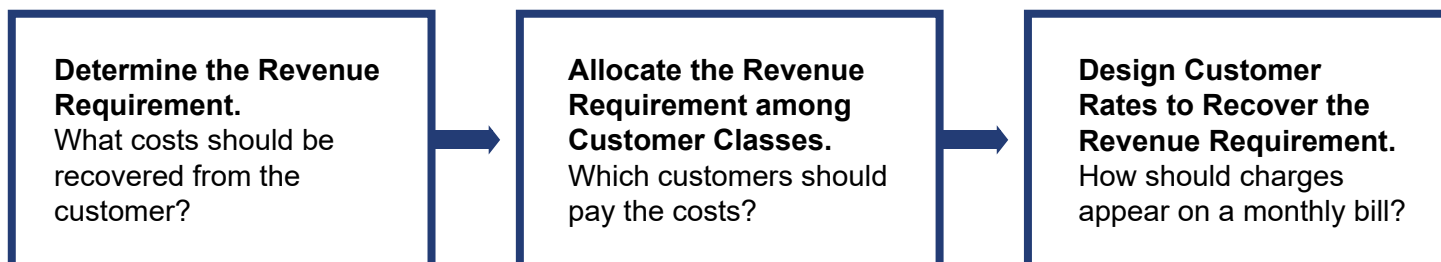




# Electric Ratemaking Fundamentals

## The Ratemaking Process

A utility must have an opportunity to recover its prudently incurred costs. The ratemaking process determines the amount of revenue needed and how revenue should be collected from a utility customer.



## Revenue Requirement: *What costs should be recovered from the customer?*

A utility's Revenue Requirement is determined based on the costs incurred by the utility during a 12-month period that represents the level of costs expected going forward.

## Cost Allocation: *Which customers should pay the costs?*

A Cost of Service Study is done to determine how to allocate the revenue requirement among customer classes according to the relative cost to serve each customer class. The cost to serve a customer class is primarily determined based on the number of customers, the peak demand of the customers, and the annual energy consumption/usage of the customers.

**Customer Class-** a set of customers with similar characteristics who have been grouped for the purpose of setting an applicable rate for electric service. Common customer classes include residential, commercial, industrial, and lighting.

A Cost of Service Study is performed in three steps:

## Standard Functionalization of Costs

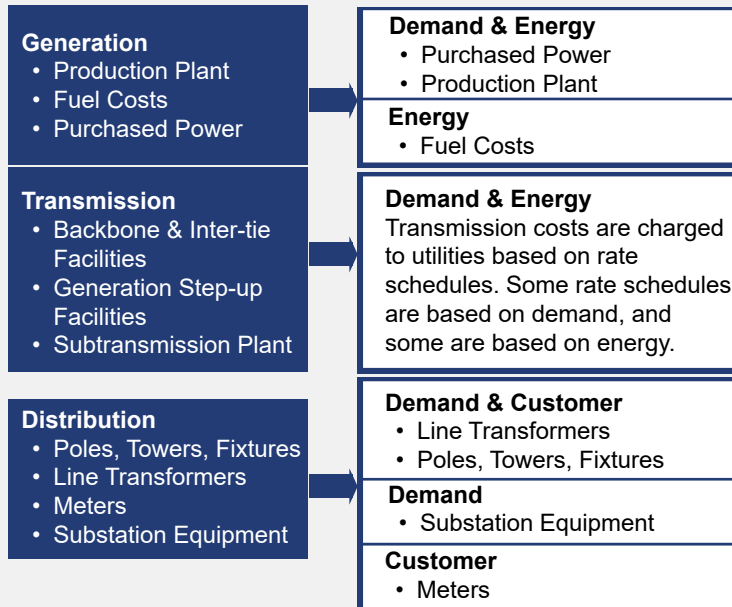
- 1 Functionalize:** Identify costs related to functions of utility service. How much cost is identifiable with electricity generation, transmission, distribution?

| Generation  | Transmission   | Distribution   | Customer  | General Plant & Overhead Expenses  |
|---|--|--|---|--|
| <ul style="list-style-type: none"><li>Debt service</li><li>Operations &amp; Maintenance (O&amp;M)</li><li>Fuel</li><li>Some transmission lines and substations needed to integrate generation resources</li></ul> | <ul style="list-style-type: none"><li>Substations connecting transmission lines</li><li>Lines (towers, conductors, etc.)</li><li>O&amp;M</li></ul> | <ul style="list-style-type: none"><li>Substations connecting distribution lines to transmission or to other distribution voltages</li><li>Lines (conductors, poles, conduit, etc.)</li><li>Line Transformers</li><li>O&amp;M</li></ul> | <ul style="list-style-type: none"><li>Service drops</li><li>Meters</li><li>Meter reading</li><li>Billing</li><li>Customer service</li></ul> | <ul style="list-style-type: none"><li>Office space</li><li>Computers and technology</li><li>Communications equipment</li><li>Pensions</li><li>Legal and regulatory</li></ul> |

**2 Classify:** Determine how much of each functionalized cost should be classified energy-related (kWh), demand-related (kW), or customer-related.

**3 Allocate:** Determine how much of each functionalized cost should be allocated to the different Customer Classes.

## Process of Functionalization and Classification



## Costs Allocation

| Function     | Allocation Factor | Each Customer Class           |
|--------------|-------------------|-------------------------------|
| Generation   | Demand & Energy   | % Production Plant + Purchase |
|              | Energy            | % Fuel Purchase               |
| Transmission | Demand & Energy   | % Transmission                |
| Distribution | Demand            | % Wires                       |
|              | Customer          | % Meters                      |

## Rate Design: What are the standards, and how should charges appear on a monthly bill?

Rates are designed to satisfy many objectives; some objectives are in competition with each other.

- 1. Sufficiency:** Rates should be designed to produce revenues sufficient to recover utility costs.
- 2. Fairness:** Rates should be designed so that costs are fairly allocated among different customers, and *undue discrimination* in rate relationships is avoided.
- 3. Efficiency:** Rates should provide efficient price signals and discourage wasteful usage.
- 4. Customer acceptability:** Rates should be relatively stable, predictable, simple, and easily understandable.

Electric customers are typically charged for electricity using a two-part or three-part rate schedule.

Residential customers typically pay a monthly fixed **customer charge** (e.g., per month) and an **energy charge** based on customer usage (e.g., per kilowatt hour).

Commercial and industrial customers often pay for electricity based on a three-part rate schedule which consists of a fixed **customer charge**, an **energy charge**, and a **demand charge**. The demand charge reflects the maximum amount of power a commercial or industrial customer uses at any one time.

## Rate Components & Costs Recovered

| Rate Component                              | Costs Typically Recovered through Rate Component  |
|---|---|
| <b>Customer charge</b><br>\$/customer-month | Customer-related costs (costs of meters, service drops, meter reading, and billing and collecting)  |
| <b>Energy charge</b><br>\$/kWh              | Energy-related costs (costs that vary with energy usage). For residential and small commercial customers, the energy charge is also used to collect all costs that are not customer-related.  |
| <b>Demand charge</b><br>\$/kW               | Demand-related costs (associated with a customer's maximum demand). To accurately reflect capacity cost causation, a large portion of the demand charge would be based on the customer's demand during system simultaneous peaks or local simultaneous peaks. |