

## I. COST OF SERVICE METHODOLOGY

Through the application of a cost of service model developed specifically for NorthWestern Energy's South Dakota retail electric operations, it is possible to address the revenue requirement elements of rate base, revenue and operating expense and assign or allocate each element to customer classes. This cost of service process consists of the following three steps:

A. Functionalization – The assignment and allocation of costs into one of the following major functions:

- Production
- Transmission
- Distribution
- Customer
- Energy

Each of these major functions was also further assigned to sub-functions such as Distribution Primary within the Distribution function, Meter Reading within the Customer function, etc.

B. Classification – The classification of functional costs into demand, energy and customer components.

C. Allocation – The allocation of the functionalized and classified costs to customer classes using allocation factors developed for each functionalized cost category.

## II. FUNCTIONS

There are five major functions in the cost of service study. Descriptions of the functions, sub-functions and costs that are included in each are as follows:

A. Production – Costs that relate to the cost of generation and purchased power.

B. Transmission – Costs that relate to the Transmission lines, substations, and associated facilities that transport power from the Generation source to the Distribution substations.

C. Distribution – Includes the cost of facilities that transport power from the high voltage side of the Distribution substation to the Primary and Secondary Distribution systems. Distribution costs also include the costs of line transformers.

1. Distribution Substations – The costs of substation transformers and switchgear between the Transmission system and the Primary and Secondary conductor systems.
  2. Distribution Primary – The costs associated with Primary conductors and devices.
  3. Distribution Secondary – The costs associated with Secondary conductors and devices.
  4. Distribution Transformers – The costs associated with Distribution Line Transformers.
- D. Customer – Includes those costs that are directly related to the change in the number of customers.
1. Services – The costs associated with customer service drops.
  2. Meters – The costs associated with the fixed cost of metering.
  3. Meter Reading – The costs associated with meter reading.
  4. Customer Records – The costs associated with customer records, collections, customer service, and information.
  5. Customer Other – The costs associated with customer-related Other Operating revenues.
  6. Lighting – Costs directly associated with the Lighting customer class
- E. Energy – Includes those costs that are associated with generation fuel costs.

### III. COST CLASSIFICATION

All functional costs are further classified into the following three components:

1. Demand – Costs whose main driver is the customer’s demand or time of use (kW).
2. Energy – Costs whose main driver is the use of energy (kWh).
3. Customer – Costs whose main driver is the number of customers.

The classification of functional costs into the component costs is as follows:

- A. Demand
- Production
  - Transmission
  - Distribution Substations
  - Distribution Primary
  - Distribution Secondary
  - Distribution Transformers
- B. Energy – Generation Fuel Costs

C. Customer

- Services
- Meters
- Meter Reading
- Customer Records & Information
- Customer Other
- Lighting

IV. **FUNCTIONAL ALLOCATION FACTORS**

The first step in the cost of service allocation process is the functionalization of costs. All costs are assigned to the functions noted above either directly or by the use of internally developed functional cost allocation factors.

1. Direct Functional Cost Assignment – Certain costs relate solely to one function and can be directly assigned. The categories of costs that contain directly assignable costs are as follows:
  - Plant in Service
  - Accumulated Depreciation
  - Fuel Inventory
  - Fuel Charge Revenues and Costs
  - External Transmission Revenues and Costs
  - Ad Valorem Revenues and Costs
  - Wholesale Revenues and Costs
  - Steam Sales Revenues
  - Yankton Sioux Billing Credits
  - O&M Production Expenses
  - O&M Transmission Expenses
  - Meter Reading Expenses
  - Customer Records Expenses
  - Customer Service & Information Expenses
  - Sales Expenses
  - Depreciation Expense
  - Plant-Related Regulatory Credits
  - North Dakota Coal Tax
2. Internal Functional Allocation – For those costs that do not relate directly to one function, an internal functional allocation factor was developed to allocate the costs. The internal functional allocation factors are the sum of functional costs that have been directly assigned or allocated or both.

The following is a list of the internal functional allocators and the costs they allocate to functions:

**FuncLabor** – Sum of Total Functionalized Labor Expense

Costs Functionalized:

- General Plant-Related Cost
- Common Plant-Related Cost
- O&M Administrative & General Labor-Related Expense
- Intangible Plant-Related Cost
- Prepaid Insurance
- Allowance for Injuries and Damages
- Regulatory Credits Pension Related
- SD Vehicle Tax
- Payroll Taxes

**MeterServices** – Sum of Meters & Service Plant Function

Costs Functionalized:

- O&M Distribution Customer Installations Expense
- Customer Deposits

**ProdExpXFuel** – Sum of O&M Functional Production Expense

Costs Functionalized:

- Production Labor Expense

**TransmExp** – Sum of O&M Functional Transmission Expense

Costs Functionalized:

- Transmission Labor Expense

**DistOpLabXS** – Sum of Total Functionalized Distribution Operating Labor Excluding Supervision

Costs Functionalized:

- O&M Distribution Operating Supervision Labor

**DistOpSubs** – O&M Distribution Operating Substation Expense

Costs Functionalized:

- O&M Distribution Operating Substation Labor

**DistOpOHLine** – O&M Distribution Overhead Lines Expense

Costs Functionalized:

- O&M Distribution Operating Overhead Lines Labor

**DistOpUGLine** – O&M Distribution Underground Lines ExpenseCosts Functionalized:

- O&M Distribution Operating Underground Lines Labor

**DistOpLight** – O&M Distribution Operating Lighting ExpenseCosts Functionalized:

- O&M Distribution Operating Lighting Labor

**DistOpMeter** – O&M Distribution Operating Meter ExpenseCosts Functionalized:

- O&M Distribution Operating Meters Labor

**DistOpCustin** – O&M Distribution Operating Customer Installation ExpenseCosts Functionalized:

- O&M Distribution Operating Customer Installation Labor

**DistOpOth** – O&M Distribution Operating Other ExpenseCosts Functionalized:

- O&M Distribution Operating Other Labor

**DistMnLabXS** – Sum of Functionalized Distribution Maintenance Labor Excluding SupervisionCosts Functionalized:

- O&M Distribution Maintenance Supervision Labor

**DistMnSubs** – O&M Distribution Maintenance Substation ExpenseCosts Functionalized:

- O&M Distribution Maintenance Substation Labor

**DistMnOHLine** – O&M Distribution Maintenance Overhead Lines ExpenseCosts Functionalized:

- O&M Distribution Maintenance Overhead Lines Labor

**DistMnUGLine** – O&M Distribution Maintenance Underground Lines ExpenseCosts Functionalized:

- O&M Distribution Maintenance Underground Lines Labor

**DistMnTrans** – O&M Distribution Maintenance Line Transformer Expense

Costs Functionalized:

- O&M Distribution Maintenance Line Transformers Labor

**DistMnLight** – O&M Distribution Maintenance Lighting Expense

Costs Functionalized:

- O&M Distribution Maintenance Lighting Labor

**DistMnMeter** – O&M Distribution Maintenance Meters Expense

Costs Functionalized:

- O&M Distribution Maintenance Meters Labor

**DistMnOther** – O&M Distribution Maintenance Other Expense

Costs Functionalized:

- O&M Distribution Maintenance Other Labor Expense

**CustMeterRdg** – O&M Customer Meter Reading Expense

Costs Functionalized:

- O&M Customer Meter Reading Labor

**CustRecExp** – O&M Customer Records Expense

Costs Functionalized:

- O&M Customer Records Labor Expense

**CustServInfo** – O&M Customer Service & Information Expense

Costs Functionalized:

- O&M Customer Service & Information Labor

**AGExpLabor** – O&M Administration & General Labor-Related Expenses

Costs Functionalized:

- O&M Administration & General Labor Expense

**AGExpGeneral** – O&M Administrative & General Expense General Plant

Costs Functionalized:

- O&M Administrative & General Labor Expense General Plant

**ProdPlant** – Sum of Production Plant

Costs Functionalized:

- Production Construction Labor Expense

**TransPlant** – Total Transmission PlantCosts Functionalized:

- Transmission Construction Labor Expense

**DistrPlant** – Sum of Functionalized Distribution Plant AccountsCosts Functionalized:

- Distribution Construction Labor Expense

**PTDCWIPLab** – Sum of Functionalized Production, Transmission and Distribution Construction Labor ExpensesCosts Functionalized:

- Contingency Construction Labor Expense

**GeneralPlt** – Functionalized General PlantCosts Functionalized:

- Accumulated Depreciation Reserve General Plant
- O&M Administration & General Expenses – General Plant
- Depreciation Expense General Plant

**CommonPlt** – Functionalized General PlantCosts Functionalized:

- Accumulated Depreciation Common Plant
- Depreciation Expense General Plant

**PTDPlt** – Sum of Functionalized Production, Transmission and Distribution PlantCosts Functionalized:

- Working Capital Materials & Supplies

**TotalPlant** – Sum of Functionalized Production, Transmission, Distribution, General and Common PlantCosts Functionalized:

- Other Prepaid Expenses
- Deferred Tax Reserves
- Miscellaneous Service Charges
- Rent Other
- Other Utility Revenues
- O&M Administrative & General Expenses – Plant Related
- Amortization Expense

**ClaimedRev**– Sum of Functionalized Revenue Requirement at the Equalized Claimed Rate of Return

Costs Functionalized:

- Rate Case Expenses
- Late Payment Charge Revenues Functionalized on Claimed Revenues
- Uncollectible Accounts Expense Functionalized on Claimed Revenues
- O&M Administrative and General Expense Revenue Related
- Taxes Other Than Income Taxes Delaware Franchise Taxes
- Taxes Other Than Income Taxes SD Gross Receipts Tax and Increase
- Tax Credits and Adjustments

**DistOpLab** – Sum of Functionalized Distribution Operations Labor

Costs Functionalized:

- O&M Distribution Operating Supervision Expense

**DistSubs** – Functionalized Distribution Substation Plant

Costs Functionalized:

- O&M Distribution Operating Substation Expense
- O&M Distribution Maintenance Substation Expense

**DistOHLLine** – Sum of Functionalized Distribution Overhead Primary and Secondary Lines Plant

Costs Functionalized:

- O&M Distribution Operating Overhead Lines Expense
- O&M Distribution Maintenance Overhead Lines Expense
- Rent from Poles and Contacts

**DistUGLine** – Sum of Functionalized Distribution Underground Primary and Secondary Lines Plant

Costs Functionalized:

- O&M Distribution Operating Underground Lines Expense
- O&M Distribution Maintenance Underground Lines Expense

**DistLight** – Sum of Functionalized Installations on Customer Premises and Street Lighting Plant

Costs Functionalized:

- O&M Distribution Operating Lighting Expense
- O&M Distribution Maintenance Lighting Expense



**DistMeters** – Functionalized Meters PlantCosts Functionalized:

- O&M Distribution Operating Meters Expense
- O&M Distribution Maintenance Meters Expense

**DistOPEXPXS** – Sum of Functionalized Distribution Operating Expense excluding Supervision and Other ExpensesCosts Functionalized:

- O&M Distribution Operating Other Expense

**DistMnLab** – Sum of Functionalized Distribution Maintenance LaborCosts Functionalized:

- O&M Distribution Maintenance Supervision Expense

**DistTransf** – Functionalized Distribution Transformer PlantCosts Functionalized:

- O&M Distribution Maintenance Transformer Expense

**DistMnExpXS** – Sum of Functionalized Distribution Maintenance Expense excluding Supervision and Other ExpensesCosts Functionalized:

- O&M Distribution Maintenance Other Expense

**MetRdgRec** – Sum of Functionalized Customer Meter Reading Expense and Customer Records ExpenseCosts Functionalized:

- O&M Customer Accounts Expense Miscellaneous Expenses

**LatePayment** – Direct assignment of Late Payment charges to the customer classes functionalized on Claimed RevenuesCosts Functionalized:

- Late Payment Charges

**Uncollectibles** – Direct assignment of Uncollectible Accounts expense to the customer classes functionalized on Claimed RevenuesCosts Functionalized:

- Uncollectible Accounts Expense

**CashWorkC** – Sum of functionalized expenses used in the calculation of cash working capital. Sum of O&M expense, Taxes Other Than Income, Federal Income Taxes, and Interest ExpenseCosts Functionalized:

- Cash Working Capital

## V. CLASS ALLOCATORS

After all costs have been functionalized, they are then allocated to customer classes using class allocation factors. Below is a listing of the functions and the class allocation factor used for that function.

1. Production  
**12CPProd** – Average 12 Coincident Peaks  
– Used to allocate Production-Related Costs to the customer classes
2. Transmission  
**12CPTrans** – Average of Class 12 Coincident Peaks  
– Used to allocate Transmission Functional Costs to the customer classes
3. Distribution Substation  
**NonCP** – Non-Coincident Class Peaks  
– Used to allocate Distribution Substation Functional Costs to the customer classes
4. Distribution Primary  
**NonCPPrimary** – Non-Coincident Class Peaks  
– Used to allocate Distribution Primary Functional Costs to the customer classes served at Primary voltage level and below
5. Distribution Secondary  
**NonCPSecondary** – Average of Non-Coincident Class Peaks and Maximum Diversified Demands  
– Used to allocate Distribution Secondary Functional Costs to the customer classes served at Secondary voltage level
6. Distribution Transformers  
**DemTransf** – Average of Non-Coincident Class Peaks and Maximum Diversified Demands  
– Used to allocate Distribution Transformer Functional Costs to the customer classes

7. Services
  - Services** – Maximum Diversified Class Demands
    - Used to allocate Distribution Services Functional Costs to the customer classes
8. Meters
  - MeterCost** – Direct assignment of Meter Costs to customer classes
    - Used to allocate Distribution Meter Costs to the customer classes
9. Customer Meter Reading
  - MeterRdg** – Direct assignment of Meter Reading Costs to customer classes
    - Used to allocate Meter Reading Functional Costs to the customer classes
10. Customer Records
  - CustRecords** – Direct assignment of Customer Records and Billing Costs to customer classes
    - Used to allocate Customer Records Functional Costs to the customer classes
11. Customer Other
  - Customer** – Allocator to customer classes based on the number of customers
    - Used to allocate Other Customer Functional Costs to the customer classes
12. Street Lighting
  - Lighting** – Direct assignment of Lighting Costs to customer classes
    - Used to assign Lighting Functional Costs to the Lighting classes
13. Energy Related
  - Energy** – kWh Sales Allocator
    - Used to allocate Energy Functional Costs to the customer classes
14. Fuel
  - Fuel** – Direct assignment of offsetting fuel clause costs and revenues to customer classes
    - Used to assign offsetting fuel costs and revenues to the customer classes

15. External Transmission

**ExtTransm** – Direct assignment of offsetting External Transmission clause costs and revenues to the customer classes

- Used to assign offsetting external transmission costs and revenues to the customer classes

16. Ad Valorem

**AdValorem** – Direct assignment of offsetting Ad Valorem clause costs and revenues to the customer classes

- Used to assign offsetting Ad Valorem costs and revenues to the customer classes

**VI. CUSTOMER CLASSES**

The individual customer classes with rates and grouping categories recognized in the cost of service study are as follows:

Total Residential

- Residential Basic 10
- Residential with Space Heating 11
- Residential Space Heating and Cooling 14
- Residential Dual-Fuel 15

Total Irrigation

- Irrigation Interruptible IRR 16 & 18
- Irrigation IRR 17

Total Commercial

- Commercial General Service 21
- Commercial Separate Metered Space Heating 23
- Commercial Space Heating & Cooling 24
- Commercial All-Inclusive 25

Total Commercial & Industrial

- Commercial & Industrial 33
- Large Commercial & Industrial 34

Total Municipal

- Municipal Pumping 41

Total Lighting

- Lighting Reddy-Guard 19
- Highway Street & Area Lighting 56

Controlled Off-Peak

- Controlled Off Peak 70