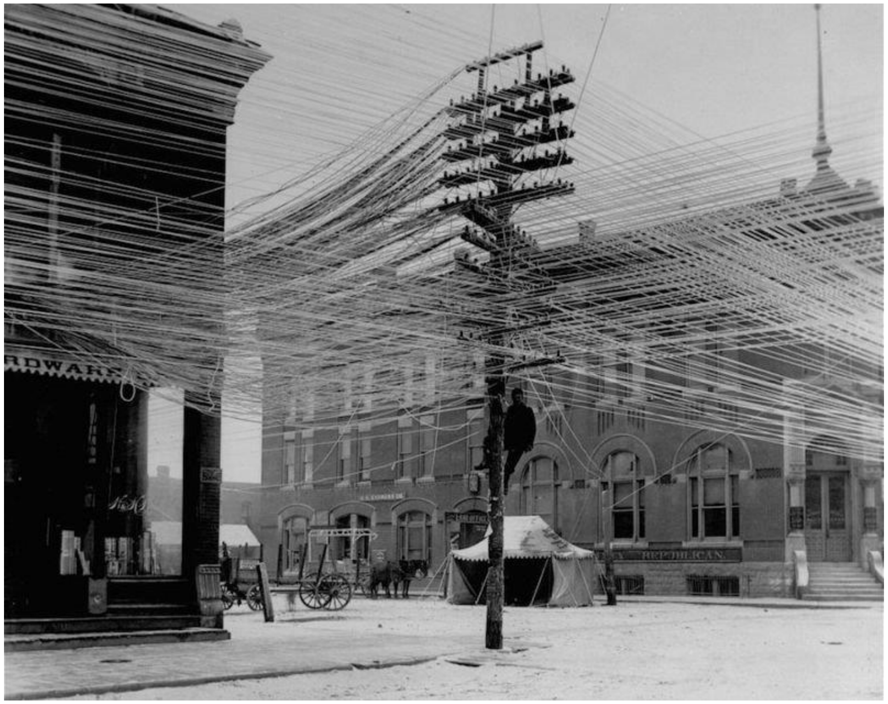
Overview of Electric Utility Ratemaking

TOM FRANTZ
DIRECTOR - ELECTRIC DIVISION, NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION
4 OCTOBER 2019

Why and What do We Regulate

- We regulate “public utilities” that are considered natural monopolies and that are vested with the public interest
  - State versus federal regulation
  - Electricity, natural gas, water, sewer
- A monopoly is a market with only a single seller of a homogenous product that has many buyers and no good substitutes for that product; a natural monopoly exists when a single supplier can serve the market at a lower cost than can two or more firms
- A monopolist has the power to set prices to maximize profit – it has market power
- Regulation is intended to substitute for those markets that are not conducive to a competitive model (e.g., distribution and transmission in electricity)
- Markets can and do change driven by changes in technology

The Past - Kansas 1914



The Present

Legal Standards for Rate Setting

U.S. Supreme Court Bluefield and Hope decisions

Bluefield – a utility is entitled to an opportunity to earn a return on its investments commensurate with similar business risks

Hope – reinforces Bluefield decision and emphasizes that returns should cover operating expenses and capital costs

Legal Standards for Rate Setting, Continued

Other Key Regulatory Concepts

- Safe and Reliable Service
- Rates are Just and Reasonable
- Prudent Investment and Management
- Assets are Used and Useful
- Costs are Known and Measurable

Revenue Requirement

Concept of Revenue Requirement - the sum total of the revenues required to pay all operating and capital costs (includes a return on investment) of a utility to provide service – underlies utility regulation

Revenue Requirement, Continued

RR = O&M + A&G + D + T + (r x RB) where:

RR is the authorized revenue requirement

O&M is the operation and maintenance costs

A&G is the utility's administration and general costs

D is depreciation

T is taxes

r is the overall return or weighted cost of capital

RB is the rate base where the rate base equals the total plant asset value minus the accumulated depreciation plus working capital; assets in NH are valued at original cost not replacement or some level of the value of service

Key Steps in Setting Rates

Must move from setting the RR to setting rates by class
5 Step Process

1. Establish the Revenue Requirement
2. Functionalization of Costs by Type of Service
   - Generation, Transmission and Distribution (also customer service and admin) based on FERC Uniform System of Accounts
3. Classification of Costs
   - Purpose is to better reflect costs in rates – are the costs fixed or variable, customer-related or not?
4. Allocation of Costs
   - How will the pie be divided? Cost causer pay? Favor large C&I?
   - No perfect way to allocate joint costs
5. Establish Rates in the Tariff for each customer class
   - Based on billing determinants (kWh, kW, # customers)
   - How fine should the rates be? TOU? Large customer charge?

Principles in Setting Rates

Bonbright's Eight Criteria of a Sound Rate Structure

1. Simplicity, understandability, public acceptance and feasibility
2. Freedom from controversies concerning interpretation
3. Effectiveness in yielding the total revenue requirements of the utility
4. Revenue Stability
5. Stability of the rates with few changes
6. Fairness
7. Avoidance of "undue discrimination"
8. Efficiency of the rate design

Rates are Based on Costs, but which Costs? Two Types of Cost Studies

Embedded or Allocated Cost of Service Studies are studies that look at historic costs on the books of the utility. An ECOSS determines the overall return as well as the earned return by rate class. Works off of the test year revenue requirements to determine which classes are over-recovering their allocated costs and which are under-recovering their allocated costs.

Uses different cost allocation factors to apportion cost to different rate classes.

For example, are the costs customer-related or demand-related or both?

Customer-related include meters, service drops, billing and customer service.

Demand-related are costs of serving the load regardless of number of customers such as distribution plant. Both may include transformers and circuits.

How to allocate costs that are both is subjective and controversial.

The Other COSS- Marginal

Preferred by economists because it focuses on present and future cost of service – the incremental cost of serving the next customer or the next kW or kWh.

Marginal costs (especially marginal social costs) represent an “efficient” price where the price equals the system marginal cost. Easier said then done.

What are the expected loads? Which class is driving them? When do they occur?

How are the “sunk costs” recovered while still sending an efficient price signal?

A Quick Overview of the Eversource MCOSS

Was filed recently as part of the Eversource base rate case. Similar to what was filed in the net metering proceeding. It's a "bottoms up" approach.

Generally, "the MCOSS calculates the marginal unit cost of local distribution facilities based on a review of historical connection work orders, which distinguished between single phase versus three-phase. The calculation also considered the system-wide proportion of underground vs. overhead facilities. Therefore, the marginal cost calculation is representative for the entire service territory. A marginal facilities unit cost is assigned to each residential and general service rate class, depending on the type of facilities that each rate class uses."

Demand

Engineering definition: “the power received by load.” NERC

Economic definition: the amount of power that would be consumed by loads if system frequency and voltage were equal to their normal operating values for all consumers.” Stoft, *Power System Economics*.

Demand Charge is the portion of the customer’s bill that is based on the customer’s maximum demand over a specified period as detailed in the utility’s tariff. (e.g., highest kW or kVA over a 15-minute period in the last month or last 12 months).

Demand charges are common for larger class commercial and industrial customers, but not for smaller class commercial customers or residential customers.

Better Rate Designs

Need over to time to be more dynamic for a smarter, more responsive and distributed grid.

More time-varying rate structures are becoming more common and will continue to expand.

Should these rates be mandatory or voluntary? Simple such as TOU or more complex such as CPP or RTP?

How will they affect other important considerations of a sound rate structure?

Will they be understandable, acceptable and affordable?

Will they be able to adapt to rapid changes in technology and automation?

Will we still be debating this five or ten years from now?