

1 Montana Public Service Commission  
2 Docket No. 2022.07.078  
3 Electric and Natural Gas General Rate Review  
4  
5  
6

7 **PRE-FILED DIRECT TESTIMONY - ALLOCATED COST OF SERVICE  
AND RATE DESIGN**

8 **OF CYNTHIA S. FANG**

9 **ON BEHALF OF NORTHWESTERN ENERGY**

10  
11 **TABLE OF CONTENTS**

12	<b><u>Description</u></b>	<b><u>Starting Page No.</u></b>
13	Witness Information	2
14	Purpose and Summary of Testimony	2
15	Ratemaking Process	3
16	Allocated Cost of Service	14
17	Rate Design	20
18	Fixed Charge Proposal	22
19	Impacts of ACOS and Rate Design Proposals	29
20	Proposed Simplification of Lighting Tariff	33
21		
22	<b><u>Exhibits</u></b>	
23	Moderation Proposal to Allocated Cost of Service	
24	Electric	Exhibit CSF-2.1
25	Natural Gas	Exhibit CSF-2.2

1 Updated Schedule No. ELDS-1 Exhibit CSF-2.3  
2 Mapping of Lighting Customers  
to New Lighting Cost Categories Exhibit CSF-2.4  
3  
4

5 **Witness Information**

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

7 **A.** My name is Cynthia (Cyndee) S. Fang. I am NorthWestern Energy's  
8 ("NorthWestern") Director of Regulatory Affairs.  
9

10 **Q. Are you the same Cynthia S. Fang who submitted pre-filed direct**  
11 **testimony on NorthWestern's priority regulatory mechanisms?**

12 **A.** Yes, I am.  
13

14 **Purpose and Summary of Testimony**

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

16 **A.** The purpose of this testimony is to: (1) discuss NorthWestern's  
17 ratemaking process, (2) present NorthWestern's moderation proposals for  
18 allocated cost of service ("ACOS") for electric and natural gas customers,  
19 and (3) discuss NorthWestern's moderation proposals for rate design for  
20 electric and natural gas service customers.  
21

1 **Q. Please summarize your testimony.**

2 **A.** My testimony:

- 3 • Describes NorthWestern’s ratemaking methodology and process used;
- 4 and
- 5 • Presents NorthWestern’s moderation proposals for allocating costs of
- 6 service to its electric and natural gas service customers and rate
- 7 design to reach a balance between the move towards more cost-based
- 8 pricing with impacts to customers.

9

10

### **Ratemaking Process**

11 **Q. What are base rates?**

12 **A.** Electric base rates are designed to collect the operational costs for  
13 NorthWestern to provide service to its customers as reflected in the  
14 electric base revenue requirements presented by the Pre-filed Direct  
15 Testimony of Andrew D. Durkin. The same design applies to natural gas  
16 base rates. For electric, this includes Transmission and Distribution  
17 (collectively “Delivery Services”) and the fixed cost of owned Generation  
18 (“Generation Services”) revenue requirements, which together comprise  
19 the electric base revenue requirements. For natural gas, base revenue  
20 requirements include Transmission, Distribution, and Storage, as well as  
21 Generation Services in the form of fixed costs of Natural Gas Production.  
22 These base revenue requirements, presented by Mr. Durkin, provide the

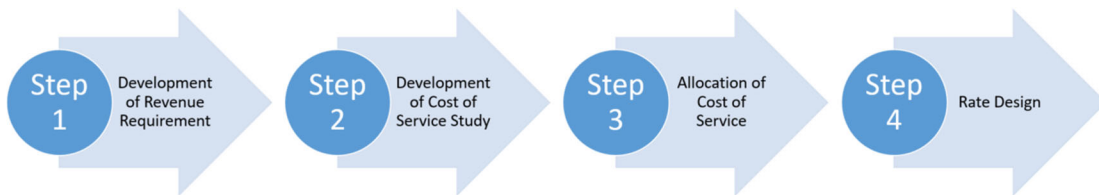
1 basis for NorthWestern’s allocated cost of service, customer class  
2 revenue moderation, and rate design proposals.

3

4 **Q. Please describe how the base revenue requirements, allocated cost  
5 of service, and base rate design proposals in this filing are related.**

6 **A.** At a high level, there are four specific ratemaking steps that are  
7 incorporated in this filing, all of which are regular components of general  
8 rate filings. These steps are the same whether applied to electric or  
9 natural gas services.

**Figure 1: Ratemaking Process**



10 Step 1: Development of Base Revenue Requirement – This step  
11 determines the test year base revenue requirement based on operating  
12 expenses, taxes, depreciation expense, and return on rate base. As  
13 described in detail by other NorthWestern witnesses, actual 2021 test year  
14 information is normalized and/or adjusted for known and measurable  
15 changes occurring through the 12 months ending December 31, 2022.  
16 This base revenue requirement represents the plant in-service and the

1 operational costs NorthWestern incurred to provide customers energy  
2 services in 2021 with adjustments for known and measurable 2022 costs.

3

4 Step 2: Development of Cost of Service Studies – The cost of service  
5 studies provide the foundation to assign cost responsibility to customer  
6 groups and to functionalize costs of service for rate design purposes  
7 discussed further below. The Montana Public Service Commission’s  
8 (“Commission”) administrative rules require both an Embedded Cost of  
9 Service (“ECOS”) and a Marginal Cost of Service (“MCOS”) study (see  
10 ARM 38.5.176). For electric, NorthWestern presents both cost of service  
11 study methodologies in this filing – MCOS and ECOS studies. For natural  
12 gas, NorthWestern presents only ECOS.<sup>1</sup> ECOS studies focus on the  
13 assignment of historic accounting costs associated with investments that  
14 are currently serving customers, while MCOS studies provide a more  
15 forward look by reflecting the incremental costs of serving additional load  
16 or customers. Consistent with prior practice, NorthWestern will be using  
17 the ECOS as the basis for its proposal to allocate cost of service to its  
18 customers. In this case, both cost studies, MCOS and ECOS for electric  
19 and ECOS for natural gas, and the resulting guidance for allocation are

---

<sup>1</sup> NorthWestern requested a waiver of the administrative rule requiring the preparation and filing of an MCOS for natural gas. The Commission granted this waiver request. See Notice of Commission Action, Docket No. 2022.01.010 (April 15, 2022).

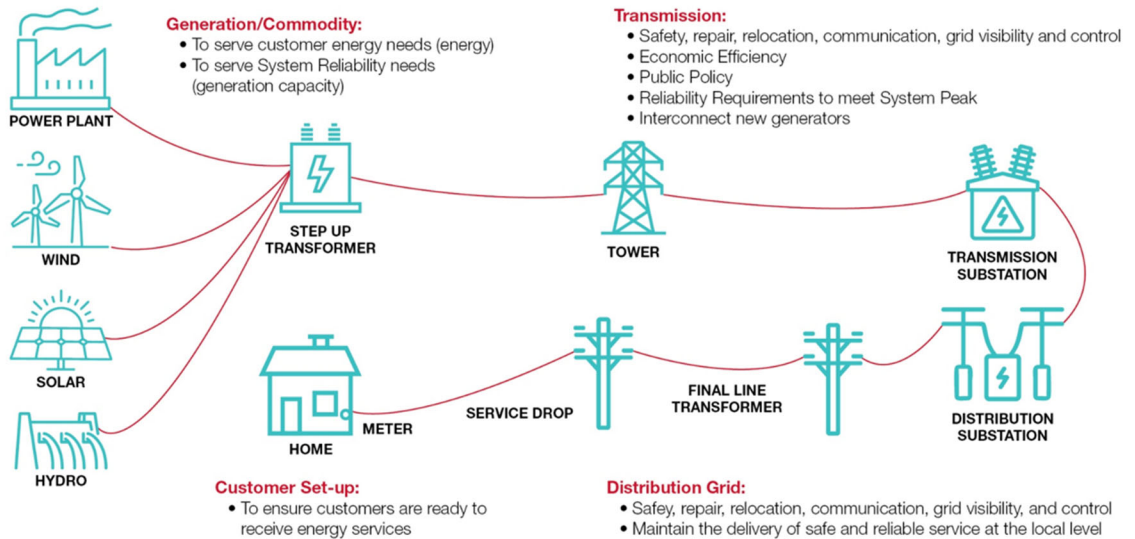
1 presented and discussed in the Pre-filed Direct Testimony of Paul M.  
2 Normand.

3  
4 Step 3: Allocation of Cost of Service – This step utilizes the cost of service  
5 studies to provide the cost basis for the allocation of costs of providing  
6 utility services that make up the base revenue requirement to the various  
7 customer classes (e.g., residential and non-residential) based on their use  
8 of the utility system.

9  
10 Step 4: Rate Design – This final step takes the class assigned revenues  
11 and establishes the individual rates that are ultimately used to bill  
12 customers. Rates are designed to collect the moderated revenues from  
13 customers on a class-by-class basis. Well-designed rates will perform two  
14 functions: (1) recover authorized costs, and (2) provide price incentives to  
15 incent economically efficient behavior. Cost-based rates provide  
16 customers with price signals that reflect the costs of providing service.  
17 Figure 2 below provides an illustration of the various components involved  
18 in providing electric service that need to be considered when developing  
19 cost-based rates.

20

Figure 2: Utility System



1 At a high level, rates consist of three types of charges to reflect the  
2 different cost drivers behind utility services:

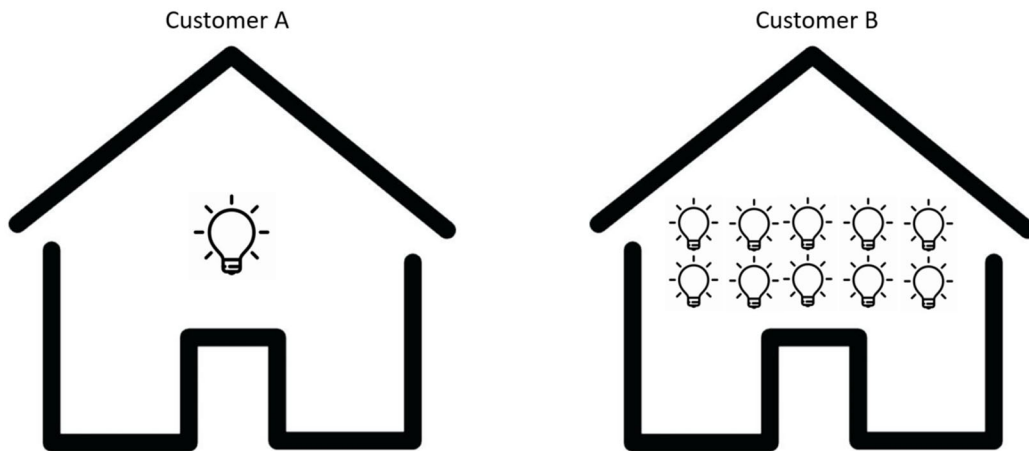
3 • **Energy, or volumetric, Rates (\$/kilowatt-hour (“kWh”)):** A cost-  
4 based energy, or volumetric, charge would capture the costs limited  
5 to the costs of providing service related to energy usage,  
6 specifically kWh usage. Volumetric rates that only recover costs  
7 related to energy usage are rare. Energy rates often collect costs  
8 well in excess of the costs related strictly to energy usage. These  
9 costs are typically flow-through costs, such as costs of fuel for  
10 generation resources and power purchase agreements for energy.  
11 For some customer classes, such as the residential customer class,  
12 energy rates are used to recover almost *all* of the costs to serve  
13 residential customers, not just supply costs. The base revenue

1 requirements addressed in this filing reflect the fixed costs of  
2 providing utility services to our customers and therefore are not  
3 dependent upon a customer's kWh usage.

4

- 5 • **Demand Charges (\$/kW):** A demand charge is for costs of the  
6 energy infrastructure used – distribution, transmission, and  
7 capacity-related power generation – to deliver energy service and  
8 to meet a customer's peak energy demand. These costs generally  
9 reflect a majority of the costs of energy service.

**Figure 3: Peak Demand versus Energy Quantity**



10 Figure 3 above presents an example of two customers who use the  
11 same quantity of energy in one day with different peak energy  
12 demands and different use of the energy infrastructure. Customer A  
13 has one 10-kW lightbulb and Customer B has ten 10-kW lightbulbs.  
14 Customer A turned on one lightbulb for 10 hours (1 lightbulb x 10



1 kW x 10 hours = 100 kWh). Customer B turned on all ten lightbulbs  
2 for 1 hour (10 lightbulbs x 10 kW x 1 hour = 100 kWh). Both used  
3 the same quantity of energy that day, but the energy infrastructure  
4 used to ensure Customer B had reliable service when using 100  
5 kW in an hour is greater than, and costs more, than the energy  
6 infrastructure required to ensure Customer A had reliable service  
7 when using 10 kW an hour for ten hours.

- 8
- 9 • **Monthly Service, or fixed, Customer Charge (\$/month):** Cost-  
10 based fixed charges generally cover the costs of providing services  
11 to our customers that are independent of energy service or capacity  
12 needs of our customers. These customer-related costs are often  
13 thought of as the costs of getting a customer connected and ready  
14 to receive service from the utility, such as the meter, and also  
15 include ongoing costs of customer service, which include costs  
16 such as the cost of billing, customer care, and other service visits.  
17 In addition, a fixed charge can play a significant role in supporting  
18 cost-based rate design overall by recovering the remainder of the  
19 utility's cost of service that was not assigned to cost-based energy  
20 and/or demand charges.

21

22 The same general structure applies to rate design for natural gas with  
23 volumetric rates on a \$/therm basis and demand charges on a \$/Maximum

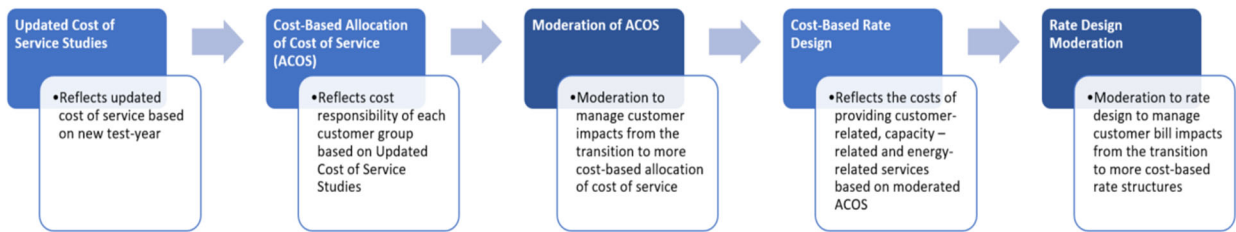
1 Daily Delivery Quantity (“MDDQ”) basis – fixed charge (\$/month),  
2 volumetric rate (\$/therms), and demand charge (\$/MDDQ).

3

4 While the cost of service studies provide a cost basis for the allocation of  
5 costs to different customer groups, changing cost-based revenue  
6 allocations is significant for customer groups whose cost of service is  
7 subsidized by other customer groups. Those customer groups will have  
8 significant bill impacts because of the change, which is why the transition  
9 should be incremental. Recognizing this concern, an additional step is  
10 needed to moderate these impacts and to achieve a balance between the  
11 move to more cost-based revenue allocations and the need to mitigate the  
12 rate impacts on customer groups. The same applies to rate design – an  
13 additional step to moderate customer impacts is needed. Figure 4 below  
14 presents the allocated cost of service and rate design process with  
15 additional steps to moderate customer impacts. The need to balance the  
16 transition to more cost-based pricing with the consideration of customer  
17 impacts is discussed further below.

18

**Figure 4: Additional Steps Needed in ACOS and Rate Design Process**



1 **Q. Please provide a brief overview of NorthWestern’s Electric System**  
2 **allocated cost of service and rate design proposals in this filing.**

3 **A.** NorthWestern proposes to update both the allocation of cost of service  
4 among its customer groups and rate design to be more cost-based  
5 compared to current rates. Mr. Normand presents the cost-based  
6 allocated cost of service and rate design proposals. When rates are cost-  
7 based, then customers will be paying for their full cost of service and,  
8 theoretically, there will be no shift of costs to other customers. When rates  
9 are not cost-based, customers are not paying their full cost of service –  
10 some will pay more, some will pay less – resulting in a shift in costs  
11 among customers. This shift in costs can occur across customer groups  
12 when the allocated cost of service is not cost-based. It can also occur  
13 across customers within the same customer group when rate design is not  
14 cost-based.

15  
16 NorthWestern recognizes that to move its customers from its current  
17 allocated cost of service and rate design to a fully cost-based allocation of

1 cost of service and/or fully cost-based rate design in one step would result  
2 in the potential for steep bill increases for some of its customers. For  
3 instance, with the allocated cost of service, residential customers do not  
4 pay their full allocation of costs to provide energy services resulting in non-  
5 residential customers helping to subsidize the residential class. In  
6 recognition of the potential bill increases customers may experience,  
7 NorthWestern proposes the transition to more cost-based allocations and  
8 rate design would occur over time with limited movement towards this goal  
9 as part of this rate review. NorthWestern will continue to monitor and seek  
10 to advance more cost-based allocated cost of service and rate design in  
11 future rate reviews.

12  
13 **Q. What are NorthWestern’s primary objectives for the Allocated Cost of**  
14 **Service and Rate Design portion of this filing?**

15 **A.** NorthWestern has developed the following Rate Design Principles to help  
16 guide the allocation of cost of service and rate design for its customers:

- 17 • **Accurate Price Signals:** Allocated cost of service and rate design  
18 should begin with a foundation based on the cost to provide energy  
19 services to customers. When customers pay their cost of service,  
20 there are no cost shifts, resulting in greater fairness and equity across  
21 customer groups.
- 22 • **Transparent Incentives:** Rarely are allocated cost of service or rate  
23 designs fully cost-based. This means that allocated cost of service or

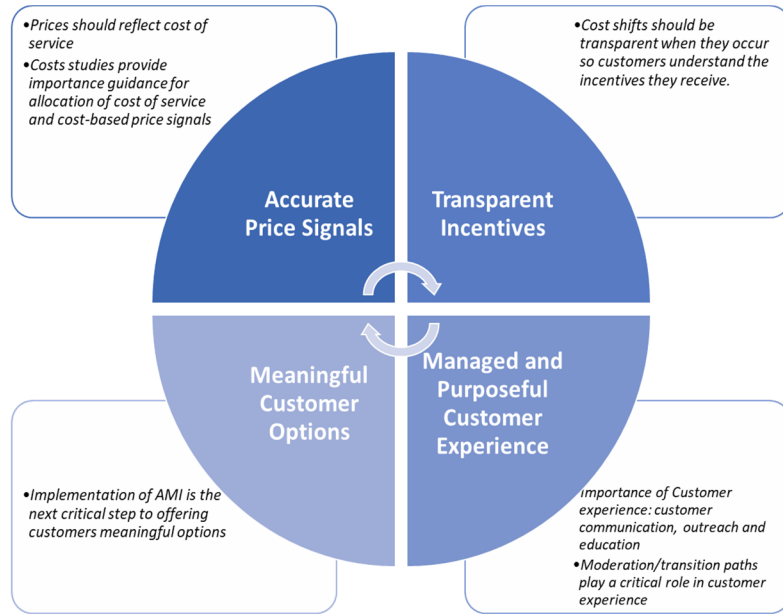
1 rate designs include incentives. State and regulatory policies can at  
2 times encourage incentives that will result in a departure from cost-  
3 based rates or allocation. When incentives are transparent, then the  
4 cost shifts they create are clear to all and allow for better ability to  
5 manage cost shifts over time.

6 • **Meaningful Options:** With deployment of Advanced Metering  
7 Infrastructure (“AMI”) devices still in progress in Montana, at this time,  
8 NorthWestern does not propose to introduce any AMI rate options for  
9 its customers. The development of rate options should be thoughtful to  
10 ensure that they provide incremental value to customers without  
11 creating cost shifts.

12 • **Managed and Purposeful Customer Experience:** NorthWestern  
13 seeks to move towards a more cost-based allocation of cost of service  
14 and rate design. This transition will take time in order to manage the  
15 potential for steep bill increases for some customer groups, and will  
16 require a focus on the customer experience.

17  
18 Figure 5 below provides a graphical representation of the Rate Design  
19 Principles discussed above.  
20

**Figure 5: NorthWestern Energy’s Rate Design Principles**



1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12

**Allocated Cost of Service**

**Q. Why and how generally were the cost studies included in this filing developed?**

**A.** Mr. Normand developed the ECOS and MCOS studies for electric and the ECOS study for natural gas for purposes of determining class revenue requirement responsibilities and the costs of the various components of the energy services NorthWestern provides. His testimony presents the methodologies he used, the analyses he conducted, and the associated results. Consistent with prior practice, the ECOS studies provide the basis for the allocation of cost of electric and natural gas services to NorthWestern’s customers.

1 **Q. Did NorthWestern use the allocated cost of service results as the**  
 2 **basis for the class revenue moderation proposals contained in this**  
 3 **filing?**

4 **A.** Yes. Table 1 below compares the current effective electric allocation of  
 5 cost of service with the updated cost-based allocation of electric cost of  
 6 service presented by Mr. Normand. This reflects the allocation of total  
 7 electric base revenue requirements, which include costs of Delivery  
 8 Services (T&D) and Generation Services. Choice customers do not pay  
 9 for generation or supply services from NorthWestern<sup>2</sup> and do not receive  
 10 an allocation of fixed generation costs.

**Table 1: Updated Allocated Cost of Service - Electric**

	<b>Current (\$M)</b>	<b>Current (%)</b>	<b>Updated Cost- Based (\$M)</b>	<b>Updated Cost- Based (%)</b>	<b>% Change from Current</b>
<i>RESIDENTIAL</i>	\$190.588	43.8%	\$247.926	47.0%	30.1%
<i>SECONDARY GS-1</i>	\$191.464	44.0%	\$219.436	41.6%	14.6%
<i>PRIMARY GS-1</i>	\$18.692	4.3%	\$18.892	3.6%	1.1%
<i>SUBSTATION GS-2</i>	\$11.508	2.6%	\$15.022	2.8%	30.5%
<i>TRANSMISSION GS-2</i>	\$5.757	1.3%	\$5.021	1.0%	-12.8%
<i>IRRIGATION</i>	\$6.777	1.6%	\$8.427	1.6%	24.3%
<i>LIGHTING</i>	\$10.562	2.4%	\$12.466	2.4%	18.0%
<b>TOTAL</b>	<b>\$435.348</b>	<b>100.0%</b>	<b>\$527.190</b>	<b>100.0%</b>	<b>21.1%</b>

11  
 12 At the system level, when looking at all electric service customers, cost of  
 13 service increased by over 21%. Updating the allocation of these costs

---

<sup>2</sup> Mont. Code Ann. § 69-8-201(1)

1 based on cost to serve across the customer groups would result in a wide  
2 range of impacts across the customer groups, from an over 30% increase  
3 to Residential and Substation GS-2 customers, just over 10% more than  
4 the average increase of 21.1%, and an over 12% decrease to  
5 Transmission GS-2 customers. This represents a range of impacts of  
6 over 40% across the different customer groups. NorthWestern has  
7 concerns about the wide range of impacts across its electric customers  
8 and proposes to moderate the impacts of the updated allocated cost of  
9 service to more equitably share in the increase in cost of service since the  
10 last electric rate review across all customer groups by narrowing the range  
11 of impacts.

12  
13 Specifically, NorthWestern proposes a cap in increases at the customer  
14 class level of no greater than 24%<sup>3</sup> and a floor of no less than 15%.

15 NorthWestern's moderation proposals are applied at the total base  
16 revenue requirement level. Table 2 below presents NorthWestern's  
17 proposal to moderate the allocated cost of electric service to customer  
18 groups with further details provided in Exhibit CSF-2.1.

19

---

<sup>3</sup> The cost-based allocation for the Irrigation customer group is 24.3%. This is 0.3% above the moderation cap proposed by NorthWestern. Given the small difference between the cost-based allocation for Irrigation and the proposed cap, NorthWestern did not apply the cap to Irrigation.



**Table 2: Moderation to Allocated Cost of Service - Electric**

	<b>Updated Cost- Based (\$M)</b>	<b>% Change from Current</b>	<b>Moderated Change from Current (%)</b>	<b>Moderated ACOS (\$M)</b>	<b>Moderated ACOS (%)</b>
<i>RESIDENTIAL</i>	\$247.926	30.1%	24.0%	\$236.329	44.8%
<i>SECONDARY GS-1</i>	\$219.436	14.6%	17.9%	\$225.795	42.8%
<i>PRIMARY GS-1</i>	\$18.892	1.1%	20.5%	\$22.532	4.3%
<i>SUBSTATION GS-2</i>	\$15.022	30.5%	24.0%	\$14.270	2.7%
<i>TRANSMISSION GS-2</i>	\$5.021	-12.8%	20.5%	\$6.939	1.3%
<i>IRRIGATION</i>	\$8.427	24.3%	24.3%	\$8.427	1.6%
<i>LIGHTING</i>	\$12.466	18.0%	22.1%	\$12.899	2.4%
<b>TOTAL</b>	<b>\$527.190</b>	<b>21.1%</b>	<b>21.1%</b>	<b>\$527.190</b>	<b>100.0%</b>

1 **Q. What about natural gas? Did NorthWestern use the allocated cost of**  
2 **service results as the basis for the class revenue moderation**  
3 **proposals contained in this filing?**

4 **A.** Yes. NorthWestern used the same approach in addressing the allocation  
5 of cost of service for natural gas customers. Table 3 below compares the  
6 current effective natural gas allocation of cost of service with the updated  
7 cost-based allocation of natural gas cost of service presented by Mr.  
8 Normand. This reflects the allocation of total natural gas base revenue  
9 requirements.

10

**Table 3: Updated Allocated Cost of Service – Natural Gas**

	<b>Current (\$M)</b>	<b>Current (%)</b>	<b>Updated Cost- Based (\$M)</b>	<b>Updated Cost- Based (%)</b>	<b>% Change from Current</b>
<i>RESIDENTIAL</i>	\$64.724	53.6%	\$77.705	55.1%	20.1%
<i>GENERAL SERVICE</i>	\$35.312	29.3%	\$36.614	26.0%	3.7%
<i>UTILITIES</i>	\$0.385	0.3%	\$0.583	0.4%	51.6%
<i>DBU TRANSPORTATION</i>	\$1.865	1.5%	\$3.107	2.2%	66.6%
<i>TBU TRANSPORTATION</i>	\$15.590	12.9%	\$20.013	14.2%	28.4%
<i>STORAGE</i>	\$2.824	2.3%	\$2.922	2.1%	3.5%
<b>TOTAL</b>	<b>\$120.698</b>	<b>100.0%</b>	<b>\$140.943</b>	<b>100.0%</b>	<b>16.8%</b>

1           At the system level, when looking at all natural gas service customers,  
2           cost of service increased by over 16%. Updating the allocation of these  
3           costs based on cost to serve across the customer groups would result in  
4           an even wider range of impacts across the customer groups, from an over  
5           60% increase to DBU Transportation and just over 3% increase to  
6           General Service and Storage customers. This represents a range of  
7           impacts of over 60% across the different customer groups.

8  
9           As with our electric service customers, NorthWestern has concerns about  
10          the wide range of impacts across its natural gas customers and proposes  
11          to moderate the impacts of the updated allocated cost of service to more  
12          equitably share in the increase in cost of service since the last natural gas  
13          rate review across all customer groups by narrowing the range of impacts.  
14          Specifically, NorthWestern proposes a cap in increases at the customer  
15          class level of no greater than 19% for natural gas customers. This results  
16          in a narrow range of impacts to natural gas customers of approximately

1 7%, from 11.8% to 19%. Consistent with electric, NorthWestern’s  
 2 moderation proposals are applied at the total base revenue requirement  
 3 level.<sup>4</sup> Table 4 below presents NorthWestern’s proposal to moderate the  
 4 allocated cost of natural gas service to customer groups with further  
 5 details provided in Exhibit CSF-2.2.

**Table 4: Moderation to Allocated Cost of Service – Natural Gas**

	<b>Updated Cost- Based (\$M)</b>	<b>% Change from Current</b>	<b>Moderated Change from Current (%)</b>	<b>Moderated ACOS (\$M)</b>	<b>Moderated ACOS (%)</b>
<i>RESIDENTIAL</i>	\$77.705	20.1%	54.6%	\$77.021	19.0%
<i>GENERAL SERVICE</i>	\$36.614	3.7%	28.1%	\$39.538	12.0%
<i>UTILITIES</i>	\$0.583	51.6%	0.3%	\$0.458	19.0%
<i>DBU TRANSPORTATION</i>	\$3.107	66.6%	1.6%	\$2.219	19.0%
<i>TBU TRANSPORTATION</i>	\$20.013	28.4%	13.2%	\$18.552	19.0%
<i>STORAGE</i>	\$2.922	3.5%	2.2%	\$3.156	11.8%
<b>TOTAL</b>	<b>\$140.943</b>	<b>16.8%</b>	<b>100.0%</b>	<b>\$140.943</b>	<b>16.8%</b>

6 **Q. Does the primary objective for the Allocated Cost of Service to be**  
 7 **cost-based differ between electric and natural gas services?**

8 **A.** As described above, the purpose of Allocated Cost of Service is no  
 9 different for natural gas service than it is for electric service. The same  
 10 principles that guided NorthWestern’s proposals for the moderation of  
 11 allocation of electric service to electric customers also guides

---

<sup>4</sup> The step-down related to natural gas production revenues was applied to revenue requirements prior to moderation. The application of moderation at the total base revenue requirement level results in adjustments to production revenues used for rate design purposes.

1 NorthWestern’s proposals for the moderation of allocation of natural gas  
2 service to natural gas customers.

3

4

### **Rate Design**

5 **Q. Did NorthWestern use the allocated cost of service results as the**  
6 **basis for base rate design proposals contained in this filing?**

7 **A.** As discussed above, the ECOS studies for both electric and natural gas  
8 presented by Mr. Normand provide the foundation for the allocated cost of  
9 service that determines the cost responsibility for the different customer  
10 groups. Once the allocation of the class-level base revenue requirements  
11 are determined, the ECOS studies then provide the foundation for  
12 NorthWestern’s rate design proposals in this filing and are discussed in  
13 more detail below.

14

15 **Q. How were electric base rates developed in this filing?**

16 **A.** The cost studies presented by Mr. Normand provide the foundational  
17 reference for a cost-based rate design. A cost-based rate design would  
18 include the charges described above – energy/volumetric rates, demand  
19 charges, and monthly service/customer charges. The current rates and  
20 their rate design are an important reference point when considering rate  
21 design proposals for the recovery of class allocated costs of electric  
22 service.

23

1 **Q. What are NorthWestern’s rate design proposals for its electric**  
2 **customers?**

3 **A.** NorthWestern has very limited changes to rate design for its electric  
4 service customers.

5 ○ **Increase to Monthly Service Charge** for all non-residential  
6 customers, with the exclusion of non-demand customers on  
7 Secondary GS-1, to move towards more cost-based pricing of  
8 electric services. An increase in the Monthly Service Charge would  
9 result in a compensating decrease in all other charges, all other  
10 things held equal, to ensure the rates developed are revenue  
11 neutral.

12 ○ **Redesign lighting rates** to better align with cost of lighting  
13 services with the implementation of NorthWestern’s LED Lighting  
14 Project (“LED Project”) and better align with its Rate Design  
15 Principles.

16 Both proposals are discussed further below.

17  
18 **Q. How were natural gas base rates developed in this filing?**

19 **A.** The development of natural gas base rates follows the same process as  
20 the development of electric base rates. It begins with the cost-based rate  
21 design developed and presented by Mr. Normand. Next, NorthWestern  
22 reviews the difference between the structure of current rates and cost-  
23 based rates to determine its proposed rate design changes.

1 **Q. What are NorthWestern’s rate design proposals for its natural gas**  
2 **customers?**

3 **A.** Consistent with its proposal for electric customers, NorthWestern has very  
4 limited changes to rate design proposals for its natural gas service  
5 customers and proposes only to increase the Monthly Service Charge to  
6 all non-residential customers to move towards more cost-based pricing of  
7 natural gas service. An increase in the Monthly Service Charge would  
8 result in a compensating decrease in all other charges, all other things  
9 held equal, to ensure the rates developed are revenue neutral.

10

11 **Q. Does the purpose of rate design as discussed above for electric**  
12 **service differ when setting natural gas service rates?**

13 **A.** As described above, the purpose of rate design is no different for natural  
14 gas service than it is for electric service. The same principles that guided  
15 NorthWestern’s proposals for the rate design of electric service to electric  
16 customers guided NorthWestern’s proposals for the rate design of natural  
17 gas service to natural gas customers.

18

19 **Fixed Charge Proposal**

20 **Q. Please describe NorthWestern’s proposal to increase monthly**  
21 **service charges for electric service customers.**

22 **A.** Table 5 presents a comparison of current and cost-based fixed charges.  
23 Currently, all of NorthWestern’s electric monthly service charges are

1 below cost-based levels. Any increase to monthly service charges would  
 2 result in a compensating decrease to energy and demand charges to  
 3 ensure the rate design remains revenue neutral, that is, the rates  
 4 developed will continue to recover the same allocated costs of service for  
 5 the customer class. A rate structure that has a higher monthly service, or  
 6 fixed, charge can reduce month-to-month bill volatility that may result from  
 7 changes in usage and/or demand from month to month.

**Table 5:**  
**Current and Cost-Based Monthly Service Charges – Electric**

	Current	Cost- Based	Change (\$)	Change (%)
<i>RESIDENTIAL</i>	\$4.20	\$9.94	\$5.74	136.7%
<i>GS-1: SECONDARY</i>				
<i>Non-Demand</i>	\$6.00	\$10.43-10.51 <sup>5</sup>	\$4.43-4.51	73.8-75.1%
<i>Demand</i>	\$8.70	\$49.28-\$57.18 <sup>6</sup>	\$40.58-48.48	466.4-557.2%
<i>GS-1: PRIMARY</i>				
<i>Non-Demand</i>	\$8.80	\$14.57	\$5.77	65.6%
<i>Demand</i>	\$27.70	\$269.85- \$508.76 <sup>7</sup>	\$242.15- 481.06	874.2- 1,736.7%
<i>GS-2 SUBSTATION</i>	\$225.00	\$1,613.74	\$1,388.74	617.2%
<i>GS-2 TRANSMISSION</i>	\$1,380.00	\$2,083.87	\$703.87	51.0%
<i>IRRIGATION</i>				
<i>Non-Demand</i>	\$45.20	\$58.72	\$13.52	29.9%
<i>Demand</i>	\$106.50	\$228.35	\$121.85	114.4%

---

<sup>5</sup> This reflects the difference between choice and non-choice customers with \$10.43 for GS1 Sec Non Dmd Choice and \$10.51 for GS1 Sec Non Dmd Non Choice.

<sup>6</sup> This reflects the difference between choice and non-choice customers with \$49.28 for GS1 Sec Dmd Non Choice and \$57.18 for GS1 Sec Dmd Choice.

<sup>7</sup> This reflects the difference between choice and non-choice customers with \$269.85 for GS1 Pri Dmd Non Choice and \$508.76 for GS1 Pri Dmd Choice.

1 NorthWestern proposes limited rate design changes in this filing. To  
2 continue to make forward progress towards cost-based pricing for our  
3 customers, NorthWestern proposes to increase the monthly service  
4 charge for its non-residential electric service customers, excluding electric  
5 service customers on Schedule GS-1, Secondary Non-Demand.

6 NorthWestern proposes the following:

- 7 • For Residential and GS-1 Secondary Non-Demand customers,  
8 NorthWestern proposes no change to their current monthly service  
9 charge.
- 10 • For customer groups with a fixed charge that is currently more than  
11 50% of cost-based levels, NorthWestern proposes to increase the  
12 monthly service charge to cost-based levels. This includes the  
13 following customer groups:
  - 14 ○ GS-1 Primary Non-Demand
  - 15 ○ GS-2 Transmission
  - 16 ○ Irrigation Non-Demand
- 17 • For customer groups with a monthly service charge that is currently  
18 below 50% of cost-based, NorthWestern proposes to double the  
19 monthly service charge. For these customer groups, even after the  
20 increase, the proposed monthly service charge will continue to  
21 remain below cost-based levels. These customer groups include:
  - 22 ○ GS-1 Primary Demand
  - 23 ○ GS-2 Substation



- 1                   ○ Irrigation Non-Demand
- 2           NorthWestern’s proposed changes to electric monthly service charges are
- 3           presented below in Table 6.

**Table 6:**  
**NorthWestern’s Proposed Monthly Service Charges - Electric**

	Current	Cost-Based	Proposed	Change from Current (\$)	Change from Current (%)
<i>RESIDENTIAL</i>	\$4.20	\$9.94	\$4.20	\$0.00	0.0%
<i>GS-1: SECONDARY</i>					
<i>Non-Demand</i>	\$6.00	\$10.43-10.51 <sup>8</sup>	\$6.00	\$0.00	0.0%
<i>Demand</i>	\$8.70	\$49.28-\$57.18 <sup>9</sup>	\$17.40	\$8.70	100.0%
<i>GS-1: PRIMARY</i>					
<i>Non-Demand</i>	\$8.80	\$14.57	\$14.57	\$5.77	65.6%
<i>Demand</i>	\$27.70	\$269.85-\$508.76 <sup>10</sup>	\$55.40	\$27.70	100.0%
<i>GS-2 SUBSTATION</i>	\$225.00	\$1,613.74	\$450.00	\$225.00	100.0%
<i>GS-2 TRANSMISSION</i>	\$1,380.00	\$2,083.87	\$2,083.87	\$703.87	51.0%
<i>IRRIGATION</i>					
<i>Non-Demand</i>	\$45.20	\$58.72	\$58.72	\$13.52	29.9%
<i>Demand</i>	\$106.50	\$228.35	\$213.00	\$106.50	100.0%

---

<sup>8</sup> This reflects the difference between choice and non-choice customers with \$10.43 for GS1 Sec Non Dmd Choice and \$10.51 for GS1 Sec Non Dmd Non Choice.

<sup>9</sup> This reflects the difference between choice and non-choice customers with \$49.28 for GS1 Sec Dmd Non Choice and \$57.18 for GS1 Sec Dmd Choice.

<sup>10</sup> This reflects the difference between choice and non-choice customers with \$269.85 for GS1 Pri Dmd Non Choice and \$508.76 for GS1 Pri Dmd Choice.

1 **Q. Please describe NorthWestern’s proposal to increase monthly**  
 2 **service charges for natural gas service customers.**

3 **A.** Table 7 below presents a comparison of current and cost-based fixed  
 4 charges. Currently, all of NorthWestern’s natural gas monthly service  
 5 changes are below cost-based levels. As noted above, any increase to  
 6 monthly service charges would result in a compensating decrease to all  
 7 other charges to ensure the rate design remains revenue neutral, that is,  
 8 the rates developed will continue to recover the same allocated costs of  
 9 service for the customer class. As with electric, a rate structure that has a  
 10 higher monthly service, or fixed, charge can reduce month-to-month bill  
 11 volatility that may result from changes in usage and/or demand from  
 12 month to month.

**Table 7:  
 Current and Cost-Based Monthly Service Charges – Natural Gas**

	Current	Cost- Based	Change (\$)	Change (%)
<i>RESIDENTIAL</i>	\$6.50	\$13.44	\$6.94	106.8%
<i>GENERAL SERVICE</i>				
<i>0 to 300</i>	\$16.35	\$23.12	\$6.77	41.4%
<i>301 to 1,000</i>	\$21.55	\$30.47	\$8.92	41.4%
<i>1,001 to 2,000</i>	\$34.70	\$49.07	\$14.37	41.4%
<i>2,001 to 5,000</i>	\$58.30	\$82.44	\$24.14	41.4%
<i>5,001 to 10,000</i>	\$71.60	\$101.25	\$29.65	41.4%
<i>10,001 to 30,000</i>	\$113.20	\$160.07	\$46.87	41.4%
<i>&gt; 30,000</i>	\$137.60	\$194.57	\$56.97	41.4%
<i>UTILITIES</i>				
<i>10,001 to 30,000</i>	\$146.35	\$263.16	\$116.81	79.8%
<i>&gt; 30,000</i>	\$377.40	\$678.63	\$301.23	79.8%
<i>DBU TRANSPORTATION</i>				
<i>&lt; 5,000</i>	\$123.90	\$181.57	\$57.67	46.5%
<i>5,000 to 10,000</i>	\$141.60	\$207.51	\$65.91	46.5%
<i>10,001 to 30,000</i>	\$194.65	\$285.26	\$90.61	46.5%

> 30,000	\$226.00	\$331.20	\$105.20	46.5%
<i>TBU TRANSPORTATION</i>				
5,001 to 10,000	\$123.50	\$368.69	\$245.19	198.5%
10,001 to 30,000	\$177.45	\$529.75	\$352.30	198.5%
> 30,000	\$393.75	\$1,175.49	\$781.74	198.5%

1 As noted above, NorthWestern proposes limited rate design changes in  
2 this filing. NorthWestern makes a similar proposal for its natural gas  
3 customers to continue to make forward progress towards cost-based  
4 pricing for our customers. Specifically, NorthWestern proposes to  
5 increase the monthly service charge for its non-residential natural gas  
6 service customers.

- 7 • For Residential customers, NorthWestern proposes no change to  
8 their current monthly service charge.
- 9 • For customer groups with a fixed charge that is currently more than  
10 50% of cost-based levels, NorthWestern proposes to increase the  
11 monthly service charge to cost-based levels. This includes the  
12 following customer groups:
  - 13 ○ General Service
  - 14 ○ Utilities
  - 15 ○ DBU Firm Transportation
- 16 • For customer groups with a monthly service charge that is currently  
17 below 50% of cost-based, NorthWestern proposes to double the  
18 monthly service charge. For these customer groups, even after the  
19 increase, the proposed monthly service charge will continue to

1 remain below cost-based levels. This applies to TBU Firm  
 2 Transportation customers.  
 3 NorthWestern's proposed changes to natural gas monthly service charges  
 4 are presented below in Table 8.

**Table 8:**  
**NorthWestern's Proposed Monthly Service Charges – Natural Gas**

	Current	Cost-Based	Proposed	Change from Current (\$)	Change from Current (%)
<i>RESIDENTIAL</i>	\$6.50	\$13.44	\$6.50	\$0.00	0.0%
<i>GENERAL SERVICE</i>					
<i>0 to 300</i>	\$16.35	\$23.12	\$23.12	\$6.77	41.4%
<i>301 to 1,000</i>	\$21.55	\$30.47	\$30.47	\$8.92	41.4%
<i>1,001 to 2,000</i>	\$34.70	\$49.07	\$49.07	\$14.37	41.4%
<i>2,001 to 5,000</i>	\$58.30	\$82.44	\$82.44	\$24.14	41.4%
<i>5,001 to 10,000</i>	\$71.60	\$101.25	\$101.25	\$29.65	41.4%
<i>10,001 to 30,000</i>	\$113.20	\$160.07	\$160.07	\$46.87	41.4%
<i>&gt; 30,000</i>	\$137.60	\$194.57	\$194.57	\$56.97	41.4%
<i>UTILITIES</i>					
<i>10,001 to 30,000</i>	\$146.35	\$263.16	\$263.16	\$116.81	79.8%
<i>&gt; 30,000</i>	\$377.40	\$678.63	\$678.63	\$301.23	79.8%
<i>DBU TRANSPORTATION</i>					
<i>&lt; 5,000</i>	\$123.90	\$181.57	\$181.57	\$57.67	46.5%
<i>5,000 to 10,000</i>	\$141.60	\$207.51	\$207.51	\$65.91	46.5%
<i>10,001 to 30,000</i>	\$194.65	\$285.26	\$285.26	\$90.61	46.5%
<i>&gt; 30,000</i>	\$226.00	\$331.20	\$331.20	\$105.20	46.5%
<i>TBU TRANSPORTATION</i>					
<i>5,001 to 10,000</i>	\$123.50	\$368.69	\$247.00	\$123.50	100.0%
<i>10,001 to 30,000</i>	\$177.45	\$529.75	\$354.90	\$177.45	100.0%
<i>&gt; 30,000</i>	\$393.75	\$1,175.49	\$787.50	\$393.75	100.0%

5 **Q. Do you believe these increases are reasonable and appropriate?**

6 **A.** Yes. As discussed above, the current fixed charges are below cost-based  
 7 levels resulting in the recovery of fixed/customer costs through

1 volumetric/energy rates. This results in low-usage customers paying less  
2 than their actual cost of service with higher-usage customers paying more  
3 than their cost of service. For impacted customers, this rate design  
4 change, all other things held equal, will result in lower-use customers  
5 seeing their bills increase as a result of paying a greater share of their cost  
6 of energy services and higher-use customers will see their bills decrease  
7 as a result of paying less of the cost of service of other customers.

8

9 **Impacts of ACOS and Rate Design Proposals**

10 **Q. What are the bill impacts to the typical residential customers from**  
11 **NorthWestern’s proposals in this rate review?**

12 **A.** Montana administrative rules and regulations require that NorthWestern’s  
13 rate review include a broad range of updates that will have an impact on  
14 customer bills. The following is a summary of these impacts:

15 • **Revenue Requirement Impact:** The revenue requirement impact  
16 consists of three components:

17 ○ **Base Revenue Requirements Update:** Base revenue  
18 requirements that provide the basis for the development of  
19 base rates are updated to recover costs incurred by  
20 NorthWestern to serve customers during the historic test  
21 year of 2021 with known and measurable adjustments  
22 through the end of 2022.

23

- 1                   ○ **PCCAM Base Costs Update**
- 2                   ○ **Property Tax Base Update**
- 3                   ● **Allocated Cost of Service:** An update to the allocated cost of
- 4                   service does not impact the total revenue requirements. It can
- 5                   impact the bills customers will pay as a result of changes in the
- 6                   allocation of total cost of service among different customer groups.
- 7                   ● **Rate Design:** An update to rate design does not impact the total
- 8                   revenue requirements. It can impact the bills customers will pay
- 9                   due to changes in the manner (i.e., energy charge, demand
- 10                  charge, and/or monthly service fee) by which NorthWestern seeks
- 11                  to recover cost of service from customers.

12 Further details regarding customer bill impacts are discussed by Mr.  
13 Durkin.

14

15 **Q. Did NorthWestern consider customer bill impacts in the context of**  
16 **developing its proposals?**

17 **A.** Yes. NorthWestern’s proposals seek to balance the move towards more  
18 cost-based allocation of cost of service and rate design with the potential  
19 customer impacts. NorthWestern has proposed moderation rather than  
20 purely cost-based allocation of cost of service and cost-based rate design  
21 for both electric and natural gas customers. Both moderation proposals  
22 are discussed in more detail above.

23

1 **Q. What COVID-19 pandemic impacts is NorthWestern assuming affect**  
2 **normalized loads for purposes of bill impacts?**

3 **A.** NorthWestern’s Load Research Department developed test period loads  
4 adjusted for known and measurable changes. It also calculated an impact  
5 to test period loads that is an estimated result of additional residential load  
6 due to the COVID-19 pandemic realized by NorthWestern during 2021.  
7 The Load Research Department then applied one-half of that 2021  
8 COVID-19 pandemic impact on residential load to the normalized loads to  
9 assume a fundamental shift in residential usage.

10

11 **Q. How does NorthWestern justify adjusting normalized loads for an**  
12 **estimated impact as a result of the COVID-19 pandemic?**

13 **A.** It is apparent that the pandemic has altered the way many people work.  
14 Many customers in NorthWestern’s service territory now work remotely for  
15 employers outside of our region. Other customers work in a hybrid  
16 environment in which they spend time working between traditional  
17 commercial office space and working from home.

18

19 Setting NorthWestern’s normalized loads based upon historical load  
20 patterns realized over the past ten years alone would ignore the likely fact  
21 that residential loads are inherently higher than that ten-year average  
22 because many NorthWestern customers are now working from home at a  
23 much higher rate than prior to the COVID-19 pandemic. Setting

1 normalized loads artificially low would have an effect of increased  
2 volumetric rates. This would likely lead to NorthWestern over-earning its  
3 revenue requirement.

4  
5 In an effort to better achieve its revenue requirement, NorthWestern  
6 proposes to adjust normalized loads for the residential class based upon  
7 one-half of the realized COVID-19 pandemic impact on residential loads  
8 during 2021. During much of 2021, throughout the country, Montana  
9 being no exception, many businesses continued to respond to the COVID-  
10 19 pandemic by either allowing, or in many cases requiring, employees to  
11 work from home, when that was a viable option for those businesses.  
12 Toward the end of 2021 and further into 2022, the pandemic began to  
13 subside and many businesses began to welcome employees back to  
14 traditional commercial offices. Not being able to know the entire load  
15 impact, NorthWestern proposes to adjust residential normalized loads by  
16 one-half of the calculated COVID-19 pandemic impact realized during  
17 2021.

18

19 **Q. Why is adjusting loads by one-half reasonable?**

20 **A.** Uncertainty continues around the expected persistence of COVID-19  
21 impacts on customer loads going forward. While we are seeing some  
22 return to pre-COVID-19 load patterns, it remains a question about what  
23 customer loads will look like going forward. For instance, while people



1 have returned to work, many have returned to hybrid or remote-work  
2 situations. Given this uncertainty of the long-term implications to customer  
3 loads, NorthWestern determined it is reasonable to incorporate 50% of the  
4 historic COVID-19 impact to loads in the test year.

5  
6 **Q. Is NorthWestern adjusting customer classes other than the  
7 residential class as a result of the COVID-19 pandemic?**

8 **A.** No. While NorthWestern did realize reduced revenues from commercial  
9 and industrial customer classes during the pandemic, NorthWestern  
10 removed those impacts from the analysis it did to determine normalized  
11 loads for those classes. Going forward, NorthWestern does not anticipate  
12 a measurable impact on loads as a result of fundamental changes caused  
13 by the COVID-19 pandemic to any customer classes other than the  
14 residential class.

15

16 **Proposed Simplification of Lighting Tariff**

17 **Q. What proposals does NorthWestern have for its Lighting customer  
18 group?**

19 **A.** NorthWestern's LED Project will transform service for its Lighting  
20 customers. NorthWestern proposes to simplify its lighting tariff, which will  
21 result in rates that better align with the new cost of providing lighting  
22 services with the implementation of the LED Project.

23

1 **Q. Please describe NorthWestern’s proposed changes to its lighting**  
2 **tariffs.**

3 **A.** NorthWestern’s current lighting tariff is overly complex and creates  
4 customer confusion. Currently, lighting services are priced according to  
5 the following:

- 6 • 29 cost categories based on costs at the time of installation. The  
7 cost categories cover a broad range from as low as \$200 to \$5,999  
8 with the date of installation often being a significant driver for the  
9 cost category assignment. For instance, customers with the same  
10 lighting configuration could receive different prices for the same  
11 service if the timing of installation differs, with older installations  
12 being lower cost than more recent installations, given changes in  
13 costs such as inflation.
- 14 • Up to three additional charges. In addition to the ownership charge  
15 and the energy charge, lighting customers may also pay: (1) an  
16 operations charge (\$/unit/month), (2) a maintenance charge  
17 (\$/unit/month), and (3) a billing charge (\$/unit/month).

18  
19 NorthWestern proposes the following changes:

- 20 • The current “ownership charge” is renamed to be a “facilities  
21 charge” to eliminate customer confusion;
- 22 • The operations charge and the maintenance charge are rolled  
23 into the new facilities charge for NorthWestern-owned lights;

- 1           • The prior billing charge for customer-owned lights will become
- 2           the Service Charge; and
- 3           • Current 29 Cost Ranges based on installation costs will be
- 4           replaced with 14 newly-defined Classes based on fixture type,
- 5           overhead (“OH”) versus Underground (“UG”), and pole type.

6           NorthWestern plans to remove the O&M service offering going forward.  
7           These changes are reflected in Exhibit CSF-2.3, Schedule No. ELDS-1.

8

9           **Q. Why is NorthWestern proposing changes to Schedule No. ELDS-1?**

10          **A.** As noted above, the current pricing structure is overly complex and  
11          confusing. In addition, with the LED Project, all lighting customers are  
12          receiving new lighting installations, which resulted in a significant change  
13          in the costs of providing lighting services to our customers that no longer  
14          aligns with the current lighting tariff structure. Under the existing tariff  
15          structure, the LED conversion would have resulted in NorthWestern  
16          lighting customers moving into new cost categories. Since the LED  
17          Project involved the replacement of old lighting installations, the likely  
18          result would have been that most customers would have moved to higher  
19          cost categories under the current tariff structure. To provide customers  
20          with a better transition, NorthWestern chose to keep customers in their  
21          legacy cost category pending further re-examination in this rate review.

22

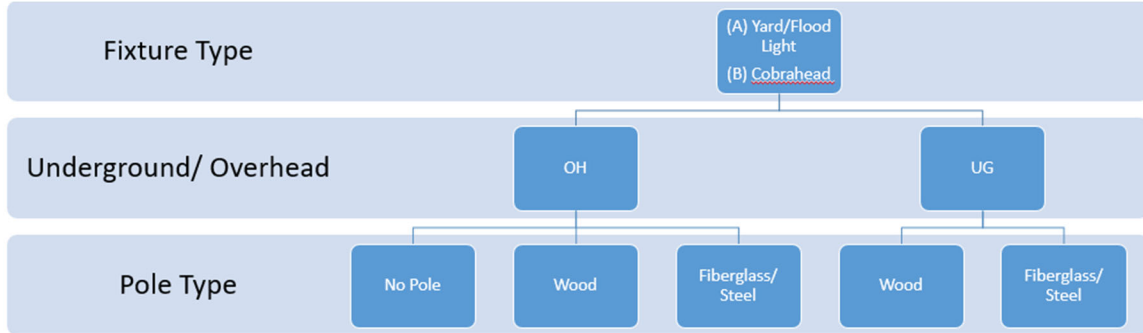
1 With the LED conversion, the timing of installation was no longer a  
2 dominant factor for difference in cost of service. As illustrated in Figure 6  
3 below, the following factors were identified as the major cost drivers  
4 among the LED service options:

- 5 • **Fixture Type** - These include: (A) Yard/Flood Lights, (B)  
6 Cobrahead, (C) Lawn Light/Lexingtons, (D) Acorn/Contemporaries,  
7 (E) Shoebox, and (F) Pendants.
- 8 • **Underground versus Overhead service**
- 9 • **Pole Type** - These include: (1) No Pole/Existing Pole, (2) Wood,  
10 and (3) Fiberglass/Steel.

11 For some fixture types Lawn Light/Lexingtons (C), Acorn/Contemporaries  
12 (D), Shoebox (E), and Pendants (F), only Underground and  
13 Fiberglass/Steel poles apply.

14

**Figure 6: Cost Drivers for Lighting Service Options**



1 **Q. For existing customers who pay for NorthWestern-owned**  
2 **streetlights, please explain how these customers were assigned their**  
3 **new “facilities charge” class.**

4 **A.** NorthWestern recognizes the potential for steep bill increases if lighting  
5 customers were to be moved from their legacy cost category to the new  
6 lighting cost categories given the LED Project. NorthWestern recognizes  
7 the need to consider potential bill impacts associated with this transition  
8 and proposes that lighting customers that have already been converted as  
9 part of the LED project be mapped to the new service category based on  
10 relative costs in order to manage potential bill impacts from the transition –  
11 that is, if an existing customer’s legacy cost category was a low-cost cost  
12 category, then their new cost category would remain a low-cost cost  
13 category. Greater detail regarding NorthWestern’s proposal for the  
14 mapping of LED lighting customers is presented in Exhibit CSF-2.4.

15

- 1 **Q.** Does this conclude your testimony?
- 2 **A.** Yes, it does.

**VERIFICATION**

This Pre-filed Direct Testimony of Cynthia S. Fang is true and accurate to the best of my knowledge, information, and belief.

/s/ Cynthia S. Fang  
Cynthia S. Fang