)					
Power Sales Credits		($62,156,861)					
Net Total	8,051,841	$492,061,091	$61.11				

Source: 2022 Mwh - NorthWestern 2022 Annual PSC Electric Report - Schedule 34 - Sources of Montana Electric Supply

Source: Fixed Costs - NorthWestern Response to PSC Letter - Andy Durkin - Dec.22, 2022 - Docket 2022.07.078

Source: Variable Costs - Actual 2022 PCCAM Costs. Jan. -Jun. 2022 Filing 2022.09.083, Jul.-Dec. 2022 NWE Response to PSC-070 2022.07.078

CU4 Variable Costs = Coal Cost, DGGS Variable Costs = Gas Costs; Hydro, Spion Kop, Two Dot Variable Costs = Production Tax Credits

Source: Judith Gap. Basin Creek, QF, Purchased Power Costs - Actual 2022 PCCAM Costs. Jan. -Jun. 2022 Filing 2022.09.083, Jul.-Dec. 2022 NWE Response to PSC-070 2022.07.078

ATTACHMENT C

Power Costs and Credits Adjustment Mechanism (PCCAM)
Costs and Credits

Costs and Credits	Actual Jan-22	Actual Feb-22	Actual Mar-22	Actual Apr-22	Actual May-22	Actual Jun-22	Actual Jul-22	Actual Aug-22	Actual Sep-22	Actual Oct-22	Actual Nov-22	Actual Dec-22	Total 2022
Energy													
Energy Market Purchases	$ 4,327,834	$ 4,671,188	$ 2,569,933	$ 6,999,318	$ 4,427,564	$ 1,397,985	$ 9,542,213	$ 17,537,515	$ 21,379,252	$ 4,494,284	$ 9,842,223	$ 43,270,739	$ 130,460,048
Energy Market Sales	$ (3,901,025)	$ (2,842,636)	$ (3,253,677)	$ (2,797,431)	$ (4,023,366)	$ (1,161,000)	$ (2,209,713)	$ (5,700,613)	$ (7,792,603)	$ (7,145,854)	$ (6,566,667)	$ (14,762,276)	$ (62,156,861)
Other Non-QF	$ 156,047	$ 156,047	$ 156,047	$ 156,047	$ 333,310	$ 626,242	$ 615,489	$ 327,901	$ 288,121	$ (77,324)	$ (374,890)	$ 159,364	$ 2,522,401
Judith Gap	$ 2,505,237	$ 2,143,483	$ 1,683,221	$ 1,084,731	$ 1,022,995	$ 793,862	$ 678,010	$ 889,554	$ 865,472	$ 1,331,589	$ 2,000,011	$ 1,824,541	$ 16,822,706
Wind Other Cost	$ 42,780	$ 11,722	$ 36,942	$ 24,012	$ 357,766	$ 31,811	$ 12,217	$ 12,217	$ 25,343	$ 11,933	$ 11,934	$ 12,694	$ 591,372
Basin Creek Variable Costs	$ 352,729	$ 326,561	$ 189,925	$ 179,760	$ 16,807	$ 24,861	$ 427,669	$ 938,203	$ 1,525,866	$ 459,071	$ 202,525	$ 1,476,467	$ 6,120,445
Basin Creek Fixed Costs	$ 502,870	$ 452,870	$ 477,870	$ 477,870	$ 477,870	$ 477,870							$ 2,867,222
Transmission Costs	$ 168,522	$ 158,095	$ 163,910	$ 168,748	$ 159,696	$ 141,107	$ 140,544	$ 163,093	$ 195,542	$ 177,770	$ 231,356	$ 276,544	$ 2,144,926
Imbalance and EIM/Costs Credits	$ 552,242	$ 174,658	$ 554,468	$ 238,705	$ (612,153)	$ 134,053	$ 940,779	$ (2,729,184)	$ (3,323,675)	$ (5,033,417)	$ (2,037,914)	$ (10,569,742)	$ (21,711,182)
YNP Contract Sales	$ (124,725)	$ (131,501)	$ (127,030)	$ (130,446)	$ (172,329)	$ (242,757)	$ (215,293)	$ (202,044)	$ (200,150)	$ (242,822)	$ (211,366)	$ (159,406)	$ (2,159,869)
Colstrip Unit 4 Total Fuel Cost	$ 3,198,896	$ 2,607,715	$ 3,154,994	$ 1,482,603	$ 1,954,018	$ 2,564,697	$ 3,451,456	$ 3,462,774	$ 2,992,224	$ 2,671,866	$ 2,403,246	$ 2,415,457	$ 32,359,944
DGGS Variable Costs	$ 1,168,877	$ 1,355,087	$ 922,828	$ 685,692	$ 1,505,851	$ 1,301,277	$ 1,304,235	$ 874,600	$ 2,098,453	$ 1,736,703	$ 3,810,979	$ 5,745,286	$ 22,509,868
Hydro Assets PTC	$ (66,242)	$ (60,033)	$ (70,438)	$ (104,087)	$ (64,508)	$ (105,255)	$ (115,951)	$ (100,041)	$ (96,831)	$ (95,833)	$ (125,079)	$ (143,495)	$ (1,147,792)
Spion Kop PTC	$ (559,397)	$ (408,758)	$ (400,411)	$ (479,120)	$ (271,847)	$ (227,291)	$ (177,419)	$ (265,539)	$ (190,500)	$ (362,634)	$ (229,520)	$ -	$ (3,572,436)
Two Dot PTC	$ (188,973)	$ (155,791)	$ (142,984)	$ (142,542)	$ (79,129)	$ (70,039)	$ (57,091)	$ (59,716)	$ (67,326)	$ (126,729)	$ (156,002)	$ (146,170)	$ (1,392,491)
													$ -
Subtotal Supply/Generating Assets	**$ 8,135,672**	**$ 8,458,709**	**$ 5,915,599**	**$ 7,843,860**	**$ 5,032,544**	**$ 5,687,424**	**$ 14,337,146**	**$ 15,148,719**	**$ 17,699,189**	**$ (2,201,397)**	**$ 8,800,835**	**$ 29,400,002**	**$ 124,258,302**
100%													
QF Tier II	$ 3,306,696	$ 2,913,868	$ 3,216,124	$ 3,218,035	$ 3,222,162	$ 2,349,930	$ 1,615,446	$ 2,587,560	$ 2,211,451	$ 3,200,927	$ 3,167,290	$ 3,351,411	$ 34,360,902
Non-Tier II QF Costs	$ 5,272,525	$ 4,336,747	$ 3,823,533	$ 3,372,126	$ 3,407,060	$ 2,814,156	$ 2,253,690	$ 3,033,271	$ 2,074,945	$ 3,192,035	$ 4,177,261	$ 3,525,575	$ 41,282,922
Subtotal QF	**$ 8,579,221**	**$ 7,250,615**	**$ 7,039,656**	**$ 6,590,161**	**$ 6,629,222**	**$ 5,164,086**	**$ 3,869,135**	**$ 5,620,831**	**$ 4,286,396**	**$ 6,392,963**	**$ 7,344,551**	**$ 6,876,986**	**$ 75,643,824**
Capacity													
Operating Reserves	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 510,000	$ 6,120,000
Existing Capacity Purchases	$ 525,000	$ 1,525,000	$ 1,525,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,950,451	$ 2,002,870	$ 2,002,870	$ 2,210,694	$ 2,002,870	$ 2,002,870	$ 18,747,627
Expected Capacity Purchases							$ -	$ -	$ -	$ -	$ -	$ -	
Subtotal Capacity	**$ 1,035,000**	**$ 2,035,000**	**$ 2,035,000**	**$ 1,510,000**	**$ 1,510,000**	**$ 1,510,000**	**$ 2,460,451**	**$ 2,512,870**	**$ 2,512,870**	**$ 2,720,694**	**$ 2,512,870**	**$ 2,512,870**	**$ 24,867,627**
Total Costs and Credits	**$ 17,749,894**	**$ 17,744,324**	**$ 14,990,255**	**$ 15,944,021**	**$ 13,171,765**	**$ 12,361,510**	**$ 20,666,732**	**$ 23,282,421**	**$ 24,498,455**	**$ 6,912,260**	**$ 18,658,256**	**$ 38,789,859**	**$ 224,769,752**

Sources: January - June 2022 actual dollars - Exhibit JMS-2 PCCAM Docket 2022.02.083
Sources: July - December 2022 actual dollars - NorthWestern Response to PSC-070 Docket 2022.08.078