Before the South Dakota Public Utilities Commission
State of South Dakota

In the Matter of the Application of
NorthWestern Corporation d/b/a NorthWestern Energy
For Authority to Increase Rates for Electric Utility Service in
South Dakota

Docket No. EL23-_____

Exhibit _____

# CLASS COST OF SERVICE
# RATE DESIGN

Prefiled Direct Testimony and Schedules of

PAUL M.NORMAND

June 15, 2023

## TABLE OF CONTENTS



## LIST OF EXHIBITS

## I. INTRODUCTION AND QUALIFICATIONS AND EXPERIENCE

**Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

**A.** My name is Paul M. Normand. I am a Principal with the firm of Management Applications Consulting, Inc. ("MAC"), 1103 Rocky Drive, Suite 201, Reading, PA 19609.

**Q. ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**

**A.** I am appearing and providing testimony on behalf of NorthWestern Corporation d/b/a NorthWestern Energy ("NorthWestern" or "Company"). NorthWestern provides electricity and natural gas service to consumers in the northwestern United States and serves approximately 753,600 electric and natural gas customers in South Dakota, Montana and Nebraska. As of December 31, 2022, NorthWestern served 64,678 electric distribution customers in South Dakota.

**Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE SOUTH DAKOTA PUBLIC UTILITIES COMMSSION ("COMMISSION")?**

**A.** No, this is my first appearance before the Commission.

**Q. Please describe MAC.**

A. MAC is a management consulting firm that provides rate and regulatory assistance including lead lag studies, allocated cost of service studies, and depreciation services for electric, gas and water utilities.

**Q. Please summarize your education and business experience.**

A. This information is contained in Exhibit PMN-1.

**Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

**A.** My Direct Testimony primarily addresses NorthWestern's class cost of service study ("CCOS")Lighting service costs, and a Standby service rate. In addition, I provide supporting information for the rate design proposals sponsored by Company witness Mr. Jeffrey Decker.

**Q. WHAT STATEMENTS AND SCHEDULES IN NORTHWESTERN'S RATE FILING DO YOU SPONSOR?**

**A.** I sponsor Statements N and O. Statement N, pages 1 through 36 shows the test year cost of service allocated to the customer classes for which the increased rates are proposed. Statement N provides both a study per books class cost of service study and a class cost of service study adjusted using the Company's claimed revenue requirement in this docket. Statement O, pages 1 through 9 compares the results of the allocated cost of service study by rate class with the revenues under the Company's claimed rate of return and revenues under proposed rates. I also sponsor Schedules N-1 through N-9 which shows the cost of service functionalization, classification, and allocation details.

**Q. WHAT EXHIBITS DO YOU SPONSOR?**

**A.** I sponsor Exhibits__(PMN-1) through (PMN-5) as set forth in the table of contents above and attached to this testimony.

**Q. WERE THE STATEMENTS, SCHEDULES, AND EXHIBITS YOU ARE SPONSORING PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION?**

**A.** Yes, they were.

**Q. ARE THE TESTIMONY AND THE CONTENTS OF THE STATEMENTS, SCHEDULES, AND EXHIBITS YOU SPONSOR TRUE AND ACCURATE TO THE BEST OF YOUR KNOWLEDGE AND BELIEF?**

**A.** Yes, they are.

**Q. HOW IS YOUR DIRECT TESTIMONY ORGANIZED?**

**A**. My Direct Testimony consists of five sections. Section I provides my qualifications and experience and describes the purpose and organization of my Direct Testimony. Section II describes and supports the CCOS I have conducted on behalf of the Company and which is provided and summarized in Statements N and O of the rate filing. Section III of my Direct Testimony describes the Lighting Service Study that MAC has prepared to assist NorthWestern in its design of Lighting service rates. The Lighting Service Study calculates the relative costs of each type of lighting service offered by NorthWestern. Section IV of my Direct Testimony discusses the design of a new Rate 34 Standby Rate for the Large Commercial & Industrial rate class. Finally, Section V summarizes my testimony and recommendations.

## II. CLASS COST OF SERVICE STUDY

**Q. WHAT IS THE PURPOSE OF A CCOS?**

**A.** The purpose of a CCOS is to calculate the revenue requirement for each class of customers based on the costs the utility has incurred to serve the class. Once identified, these class revenue requirements provide useful guidelines for rate design. Class revenue requirements are calculated by allocating the detailed components of a utility's revenue requirement to individual classes using allocation factors and direct assignments that

represent the cost drivers of the costs being allocated. In a CCOS, the total retail cost of service is prorated among customer classes so that the sum of the class revenue requirements equals the total revenue requirement at issue. Although there is often disagreement among parties regarding cost allocation measurement and attribution, the use of CCOSs as a guide to rate design is a longstanding practice utilized by this Commission and by numerous other state regulatory agencies.

**Q. HAVE YOU PREPARED A CCOS ON BEHALF OF NORTHWESTERN?**

**A.** Yes, I have. The per book CCOS and the adjusted, or pro forma, CCOS are presented as Statement N of NorthWestern's rate filing. Statement N includes the details of the allocated cost of service study by rate class per books and per the claimed revenue requirements. This statement shows the following for each of the studies:

1. Detail of the functional cost of service study allocating costs to the 16 cost functions.
2. Detail of the 16 functional costs for the labor allocator.
3. Listing of the functional allocators.
4. Detail of the allocation of the functionalized costs to the customer classes.
5. Listing of the class allocators used to allocate the functionalized costs to rate classes.
6. Detail of the calculation of income taxes at present revenues by customer class.
7. Detail of the calculation of income taxes at the claimed rate of return by customer class.

**Q. PLEASE DESCRIBE THE LAYOUT AND OPERATION OF THE CLASS COST OF SERVICE MODEL YOU ARE SPONSORING ON BEHALF OF NORTHWESTERN IN THIS FILING.**

A. The CCOS results are presented in Statements N and O of the Rate Filing Package. Statement N consists of a cover page providing the Section N filing requirements and 36 pages of allocated cost of service information. Statement O presents revenues, returns, income taxes, and allocated costs by rate class at present rate revenue levels, at equalized claimed rate of returns, and at the Company's proposed rates. Statement O consists of summaries of the detailed CCOS results from Statement N. Statement O is comprised of sets of three pages with the first page of each set providing the summary cost information for the major customer groupings (i.e., Total Residential, Total Irrigation, Total Commercial, Total Commercial & Industrial, Total Lighting, and Controlled Off-Peak service) and the next two pages including more detailed breakdowns of costs among the individual rate classes.

Statement N provides the detailed functionalization and allocation information that is summarized in Statement O. Pages 1-3 of Statement N present cost of service information for each customer class at present rates, at the Company's claimed rate of return, and at the proposed rates. Pages 4-15 of Statement N detail the allocation of rate base to customer classes. Pages 16-18 provide the allocation of revenue by customer class. Pages 19-24 detail the allocation to classes of operation and maintenance ("O&M") expenses, depreciation expense, regulatory credits and taxes other than income taxes. Pages 25-30 of Statement N provide of income taxes and operating income by customer class. Pages 31-33 set forth each functionalized cost component of base rate revenues at

the claimed rate of return and each functionalized cost component of base rate revenues at the present rate of return. Pages 34-36 set forth the functionalized gross receipts tax increase by class and by function for the claimed rate of return.

Schedule N-1 consists of 24 pages and provides the detail of the calculation of income taxes at present rates by functionalized cost component. Pages 1-6 show the functionalization of revenue by type to classes. Pages 7-9 provide the allocation of functionalized O&M and depreciation expenses by class of service. Pages 10-18 set forth the detailed allocations of functionalized tax components to customer classes. Pages 19-24 of Schedule N-1 provide the calculation of operating income, rate base, and rate of return by class at present rate levels. Schedule N-2 provides similar information and is laid out in the same manner as Schedule N-1, but employs revenues and revenue requirements at the Company's claimed rate of return in the calculation of income taxes by customer class.

Schedule N-3 consists of 14 pages and provides the functionalization of NWE's revenue requirement components. Pages 1-4 of Schedule N-3 provide the functionalization of rate base. Pages 5-6 provide the functionalization of revenue. Pages 7-10 provide the functionalization of O&M expenses. Pages 11-14 provide the detailed functionalization of depreciation expense, other taxes, and income taxes.

Schedule N-4 consists of two pages and provides the functionalization of the labor costs within the O&M expense accounts. Schedule N-5 consists of nine pages and provides the detailed allocation factors by function employed in the allocation of functionalized costs to customer classes. Schedule N-6 consists of six pages that provide the detailed functionalization factors employed in the allocation of total Company costs to functions.

Schedule N-7 is comprised of eight pages which provide functionalized base rate revenues by class of service at the Company's present rate of return and claimed rate of return. Schedule N-8 consists of three pages that provide the summary of the customer component costs of each class's revenue requirement.

**Q. WHAT ARE THE STEPS INVOLVED IN CONDUCTING A CCOS?**

**A**. There are three steps involved in conducting a CCOS - functionalization, classification, and allocation. Functionalization identifies the operational source where the costs are incurred, either directly or indirectly, with respect to the physical process of providing service. For example, the costs of generating units and purchased power (production function) are identified separately from costs associated with transmission lines (transmission function) which are, in turn, segregated from the costs of the distribution system (distribution function). Each function (production, transmission, and distribution) may be further separated into sub-functions. For example, distribution costs may, as in this case, be further separated into ten separate functions to allow a more accurate cost allocation and to provide information that may be useful in designing cost-based rates for customers receiving service from NorthWestern's distribution system.

Classification is the next step in conducting a cost of service study. Classification refers to the separation of functionalized costs according to a measurable usage characteristic that drives the cost. Classification further breaks down functionalized costs into demand, energy, and customer-related costs. Demand costs are costs that result from the rate of power consumption over a relatively short period of time (usually 15 minutes to an hour). Demand costs frequently reflect the costs of equipment that must be sized to meet a rated maximum load requirement placed on that equipment. Energy costs are those

costs that result from the volume of energy supplied over time. Fuel expense is generally the largest type of energy cost incurred by an electric utility. Customer costs are costs that vary as a function of the number of customers. Meters are an example of customer-related costs, although the cost analysis should account for the fact that meters serving large loads are more expensive than meters serving smaller customer loads.

The final step in conducting a cost of service study is the allocation of functionalized and classified costs to individual customer classes. The allocation step uses customer class metrics, along with direct assignments, where applicable, to allocate the specific cost components that have been functionalized and classified to individual customer classes. Customer class information such as non-coincident peak demands, coincident peak demands, annual energy use, and customer counts are employed to calculate class allocation factors.

**Q. PLEASE DESCRIBE THE PROCESS OF COST FUNCTIONALIZATION YOU HAVE EMPLOYED IN THE CCOS YOU SPONSOR.**

**A.** The individual details of costs comprising the total revenue requirement are separated according to the function or physical service they provide. The major functions employed in NorthWestern's CCOS are:

- Production – costs associated with power generation and purchased capacity. Production costs are the costs associated with securing power supply resources sufficient to meet maximum load requirements of the system;
- Transmission – Transmission costs are costs that are associated with the high voltage system that transports power and energy to load centers. Transmission facilities include transmission lines, substations, and associated equipment. External transmission costs

included in FERC account 565 are not included in base rates, but are recovered through NorthWestern's separate external transmission cost tracker which includes offsetting revenues;

- Distribution – costs associated with distributing and measuring the power and energy from the transmission system to end users. Distribution facilities include distribution substations, primary and secondary conductors and devices, transformers, voltage regulators, and other equipment necessary to transport power from the high voltage side of the distribution substation to the point of delivery of the power and energy. NorthWestern's CCOS identifies the costs associated with four demand-related distribution functions and two customer-related distribution functions;
- Customer – expenses that tend to be correlated to the number of customers – *i.e.*, meter reading, billing, customer accounting, customer care and service, and other similar costs. NorthWestern's CCOS employs two customer-related distribution functions as well as three customer-related functions of meter reading, customer records, and other customer-related costs;
- Lighting – costs that are directly associated with street and area lighting;
- Other Energy – energy-related costs that are not recovered in the fuel clause, but which are recovered in base rates. These costs are mainly fuel stock, non-recoverable fuel costs, fuel balancing costs, and coal taxes;
- Fuel – fuel and the energy portion of purchased power costs and offsetting revenues rrecovered through a tracker; and
- Ad Valorem – property taxes recovered in the Ad Valorem recovery clause.

Exhibit__(PMN-2) provides a more detailed description of the functions employed

in NorthWestern's retail CCOS as well as detailed descriptions for the cost classifications and allocation factors employed in Statements N and O.

A detailed Functional Labor Expense allocator accurately functionalizes labor-related costs. This allocator was developed by functionalizing all labor-related Operation and Maintenance expense by each account and capital labor and summing these allocated labor-related amounts to create the labor expense functional allocation factor.

**Q. HOW DID YOU CLASSIFY PRODUCTION COSTS?**

**A.** As stated above, all production-related costs other than fuel expense were classified as being demand-related.

**Q. HOW DID YOU CLASSIFY TRANSMISSION COSTS?**

**A.** All transmission costs are classified as demand-related costs. NWE's transmission system must be capable of serving the maximum demands placed upon it, regardless of when those maximum demands occur.

**Q. HOW HAVE DISTRIBUTION COSTS BEEN CLASSIFIED?**

**A.** Structures, station equipment, poles and towers, conductors and conduit, and transformers have been classified as demand-related costs. Services, meters, and certain other distribution expenses, such as customer service and information expenses, have been classified as customer-related costs. Distribution costs also include the costs of providing lighting services. Much of the cost of providing lighting services are unique to that service and are readily identifiable using standard accounting and property records. Thus, lighting service is largely directly assigned its distribution costs. Exhibit__(PMN-2) provides more detailed information regarding how each cost of service component was classified in Statements N and O.

**Q. ONCE NORTHWESTERN'S COSTS OF SERVICE ARE FUNCTIONALIZED AND CLASSIFIED, WHAT IS THE NEXT STEP IN THE PROCESS OF CALCULATING CLASS COSTS OF SERVICE?**

**A.** Once costs are functionalized and classified, I allocate costs to rate classes. Sixteen allocators were used to allocate the classified functional costs. These allocators are developed externally and are derived from (a) demands imposed by the class (using either monthly coincident peak ("CP") demands or annual non-coincident peak ("NCP") demands); (b) energy use by class at the generation source (*i.e.*, after accounting for line and transformation losses); or (c) number of customers served and meters (weighted by the appropriate weighting factor to recognize differences in types of customers and their impacts upon the system). These allocations are then summarized within the cost of service model to derive costs of service for each customer class. The allocation process also includes the detailed calculation of income taxes at present revenues and at equalized claimed rates of return. These income tax calculations were performed in order to properly functionalize and allocate income taxes to the customer classes.

**Q. YOU PREVIOUSLY EXPLAINED THAT PRODUCTION PLANT WAS CLASSIFIED AS DEMAND-RELATED. HOW WAS GENERATION PLANT ALLOCATED?**

**A.** Production costs were allocated on the basis of class contributions to the 12 monthly system peak demands during the test year, an allocation approach referred to as the Twelve Coincident Peak ("12CP") demand allocation method.

**Q. HOW DID YOU ALLOCATE THE FUEL COSTS ASSOCIATED WITH THE PRODUCTION PLANT, THE EXTERNAL TRANSMISSION COSTS, AND AD VALOREM COSTS?**

A. Most fuel costs are not recovered in base rates. The fuel clause revenues were determined for the test period by customer class. The offsetting costs, which equaled the fuel revenues, were then allocated on the basis of the fuel revenues by rate class. The result is that fuel revenues equaled allocated fuel costs by rate class and, therefore, have no effect on base rates. This same approach was used for the External Transmission functional costs and the Ad Valorem functional costs both of which are recovered through rate mechanisms other than base rates. The small percentage of fuel-related costs that are recovered in base rates were allocated to rate classes on the basis of energy use adjusted to losses at input.

**Q. PURCHASED POWER IS BOOKED BY ELECTRIC UTILITIES IN FERC ACCOUNT 555. HOW DID YOU ALLOCATE THE DEMAND PORTION OF PURCHASED POWER COSTS TO CLASSES?**

A. NorthWestern's firm power supply contracts have demand charges that are not recoverable in its Fuel Clause. These purchased power demand costs were allocated on the basis of 12CP demands consistent with all other generating resources in the study..

**Q. HOW DID YOU ALLOCATE TRANSMISSION-RELATED COSTS?**

A. I used the 12CP method to allocate transmission function plant and expenses.

**Q. WHY DID YOU EMPLOY CLASS CONTRIBUTIONS TO THE TWELVE MONTHLY COINCIDENT PEAK DEMANDS IN THE TEST YEAR TO ALLOCATE THE DEMAND-RELATED COSTS OF GENERATION AND TRANSMISSION PLANT?**

A. NWE must build or otherwise secure sufficient power supply resources to meet its peak demands regardless of the times at which those system peak demands occur. Based upon my analyses, I believe that most months of the year should be considered peak months for cost allocation purposes.

**Q. PLEASE DESCRIBE THE ANALYSES YOU HAVE CONDUCTED THAT SUPPORT THE USE OF BOTH WINTER AND SUMMER MONTHS IN THE ALLOCATION OF SYSTEM PEAK-RELATED PRODUCTION DEMAND COSTS.**

**A.** Please refer to Exhibit___ (PMN-3), page 1 which sets forth monthly peak demands for the 12 months ended December 31, 2022. Note that the system peak demand occurred in the month of July. However, during the test year the demands were also high for the winter months of January, February, March and December. Monthly historical demands reveals that the magnitudes of winter monthly demands relative to summer peak demands have historically been fairly close. The sum of the peak demands for the test year months of January, February, March and December are 94 percent of the sum of the peak demand for the months of June, July, August and September. The demands of the four summer months of June through September are not significantly different from the peak demands during the winter months December through March. The remaining months provide reduced demand levels that provide for the orderly scheduling of maintenance for the Company's other facilities. For this reason, I recommend that customer contributions to monthly system peak demands in all 12 months of the test period be employed to allocate production and transmission related demand costs.

**Q. PLEASE DESCRIBE HOW YOU ALLOCATED DISTRIBUTION-RELATED FUNCTIONAL COSTS TO CUSTOMER CLASSES IN YOUR COST OF SERVICE STUDY.**

A. Distribution rate base and expense accounts were allocated on the basis of customer class non-coincident peak ("NCP") demands. NCP demands are the maximum demands of the customer class and represent the undiversified loads placed upon system equipment at or near the customer's point of service. Distribution substations, primary service, and transformer costs were allocated based upon the NCP demands of customers taking service at either primary or secondary voltages. Secondary distribution plant was allocated in a consistent manner, using the NCP demands of customers taking service at secondary voltages.

**Q. HOW WERE THE REMAINING DISTRIBUTION-RELATED FUNCTIONAL COSTS ALLOCATED?**

A. Service laterals connect the secondary transformer to the customer premises. Services costs include customer-related costs that are allocated to classes on the basis of the customers' individual maximum demands. Meters costs are allocated to classes on the basis of the number of customers weighted by the relative cost of a meter for that class. The remaining plant accounts and related costs, installations on customer premises, and street lighting and signal systems are exclusively used for lighting services of NorthWestern. Therefore, these plant costs are directly assigned to the lighting class as a whole.

**Q. HOW WERE THE REMAINING FUNCTIONAL COSTS ALLOCATED TO RATE CLASSES?**

**A.** The meter reading functional costs were allocated to rate classes based on a weighted number of meter allocators. The customer records-related functional costs were allocated to rate classes based on a weighted number of customer allocators. The customer other functional costs relate mostly to customer service and information expense. The allocator used is based on a 50% weighting of the number of customers and a 50% weighting of the kWh sales at the generation level.

**Q. HOW WAS GENERAL PLANT ALLOCATED?**

**A.** General plant consists of plant and equipment necessary to support personnel involved in the overall operation of the system. General plant is a cost that is common to all functions and cost classifications. As a common cost, General plant does not readily fall into a demand, energy, or customer classification. However, plant costs and Operation and Maintenance ("O&M") expenses for production, transmission, distribution, customer accounting, and customer information have already been functionalized, classified, and allocated to classes. As a result, the level of wages and salaries recorded within the O&M expense and capital accounts is known, and allocation factors have been developed using this information. General plant is functionalized and allocated on the basis of the prior assignment of distribution wages and salaries by O&M expense and capital labor.

**Q. HOW ARE THE REMAINING RATE BASE ITEMS ALLOCATED TO CLASSES?**

**A.** Depreciation reserves are functionalized and allocated to classes based upon the prior allocation of related plant accounts. Additions and deductions from rate base are allocated using the most appropriate allocation factors for the items being assigned. For example, cash working capital is broken into three components --

1. Materials & Supplies, which is functionalized and allocated on the basis of previously allocated production, transmission, and distribution plant,

2. Cash Working Capital, which is functionalized and allocated on the basis of the sum of O&M expense, taxes other than income, income taxes, and interest expense, and

3. Fuel Stock, which is functionalized as energy-related and allocated on the basis of loss-adjusted energy sales. Deferred income taxes were functionalized and allocated on the basis of total plant.

**Q. HOW DID YOU DETERMINE EACH CUSTOMER CLASS'S REVENUES FOR PURPOSES OF THE CCOS?**

**A.** Revenues from Sales of Electricity by class are recorded in NorthWestern's books and are directly assigned to the class producing the revenue. Fuel revenue, external transmission revenue, and ad valorem revenue are directly assigned to the class producing the revenues. Non-fuel-related wholesale revenues are assigned on the basis of loss-adjusted energy and fuel-related wholesale revenues are allocated based upon the allocation of fuel expense. Other revenues are comprised of late payment charges, which are allocated on the basis of late payment history by class, and miscellaneous service charges, rents and other electric revenues, which are allocated on the basis of previously allocated total plant by class. Pole rental revenues were allocated and functionalized on the previously functionalized distribution overhead lines plant. Revenue from steam sales was directly assigned and allocated on the same basis as production plant.

**Q. PLEASE DESCRIBE THE ALLOCATION OF O&M EXPENSES, DEPRECIATION EXPENSE, REGULATORY CREDITS, AND TAXES OTHER THAN INCOME TAXES.**

**A**. Generation costs and non-recoverable purchased power demand charges are functionalized as production-related and allocated on the basis of the 12CP demand allocation factor. Fuel expense and wholesale fuel expense are functionalized to the fuel function and allocated as previously described. Non-recoverable fuel costs and the costs of fuel balancing are energy-related and allocated on the basis of loss adjusted energy sales. Transmission expenses are allocated on the basis of previously allocated transmission plant. Distribution expenses are functionalized to the associated plant and then allocated on the basis of the previously allocated distribution plant components. Similarly, customer-related expenses are functionalized and then allocated using weighted number of meters, weighted number of customers, and weighted sales allocators. Depreciation expense is functionalized based upon the associated plant values and then allocated on the basis of the previously allocated plant in service. Taxes other than income taxes are identified by type and allocated accordingly. For example, Delaware franchise taxes and South Dakota gross receipts taxes are functionalized and allocated based upon the revenue requirement at the Company's claimed rate of return; ad valorem taxes are assigned to the ad valorem function and then allocated on the basis of ad valorem revenues billed by customer class, and coal taxes are allocated as energy-related costs. Payroll taxes were functionalized and allocated on the basis of the functionalized labor expense.

**Q. PLEASE DESCRIBE THE ALLOCATION OF FEDERAL INCOME TAX.**

A. As previously stated, federal income tax is not directly allocated to customer classes. Instead, the revenue and cost components used to calculate NWE's South Dakota retail federal income tax are functionalized and allocated to classes. These allocated income tax components are then used to calculate the income tax liability for each class. The detailed computation of federal income taxes is provided in Schedule N-2 for income taxes at present rates and Schedule N-3 for income taxes at the claimed rate of return.

**Q. PLEASE DESCRIBE THE RESULTS OF THE CCOS AND COMPARE THESE RESULTS WITH THE CLASS REVENUES PRODUCED BY NORTHWESTERN'S PRESENT RATES.**

**A.** Pages 1 through 3 of Statement N provide the revenues, costs, and returns by customer class under present, claimed and proposed rates. This cost information is summarized in Table 1 below.

**Table 1**

| | Present Revenues | Present Rate of Return | Claimed Revenues | Percent Increase | Proposed Rates | Proposed Increase ($) | Proposed Increase (%) | Prop. ROR |
|---|---|---|---|---|---|---|---|---|
| Residential | $47,207,213 | 3.07% | $66,421,260 | 40.70% | $59,087,261 | 11,880,049 | 25.17% | 5.81% |
| Irrigation | 204,088 | 0.24% | 362,325 | 77.53% | 257,783 | 53,696 | 26.31% | 2.69% |
| Commercial | 12,767,249 | 4.85% | 15,572,285 | 21.97% | 15,972,116 | 3,204,867 | 25.10% | 7.93% |
| Comm. & Ind | 56,655,630 | 5.88% | 64,458,613 | 13.77% | 71,791,769 | 15,136,139 | 26.72% | 9.16% |
| Municipal | 628,710 | 12.391% | 469,502 | -25.32% | 778,962 | 150,252 | 23.90% | 16.89% |
| Lighting | 1,972,030 | -1.80% | 2,999,337 | 52.09% | 2,401,950 | 429,920 | 21.80% | 2.10% |
| Controlled Off-Peak | 79,701 | 4.17% | 104,949 | 31.68% | 98,454 | 18,752 | 23.53% | 6.67% |
| Total Retail | $119,514,621 | 4.51% | $150,388,271 | 25.83% | $150,388,296 | $30,873,674 | 25.83% | 7.54% |

As indicated on Table 1 above, the differences between present revenues and allocated costs vary significantly by class of service. Mr. Jeffrey Decker's Direct Testimony

supports NorthWestern's proposed revenue distribution, including the Company's proposed rate mitigation concerns. Mr. Decker also developed support of the Company's rate design.

## III. ANALYSIS OF LIGHTING SERVICES COSTS

**Q. WHAT IS AN ANALYSIS OF LIGHTING SERVICE COSTS AND HOW IS SUCH AN ANALYSIS USED?**

**A.** A separate analysis of lighting service costs was performed to derive reasonable current cost estimates for each of the installed fixtures, brackets, and poles contained within the Company's lighting rate schedules. The cost differentials between the lights resulting from this analysis were adjusted to match the target revenue established in NorthWestern's class proposed revenues.

**Q. WHAT APPROACH WAS SELECTED TO PERFORM THE LIGHTING ANALYSIS?**

**A.** The analysis of lighting was based on an accounting class cost of service approach using the most currently available data for 2022. The analysis consisted of using the CCOS functional results, as provided by Statement N, for gross plant, depreciation, net plant, O&M expenses, and existing revenue levels to calculate a unit charge for each functional cost area. These calculated costs include the functional costs for Production (excluding fuel), Transmission, Distribution, and Lighting related plant and O&M expense, as shown in Table 8 of Exhibit__(PMN-4).

**Q. PLEASE DESCRIBE THE LIGHTING SERVICE RATES INCLUDED IN NORTHWESTERN'S LIGHTING COST ANALYSIS AND DESCRIBE THE LEVEL OF DETAIL INCLUDED WITHIN EACH OF THESE RATES.**

**A.** NorthWestern's lighting analysis included two lighting service rate schedules, Rate Schedule 19 and Rate Schedule 56. Rate Schedule 19, referred to as the Reddy-Guard class of service, includes residential, commercial, industrial, farm and rural area, outdoor area, and street lighting. Rate Schedule 56's class of service is Company or customer owned highway, and street and area lighting systems. Rate Schedule 56 is available for lighting systems owned by NorthWestern or political sub-divisions.

For each of these lighting rate schedules, a detailed analysis was performed at the revenue code level which identified the fixture by type of lamp (i.e., High Pressure Sodium, Mercury Vapor, and Metal Halide) and wattage (100, 250, and 1000). The revenue codes were then grouped and analyzed by rate code.

Rate Schedule 19 includes six rate code groups:

1. Rate Code U10 – Reddy-Guard Residential Unmetered
2. Rate Code U10 – Reddy-Guard Residential Metered
3. Rate Code U20 – Reddy-Guard Commercial Unmetered
4. Rate Code U20 - Reddy-Guard Commercial Metered
5. Rate Code U30 – Public Lighting Unmetered
6. Rate Code U30 – Public Lighting Metered

Rate Schedule 56 includes six rate code groups:

1. Rate Code U30 - Distribution Pole Mounting - Company Owned
2. Rate Code U30 - Distribution Pole Mounting - Customer Owned

3. Rate Code U30 - Metal Pole Mounting - Company Owned
4. Rate Code U30 - Metal Pole Mounting - Customer Owned
5. Rate Code U30 - Wood Pole Mounting - Company Owned
6. Rate Code U30 - Wood Pole Mounting - Customer Owned

**Q. PLEASE DESCRIBE HOW THE LIGHTING ANALYSIS WAS PERFORMED.**

**A.** The first step of the analysis was to isolate current costs by major functions and review the costs to ensure that only those relevant portions of costs be considered and included. In order to facilitate the cost calculations and allocations, costs were allocated and developed on dollars per kilowatt-hour ("$/kWh") by function. This $/kWh by function approach was employed to incorporate the underlying assumption that lighting is an off-peak load and, therefore, is not a cost driver for the Company's distribution cost investments. The assumption is based on a review of the load data which indicates the lighting class was coincident with the monthly system only in November and December and partially coincident with the monthly peak in the months of January and October. Furthermore, historical peaks have occurred during summer daylight hours when lighting services are not used. For this reason, the use of these investments for approximately 4,043 (off-peak) hours per year indicates that kWh usage is a reasonable basis upon which to assign costs.

The second step of the analysis was to establish a common table of current installed costs applicable to all rate schedules that would capture the existing gross plant booked in each account. These installed costs were then used to calculate the current costs for each existing revenue code (fixture type and wattage) category included within each lighting rate schedule. These calculated costs were scaled to the installed gross plant costs for each

lighting rate class's revenue code in order to match the level of existing booked gross plant account costs. Net plant was allocated to the revenue code items based on existing booked gross plant costs within each rate code group, as shown in Table 7 of the Lighting Study. Due to limited historical plant data, the same average vintage was assumed for all units in the lighting analysis.

The third step was to calculate functional $/kWh for net plant by rate class using the Company's class cost of service study's plant accounting data for Rate Class 19 and Rate Class 56, as shown in Table 9 of the lighting study. The functional $/kWh for net operating expenses (NOE) were calculated using the functional operating expense, other operating revenue, and wholesale revenue from the Company's class cost of service study, as shown in Tables 11A and 11B of the lighting study. The functional lighting plant $/kWh costs were adjusted to the class target revenue level by subtracting the NOE from the target revenues and dividing them by the kWh for each class. These calculated costs per kWh for each of the rate class's rate codes are summarized on Table 8, provided in Exhibit__(PMN-4).

The fourth step in the lighting analysis was to calculate the monthly charge for each revenue code within each rate class's rate code. This was accomplished by taking each functional cost per kWh (production, transmission, distribution, lighting NOE, and lighting plant) and multiplying these costs by the annual kWh, dividing these costs by the number of units, and then adding the functional costs together to determine a monthly charge for each revenue code. The monthly charges for each revenue code were multiplied by the number of units within each revenue code to get the annual target revenues for each revenue

code. The revenue code revenues within Rate Class were added together to compute the total rate class target revenues.

The final step in the lighting analysis was to compare the current monthly charges to the cost based calculated monthly charges for each rate code within each rate class. The cost based monthly revenue code charges were then adjusted to incorporate an increase of 22% for Total Lighting to achieve the required revenue increases found in Mr. Jeffrey Decker's Rate Moderation file.

**Q. BRIEFLY SUMMARIZE THE RESULTS OF NORTHWESTERN'S LIGHTING COST ANALYSIS.**

**A.** The lighting cost analysis indicates the following:

| Lighting Schedule | Change to Recover Costs of Service |
|---|---|
| Rate 19 (U10) Reddy Guard Residential Metered | Increase. |
| Rate 19 (U10) Reddy Guard Residential Unmetered | Increase. |
| Rate 19 (U20) Reddy Guard Commercial Metered | Increase. |
| Rate 19 (U20) Reddy Guard Commercial Unmetered | Increase. |
| Rate 19 (U30) Public Lighting (PL) Unmetered | Increase. |
| Rate 19 (U30) Public Lighting (PL) Metered | Increase. |
| Rate 56 (U30) PL w/Distribution Pole Mounting-Co Owned | Increase. |
| Rate 56 (U30) PL w/Distribution Pole Mounting- Cust Own | Increase. |
| Rate 56 (U30) PL w/Metal Pole Mounting- Company Owned | Increase. |
| Rate 56 (U30) PL w/Metal Pole Mounting -Customer Owned | Increase. |
| Rate 56 (U30) PL w/Wood Pole Mounting-Company Owned | Increase. |
| Rate 56 (U30) PL w/Wood Pole Mounting-Customer Owned | Increase. |

**Q. HOW WERE THESE COSTS BY LIGHTING SERVICE TYPE (REVENUE CODE LEVEL) USED TO DETERMINE THE COSTS OF THE VARIOUS LIGHTING SERVICES OFFERED BY THE COMPANY?**

**A.** After the costs by lighting service type were calculated, the differentials between the revenue codes within each rate code group of each lighting service rate schedule were adjusted to match the target revenue established in the Company's class proposed revenues.

**Q. DO THE LIGHTING COSTS BY SERVICE TYPE THAT RESULT FROM THE LIGHTING ANALYSIS YOU SPONSOR REASONABLY AND ACCURATELY REFLECT NORTHWESTERN'S COSTS OF PROVIDING THESE TYPES OF LIGHTING SERVICES?**

**A.** Yes, they do.

## IV. RATE 34 LARGE COMMERCIAL & INDUSTRIAL STANDBY RATE

**Q. PLEASE PROVIDE A BRIEF DISCUSSION OF A UTILITY'S STANDBY SERVICE.**

**A.** The use of customer's onsite generation requires that some level of pricing needs to be developed by the Company to provide the necessary backup facilities in the event that a customer's generating facilities become inoperable. The complexities of this pricing approach require considerations for the following support:

Contract Demand – Customer maximum demand which will establish level of applicable Standby charge that customer is responsible to pay each month.

Backup Service – provide equivalent capacity in the event of inoperable customer facilities to generate power. These outage events are unscheduled and can occur on any hour or day of the year.

Maintenance Service – a customer's need to perform routine and periodic maintenance on its facilities on a schedule service with the utility. This approach ensures a best practice for both utility and customer operation.

While there are many scenarios that can exist that add many layers of complexity, the pricing goal of the standby rate is to provide backup supply and distribution infrastructure support for a customer's return to service even on a very limited basis.

**Q. HOW WOULD YOU DEVELOP THE COST ASSIGNMENT AND RATE PRICING LEVELS TO ENSURE A FAIR REFLECTION OF COSTS RESPONSIBILITY FOR ALL EXISTING AND NEW STANDBY CUSTOMERS WHO REQUIRE INTERMITTENT AND LIMITED USE OF A UTILITY'S GENERATION AND INFRASTRUCTURE FACILITIES?**

**A.** The utility company must invest in both generating and transmission facilities to provide safe and reliable power for all hours of the year. This infrastructure requires a considerable amount of investment that must be made to accomplish this for all levels of service.

Supply

One of the major considerations is to recognize that customers with onsite generation facilities provide the customer with virtually all its power requirements. Each onsite generation will experience various periods of unavailability due to both unforeseen equipment problems/malfunctions to periodic maintenance that is known and coordinated with the utility to minimize any potential delivery problems.

In order to recognize the infrequent operating factors of customer facilities, one should consider incorporating a well-known statistic in utility generation operation called a forced outage rate.

This statistic reflects the generation and interconnection which will be inoperable for some limited period of time over a calendar year. For our purposes in this Standby rate derivation, we have assumed a Forced Outage Rate of 10% which can be thought of as an

industrywide factor for all types of customer-owned facilities. Initial immature (new) facilities may easily exceed this level, but over time, good engineering and coordination will from time to time be even consistently lower than 10%. This forced outage value would be periodically reviewed and updated to reflect a customer installation and maintenance upkeep over time. We have also assumed that each customer is an independent event whereby failure or multiple facilities at the same time would be a very small probability of occurrence and over time and not considered in my analysis. An alternative approach is to limit the total amount of customer generation (e.g. 10% of system peak, substation and feeder limitations, etc.).

For Transmission, I am also using the same approach by applying the Forced Outage Rate of 10% to also reflect the very limited unavailability of a customer's facilities.

Standby Distribution (wires) Costs

The remaining distribution costs reflect a movement of costs towards more local facilities. The substations and primary feeder facilities provide electric service to many hundreds (thousands) of customers depending on their location on the Company's extensive delivery network.

An underlying consideration is the total contract capacity of these installed facilities versus the actual day-to-day maximum use of any one customer. In my analysis of distribution costs, I considered that the distribution capability will generally support a 25% reserve level while the substation and feeder investments may have additional capacity to accept/tolerate accidental or intermittent load. This application is a systemwide assumption where any one location would possibly exhibit a different reserve level.

**Q. COULD YOU PLEASE DISCUSS YOUR EXHIBIT PMN-5?**

**A.** Exhibit PMN-5 details the calculations and assumptions of deriving the Standby pricing based on my previous discussion of the considerations I integrated in the functional costs' calculation.

To begin with, all functional costs shown are based on the Company's filed costs of service results (Exhibit PMN-5, column (a)). Lines 41 and 42 reference the cost of service (Schedule N-2, page 3 of 24). Line 4 (PMN-5) shows the 10% Forced Outage rate utilized for Production and Transmission functional costs for the Standby rate. Applying row 2 percentages to each cost area results in a total costs identification to be used in the Standby calculation on line 20, columns (b) through (d). Lines 22 – 35 show the unit $/kW charges that would result by using different units of customer demand (12 CP, NCP, billing demand). For purposes of this rate design, we chose the use of the Company's billing demands which are far greater as shown in rows 28 and 29. The resulting proposed pricing is detailed and summarized on lines 33 for Transmission of 2.12/kW and line 34 for Distribution of 2.44/kW. The infrequent customer access to the Company's supply infrastructure necessitates that Standby rates should reflect a demand pricing level in order to efficiently recover these costs on an equitable basis.

## V. SUMMARY AND RECOMMENDATIONS

**Q. PLEASE SUMMARIZE YOUR DIRECT TESTIMONY AND YOUR RECOMMENDATIONS IN THIS PROCEEDING.**

**A.** My testimony addresses three topics:

1) Class Cost of Service. I have prepared and submitted class cost of service studies using both pro-forma and booked revenue requirements. This cost of service study

employs well established allocation methods and practices and accurately reflects the costs of serving NorthWestern's customer classes. I recommend that the Commission approve the use of the 12CP allocation method for allocating production and transmission demand costs. I further recommend that the Commission approve the allocations of distribution and other costs as set forth in Schedule N;

**2)** Lighting Services. I have provided a study that calculates the Company's costs of serving the various types of Lighting services that it offers. The results of this study allow the Company to identify how to adjust the rates for these services to better reflect the relative costs of providing electric power and energy to Lighting customers. I recommend that the resulting Lighting rates proposed by NWE be approved by the Commission**.**

**3)** Rate 34 Standby Rate**.** I have provided detailed calculations supporting the method used to calculate proposed rates Rate 34 Standby Rate. These calculations provide underlying support for the proposed rates. I recommend that the Commission approve the use of the proposed Standby rate.

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

**A.** Yes, it does.