

Electric Utility Cost of Service and Rate Design

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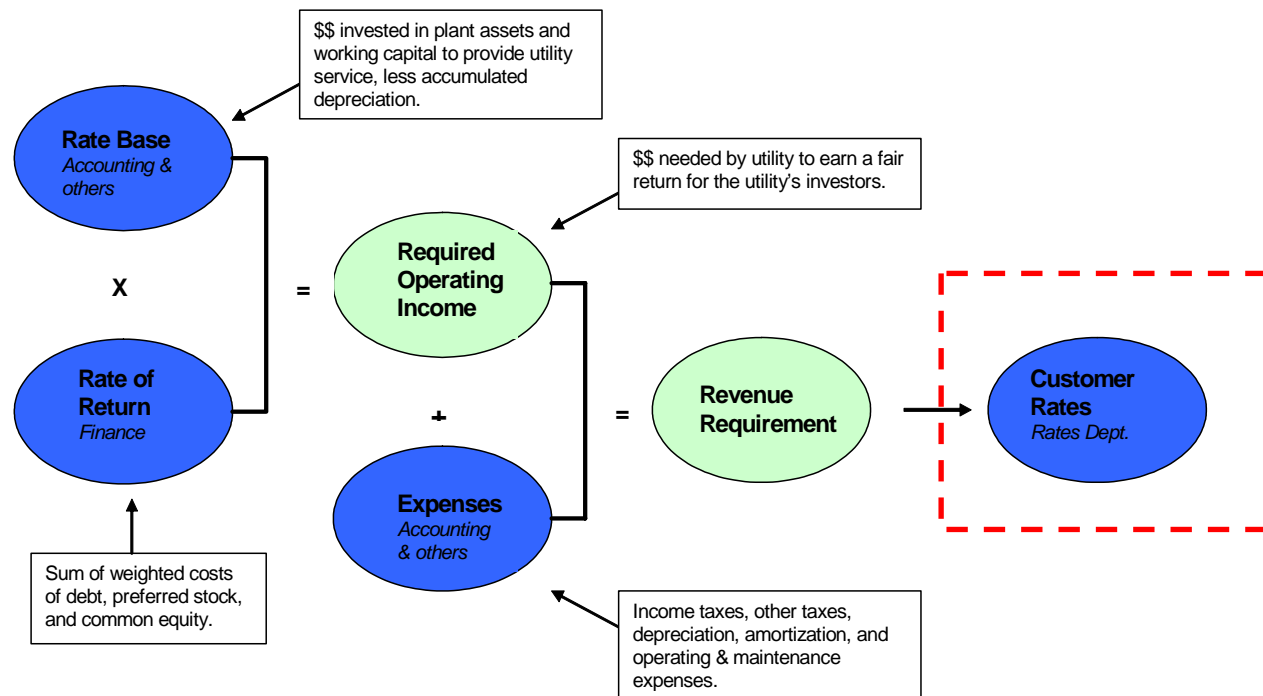
Financial Analysis Division
Public Utilities Bureau
Illinois Commerce Commission

Topic Overview



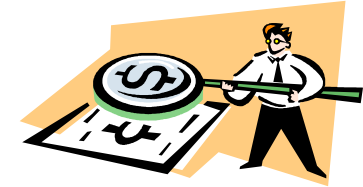
- Terminology
- Types of Rates
- Rate characteristics
- Cost of Service Study (COSS)
- Rate Design
- Other

Rate Setting Process

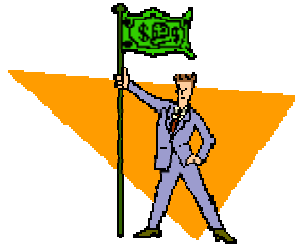


After the revenue requirement is identified, the next step is to determine how that revenue will be collected from the utility's various types of customers by developing customer rates.

Terminology



- A **tariff** is a published document setting forth the types of rates charged for specific utility services and the general terms and conditions under which such services will be provided.
 - To be effective, a utility tariff must be filed with, and approved by, the ICC.
 - Sec. 9-201 of the Public Utilities Act requires tariffs in effect to be made publicly available.
- A **rate** is a standard unit charge for service rendered by a utility to its customers and is applicable under general circumstances.
- A **rider** is a form of tariff that represents a supplemental charge to specific customer classes. The costs recovered through a rider are not recovered through the base rates.
 - Examples include riders to recover costs of environmental clean-up; costs of purchased electricity; costs of energy efficiency programs; costs of various taxes



Types of Rates

- **Customer Charge** – A flat monthly charge to cover fixed costs incurred to provide service to the customer (e.g., cost of the service line; cost of billing and customer service).
- **Meter Charge** – Traditionally has been included in the customer charge, but is itemized separately for electric delivery service. A flat monthly charge that covers, among others, the cost of the meter and meter reading.
- **Usage Charges** (includes Commodity, Transmission and Distribution Charge) – A cents per kwh charge multiplied by the customer’s usage volume. The distribution charge is a “base rate” developed in a rate case that mostly recovers the cost of delivering utility service.
- **Demand Charge** – Generally a flat charge multiplied by the size of the customer’s load (where “load” is the maximum kw used per month). Typically applied to medium or larger, non-residential customers. It recovers the incremental cost of building larger facilities to meet these customers’ higher load demands.

Rate Characteristics



- **Flat rate** – Same rate applies regardless of usage volume or season.
- **Declining Block** – Rates decrease as usage increases.
Example: 8 cents/kwh up to 1,000 kwh;
6 cents/kwh for the next 5,000 kwh;
4 cents/kwh for > 6,000 kwh.
- **Inclining Block** - Rates increase as usage increases.
Example: 8 cents/kwh for up to 1,000 kwh;
9 cents/kwh for the next 5,000 kwh;
11 cents/kwh for > 6,000 kwh.



Rate Characteristics

- **Seasonal rate** – Different rate applies depending on time of year.
Example: summer and non-summer rates.
- **Time-of-day rate** - different rate applies depending on time of day.
Example:
 - 8 cents/kwh from 10 a.m. to 8 p.m., Monday – Friday
 - 5 cents/kwh for all other kwh in a month.
- **Real time pricing rate** - charge for the supply of electricity changes by the hour based on the published price at PJM or MISO.



How Customer Rates Are Developed

- A **Cost of Service Study (COSS)** develops charges for service that will apply to each rate class.
- Rate classes are determined by grouping customers with similar usage patterns.
 - Customers with similar usage characteristics impose similar costs on the utility.

Examples: Residential, Commercial, and Industrial Class

- Some classes are further divided into Sub-Classes as needed.

Examples: Residential Space Heating
Residential Non-Space Heating
Commercial Grain Drying
Non-residential > 10 mw
Non-residential High Voltage



Types of COSS

- Embedded Costs

- Based on historical information
- Information can be verified
- Less complex than marginal



- Marginal Costs

- Based on projected information and assumptions
- Much more complex than embedded
- Most utilities do not have the capabilities in-house, and the expense for consultant capabilities can be very high
- Resulting rates may not be very different from rates under an embedded approach.





Cost of Service Study (COSS)

- Cost Allocation : The costs of providing service are caused by all customers and, therefore, are charged to all customers on a weighted basis in a COSS.
- How does it work? By applying allocation factors developed by analyzing the relationships (i.e., cause and effect) among various cost categories.
 - Examples:
 - Customer Records and Collection Expenses are allocated to customer classes based on the average number of customers per class.
 - Meter Reading Expenses are allocated based on the number of meters in each customer class.

Basic Steps in a COSS



- Functionalize
 - Identification of costs as related to functions within each type of utility service. Examples:
 - **Electric utility**: How much cost is identifiable with generation, transmission, distribution?
- Allocate
 - Determine how much of each functionalized cost is apportioned to each customer class.
 - All costs are allocated.
 - Allocation factors are developed to appropriately weight costs to the customer classes.
- Classify
 - Determine how much of each allocated cost should be in the customer charge, the meter charge, the demand charge, or the usage charge.
 - All costs that have been allocated to the customer classes are designated either to the customer charge, the meter charge, the demand charge or the usage charge.

Cost of Service Allocation Factors

Allocation factors can be developed from various characteristics, such as:

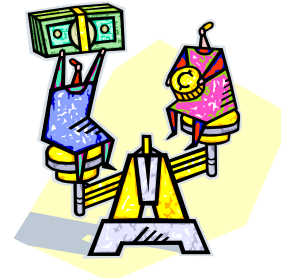
- Customer class Peak Demands
- Customer class Usage
- Number of Customers
- Number of Meters
- Number of Services
- Many Others



Rate Design

- The Cost of Service Study does not provide a precise and inflexible set of rates for each customer class, but rather a starting point for designing rates.
- The resulting rates from a COSS must then be adjusted for other items such as social and economic concerns (e.g., size of customer bills, potential rate shock, who should pay for programs, environmental considerations).

This entire process is referred to as rate design.



Example: Residential Customer Bill



- **Bundled Rate Bill**

*Customer Charge
(fixed \$ per month)



- **Post-2006 Bill**

**Customer Charge*
**Meter Charge*

*Energy Charge
(cents/kWh)



Supply Charge

Energy Charge

Market Value Adjustments

Supply Cost Adjustment

Delivery Charge

**Distribution Service*

Transmission Service



Rate Design Objectives

- **Cost Causation--Customers Who Cause the Costs, Pay for Those Costs**
 - Example: Large customers use sophisticated demand meters which are much more expensive than residential meters that simply record kwh. The costs for the more expensive meters are allocated to those large customer classes and not to the small customer classes.
 - Example: Small use customers are more likely to not pay their monthly bills than are large customers. Thus, the costs for uncollectible accounts are allocated more to the small customer classes.
- **Recover the Utility's Revenue Requirement**

Utilities are allowed by law to earn the revenue requirement approved by the Illinois Commerce Commission.



Rate Design Objectives

- **Include Only the Appropriate Costs**
 - Some costs may be disallowed by the Commission as imprudent, unnecessary or not reasonable.
- **Understandable to Regulators and Customers**
 - The rates that are charged to the customers must be stated in a form that the average customer can understand and presented in a bill format that the customer can calculate on his own to verify the company's calculations.
- **Avoid Adverse Impacts Between Customer Classes, Where Possible**
 - Subsidies between classes occur, but should be avoided as much as possible.

Rate Design



- Each cost component is divided by Annual Billing Units by class to determine the customer, meter, demand and usage charges.

The annual billing unit used to determine the customer charge is the number of customers in each class.

The annual billing unit used to determine the meter charge is the number of meters in each class.

The annual billing unit used to determine the demand charge is the total amount of kw demand in each class.

The annual billing unit used to determine the kwh usage charge is the total amount of kwh usage in each class.

Typical Rate Issues in a Rate Case



- Should all fixed costs be recovered through the Customer Charge
- Weather normalization (what is the appropriate time period)
- Bill Impacts of revenue increases on Customer Classes

Terms and Conditions

- Generally includes language covering topics that apply to all tariffs, such as:
 - Application for service
 - Deposits
 - Exclusivity of service
 - Protection of utility property
 - Liability
 - Metering
 - Billing for service
 - Late payment
 - Discontinuance of service
 - Disconnect notices



Other Information

- Tariffs and rates for Commonwealth Edison Company and Ameren Corporation are on their websites.
- www.ameren.com
- www.exeloncorp.com
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