

**BEFORE THE
MONTANA PUBLIC SERVICE COMMISSION**

**DIRECT TESTIMONY OF
DR. RONALD E. WHITE
IN DOCKET NO. 2022.07.078**

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME, EMPLOYER AND BUSINESS ADDRESS.

A. My name is Ronald E. White. I serve as President of Foster Associates Consultants, LLC. Foster Associates is a public utility economic consulting firm. My business address is 17595 S. Tamiami Trail, Suite 260, Fort Myers, Florida 33908. A summary of my education, relevant employment experience and other professional qualifications is provided in Exhibit REW-1.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. NorthWestern Energy ("NorthWestern" or "Company") engaged Foster Associates to conduct a 2022 depreciation study for electric, natural gas and common properties subject to the jurisdiction of the Montana Public Service Commission ("MPSC" or "Commission"). The purpose of my testimony is to sponsor and describe the 2022 depreciation study.

III. IDENTIFICATION OF EXHIBITS

Q. DO YOU SPONSOR ANY EXHIBITS IN SUPPORT OF YOUR TESTIMONY?

A. Yes. As noted above, a more detailed description of my professional qualifications is contained in Exhibit REW-1. I also sponsor Exhibit REW-2, a document titled "2022 Depreciation Rate Study." These documents were prepared by me or under my direction and supervision.

IV. SUMMARY

**Q. PLEASE SUMMARIZE THE DEPRECIATION RATES AND ACCRUALS
RECOMMENDED FOR NORTHWESTERN IN THE 2022 STUDY.**

1 A. Table 1 below provides a summary of the changes in annual rates and accru-
 2 als resulting from an application of the service life and net salvage parame-
 3 ters recommended for Montana electric operations.

Function	Accrual Rates			2022 Annualized Accrual		
	Current	Proposed	Difference	Current	Proposed	Difference
A	B	C	D=C-B	E	F	G=F-E
<i>Steam Production</i>	3.25%	3.80%	0.55%	\$ 3,825,038	\$ 4,467,536	\$ 642,498
<i>Hydraulic Production</i>	1.79%	1.87%	0.09%	10,123,648	10,608,929	485,281
<i>Other Production</i>	3.61%	3.74%	0.14%	10,382,327	10,773,269	390,942
<i>Transmission</i>	2.21%	2.69%	0.48%	22,510,250	27,404,949	4,894,699
<i>Distribution</i>	2.92%	3.14%	0.22%	50,637,093	54,377,286	3,740,193
<i>General</i>	4.75%	4.83%	0.07%	3,641,847	3,698,253	56,406
TOTAL	2.66%	2.93%	0.27%	\$ 101,120,203	\$ 111,330,222	\$10,210,019

Table 1. Electric Operations

4 The composite accrual rate recommended for electric operations is 2.93
 5 percent. The current equivalent rate is 2.66 percent. The recommended
 6 change in the composite rate is an increase of 0.27 percentage points.

7 A continued application of current rates would provide annualized depre-
 8 ciation expense of \$101,120,203 compared with an annualized expense of
 9 \$111,330,222 using the proposed rates. The resulting 2022 expense increase
 10 is \$10,210,019.

11 Table 2 below contains a summary of annual rates and accruals for Mon-
 12 tana natural gas operations.

Function	Accrual Rates			2022 Annualized Accrual		
	Current	Proposed	Difference	Current	Proposed	Difference
A	B	C	D=C-B	E	F	G=F-E
Gas Utility						
<i>Production Plant</i>	2.99%	2.91%	-0.08%	\$ 210,794	\$ 205,259	\$ (5,535)
<i>Underground Storage</i>	1.68%	1.94%	0.26%	866,822	1,001,025	134,203
<i>Transmission</i>	1.76%	1.84%	0.08%	6,306,816	6,586,488	279,672
<i>Distribution</i>	2.67%	3.00%	0.33%	11,042,013	12,427,513	1,385,500
<i>General</i>	4.81%	4.78%	-0.03%	658,439	654,655	(3,784)
Total Gas Utility	2.26%	2.47%	0.21%	\$19,084,884	\$20,874,940	\$1,790,056
<i>Canadian Montana</i>	1.35%	1.80%	0.45%	38,776	51,692	12,916
<i>Havre Pipeline</i>	2.68%	2.88%	0.20%	409,896	441,276	31,380
<i>Townsend Propane</i>	2.79%	3.12%	0.33%	40,704	45,460	4,756
Total	2.27%	2.48%	0.21%	\$19,574,260	\$21,413,368	\$1,839,108

Table 2. Gas Operations

13 Primary account depreciation rates equivalent to a composite rate of 2.48
 14 percent are recommended for natural gas operations. Depreciation expense
 15 is currently accrued at rates that composite to 2.27 percent. The recommend-

1 ed change in the composite depreciation rate is an increase of 0.21 percent-
 2 age points.

3 A continued application of current rates would provide annualized depre-
 4 ciation expense of \$19,574,260 compared with an annualized expense of
 5 \$21,413,368 using the proposed rates. The resulting 2022 expense increase
 6 is \$1,839,108.

7 Table 3 below provides a summary of the changes in annual rates and ac-
 8 cruals resulting from an application of the parameters recommended for Mon-
 9 tana common plant and equipment used for both electric and natural gas
 10 operations.

Function	Accrual Rates			2022 Annualized Accrual		
	Current	Proposed	Difference	Current	Proposed	Difference
A	B	C	D=C-B	E	F	G=F-E
<i>Depreciable</i>	2.32%	2.74%	0.42%	\$ 2,493,728	\$ 2,944,907	\$ 451,179
<i>Amortizable</i>	8.78%	8.78%	0.00%	1,807,770	1,807,770	0
Total	3.37%	3.71%	0.34%	\$ 4,301,498	\$ 4,752,677	\$451,179

Table 3. Common Operations

11 The composite accrual rate recommended for Common plant is 3.71 per-
 12 cent. The current equivalent rate is 3.37 percent. The resulting change in the
 13 composite rate is an increase of 0.34 percentage points.

14 A continued application of current rates would provide annualized depre-
 15 ciation expense of \$4,301,498 compared with an annualized expense of
 16 \$4,752,677 using the proposed rates. The resulting 2022 expense increase is
 17 \$451,179.

18 **V. 2022 DEPRECIATION RATE STUDY**

19 **Q. PLEASE DESCRIBE THE SOURCE OF DEPRECIATION RATES CUR-**
 20 **RENTLY USED BY NORTHWESTERN.**

21 A. Depreciation rates currently used by NorthWestern for electric and common
 22 properties serving Montana customers were adopted pursuant to a Stipulation
 23 and Settlement Agreement (dated May 10, 2019) in Docket No. 2018.02.012
 24 and Final Order No. 7604u dated December 20, 2019. Depreciation rates cur-
 25 rently used for natural gas properties were adopted pursuant to a Stipulation

1 and Settlement Agreement (dated May 5, 2017) in Docket No. 2016.09.068
2 and Final Order No. 7522g dated July 20, 2017. Depreciation rates proposed
3 for electric and common utility plant accounts were developed in a 2018 de-
4preciation study and rates proposed for natural gas plant accounts were de-
5veloped in a 2016 study.

6 **Q. PLEASE DESCRIBE THE PRINCIPAL ACTIVITIES UNDERTAKEN BY**
7 **FOSTER ASSOCIATES IN CONDUCTING A DEPRECIATION STUDY.**

8 A. The principal activities typically include:

- 9 1. Collection of plant accounting data;
- 10 2. Estimation of service-life statistics;
- 11 3. Estimation of net salvage rates;
- 12 4. Analysis of depreciation reserves; and
- 13 5. Formulation of accrual rates.

14 **Q. DID NORTHWESTERN PROVIDE FOSTER ASSOCIATES PLANT AC-**
15 **COUNTING DATA FOR CONDUCTING THE 2022 STUDY?**

16 A. Yes. The current study for electric, gas and common operations was obtained
17 by appending plant and net salvage transactions for activity years 2018–2021
18 and age distribution of surviving plant at December 31, 2021 to the database
19 used in conducting the 2018 study. The accuracy and completeness of the
20 appended data was confirmed by Foster Associates for activity years 2018
21 through 2021 by comparing beginning plant balances, additions, retirements,
22 transfers and adjustments, and derived ending plant balances to the official
23 plant records of the Company. Annual plant activity prior to 2021 was recon-
24ciled in the 2018 and prior depreciation rate studies.

25 The database for hydraulic production facilities is limited to activity years
26 2014–2021, with all vintages prior to 2000 collapsed into a 1999 vintage. The
27 limited database for hydraulic production facilities is the result of a sale of 11
28 plants owned by The Montana Power Company to Pennsylvania Power &
29 Light Co. (“PPL”) in 1999 and then purchased by NorthWestern in 2014 from
30 PPL.

1 **Q. HOW WERE SERVICE LIVES ESTIMATED IN THE 2022 STUDY?**

2 A. As discussed in Exhibit REW-2, all full mortality plant accounts were ana-
3 lyzed using a technique in which first, second- and third-degree orthogonal
4 polynomials were fitted to a set of observed retirement ratios. The resulting
5 function was expressed as a survivorship function and numerically integrated
6 to obtain an estimate of the population projection life. The observed propor-
7 tions surviving were then fitted by a weighted least-squares procedure to the
8 lowa-curve family using the estimated projection lives to obtain a mathemati-
9 cal description or classification of the dispersion characteristics of the data.
10 Service life indications derived from the statistical analyses were blended with
11 expectations about the future to obtain an appropriate projection life curve for
12 each plant category.

13 **Q. HOW WERE NET SALVAGE RATES ESTIMATED IN THE 2022 STUDY?**

14 A. A five-year moving average analysis of the ratio of realized salvage and cost
15 of removal to the associated retirements was used in the study to a) estimate
16 realized net salvage rates; b) detect the emergence of historical trends; and
17 c) obtain a basis for estimating future net salvage rates. Cost of removal and
18 salvage opinions obtained from NorthWestern operating personnel were
19 blended with judgment and historical net salvage indications in developing es-
20 timates of the future.

21 **Q. HOW ARE DEPRECIATION RESERVES ANALYZED IN CONDUCTING A**
22 **DEPRECIATION STUDY?**

23 A. A comprehensive depreciation study will include an analysis of the adequacy
24 of recorded depreciation reserves. The purpose of such an analysis is to
25 compare current recorded reserve balances with the balances required to
26 achieve the goals and objectives of depreciation accounting if the amount and
27 timing of future retirements and net salvage are realized as predicted. The dif-
28 ference between required (or theoretical) reserves and recorded reserves
29 provides a measurement of the expected excess or shortfall that will remain in

1 the depreciation reserve if corrective action is not taken to extinguish the re-
2 serve imbalances.

3 Although reserve records are typically maintained by various account clas-
4 sifications, the sum of all reserves is the most important indicator of the ade-
5 quacy (or inadequacy) of recorded depreciation reserves. Differences
6 between theoretical and recorded reserves will arise as a normal occurrence
7 when service lives, dispersion patterns and net salvage estimates are adjust-
8 ed in the course of depreciation reviews. Differences will also arise due to
9 plant accounting activity such as transfers and adjustments requiring an iden-
10 tification of reserves at a different level from that maintained in the accounting
11 system. It is appropriate, therefore, and consistent with group depreciation
12 theory, to periodically redistribute or rebalance recorded reserves among pri-
13 mary accounts based on the most recent estimates of retirement dispersion
14 and net salvage rates. A redistribution of recorded reserves will provide an ini-
15 tial reserve balance for each primary account consistent with the estimates of
16 retirement dispersion selected to describe mortality characteristics of the ac-
17 counts and establish a baseline against which future comparisons can be
18 made.

19 **Q. HOW DO COMPUTED RESERVES COMPARE WITH RECORDED RE-**
20 **SERVES FOR NORTHWESTERN AT DECEMBER 31, 2021?**

21 A. Exhibit REW-2, Statement C (page 36) provides a comparison of computed
22 and recorded reserves for NorthWestern Electric Operations on December
23 31, 2021. The recorded reserve was \$1,450,871,060 or 38.2 percent of the
24 depreciable plant investment. The corresponding computed reserve is
25 \$1,448,670,261 or 38.1 percent of the depreciable plant investment. A propor-
26 tionate amount of the measured reserve imbalance of \$2,200,799 will be
27 amortized over the composite weighted-average remaining life of each rate
28 category using the remaining life depreciation rates proposed in this review.

29 Statement C (page 92) provides a comparison of the computed and rec-
30 orded reserves for NorthWestern natural gas operations on December 31,

1 2021. The recorded reserve was \$335,959,879 or 38.9 percent of the depre-
2 ciable plant investment. The corresponding computed reserve is
3 \$340,648,882 or 39.5 percent of the depreciable plant investment. A propor-
4 tionate amount of the measured reserve imbalance of \$4,689,003 will be
5 amortized over the composite weighted-average remaining life of each rate
6 category using the remaining life depreciation rates proposed in this review.

7 Statement C (page 112) provides a comparison of the computed and rec-
8 orded reserves for NorthWestern common plant serving both Electric and
9 Natural Gas Operations on December 31, 2021. The recorded reserve was
10 \$30,745,965 or 24.0 percent of the depreciable plant investment. The corre-
11 sponding computed reserve is \$28,722,488 or 22.4 percent of the depreciable
12 plant investment. A proportionate amount of the measured reserve imbalance
13 of \$2,023,447 will be amortized over the composite weighted-average re-
14 maining life of each rate category using the remaining life depreciation rates
15 proposed in this review.

16 **Q. IS FOSTER ASSOCIATES RECOMMENDING A REBALANCING OF DE-**
17 **PRECIATION RESERVES FOR NORTHWESTERN?**

18 A. Yes. Offsetting reserve imbalances attributable to both the passage of time
19 and parameter adjustments recommended in the 2022 study should be rea-
20 ligned among primary accounts to reduce offsetting imbalances and increase
21 depreciation rate stability.

22 A redistribution of recorded reserves for depreciable plant was achieved by
23 multiplying the calculated reserve for each primary account within a function
24 (or plant location) by the ratio of the function (or location) total recorded re-
25 serve to the function (or location) total calculated reserve. The sum of redis-
26 tributed reserves within a function (or location) is, therefore, equal to the
27 function (or location) total recorded depreciation reserve before the redistribu-
28 tion. Depreciation reserves for amortizable categories were set equal to the
29 respective theoretical reserves. Residual imbalances were distributed to the
30 remaining depreciable accounts within the appropriate function.

Q. PLEASE EXPLAIN HOW DEPRECIATION ACCRUAL RATES ARE FORMULATED IN A DEPRECIATION STUDY.

A. Parameters estimated from service life and net salvage studies are integrated into an appropriate formulation of an accrual rate based upon a selected depreciation system. Three elements (*i.e.*, method, procedure and technique) are needed to describe a depreciation system. The sub-elements most widely used in constructing a depreciation system are shown in Figure 1 below.

Methods	Procedures	Techniques
Retirement	Total Company	Whole-Life
Compound-Interest	Broad Group	Remaining-Life
Sinking-Fund	Vintage Group	Probable-Life
Straight-Line	Equal-Life Group	
Declining Balance	Unit Summation	
Sum-of-Years'-Digits	Item	
Expensing		
Unit-of-Production		
Net Revenue		

Figure 1. Elements of a Depreciation System

The above elements (*i.e.*, methods, procedures and techniques) can be visualized as three dimensions of a cube in which each face describes a variety of sub-elements that can be combined to form a system. A depreciation system is therefore formed by selecting a sub-element from each face such that the system contains one method, one procedure and one technique.

Q. PLEASE DESCRIBE THE DEPRECIATION SYSTEM CURRENTLY APPROVED BY THE MPSC FOR NORTHWESTERN.

A. With the exception of asset categories for which amortization accounting has been approved, NorthWestern is currently using an approved depreciation system composed of the straight-line method, vintage group procedure, and remaining-life technique.¹ Amortization accounting is used for plant categories in which the unit cost of plant items is small in relation to the number of units classified in the account. Plant is retired (*i.e.*, credited to plant and charged to the reserve) as each vintage achieves an age equal to the amorti-

¹ Amortization accounting is proposed for Electric Accounts 360.00 (Meters), Account 370.30 (AMI Meters) and Gas Accounts 367.20 and 376.20 (Mains – Cathodic Protection).

1 zation period. Any realized net salvage for amortizable accounts is netted
2 against current-year vintage additions.

3 **Q. IS FOSTER ASSOCIATES RECOMMENDING A CHANGE IN THE DEPRE-**
4 **CIATION SYSTEM FOR NORTHWESTERN?**

5 A. No. Depreciation rates recommended in the 2022 study were developed us-
6 ing the currently approved system composed of the straight-line method, vin-
7 tage group procedure and remaining-life technique for all depreciable plant
8 categories. This formulation of the accrual rate is equivalent to a straight-line
9 method, vintage group procedure and whole-life technique with amortization
10 of reserve imbalances over the estimated remaining life of each rate category.
11 It is the opinion of Foster Associates that this system will remain appropriate
12 for NorthWestern, provided depreciation studies are conducted periodically
13 and parameters are routinely adjusted to reflect changing operating condi-
14 tions.

15 It is also the opinion of Foster Associates that amortization accounting cur-
16 rently approved or proposed for selected asset categories is consistent with
17 the goals and objectives of depreciation accounting and remains appropriate
18 for these plant categories.

19 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

20 A. Yes, it does.

21 **VERIFICATION**

22 This Pre-filed Direct Testimony of Ronald E. White is true and accurate to the
23 best of my knowledge, information and belief.

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25 
26

27 Ronald E. White, Ph.D.
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