Rate-Setting Principles And Philosophies

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Basic Math of Rate Making

$$\text{RATES (cents/kwh)} = \frac{\text{REVENUE REQUIREMENTS (capital costs + operating expenses)}}{\text{ENERGY SALES (kwh)}}$$

Rate Setting

- Rate setting is prospective
- Rates are set today to recover the future cost of service
- Development of the revenue requirement is largely a science, but rate design involves significant element of art
- Cost of service practices have been in use since 1890's in US, but developments in information technology and metering affect these practices

Rate Setting II

- Rate setting may fulfill several objectives
- Rate regulation and design is an act of government exercising social policy with the objective of enhancing social welfare

Rate Setting Objectives

- Rates should not be:
  - Unreasonably preferential
  - Prejudicial
  - Predatory
  - Discriminatory
  - Anticompetitive
- Rates must not embody unreasonable distinctions
- Rates should be just, reasonable, sufficient, equitable, and consistent

OVERVIEW

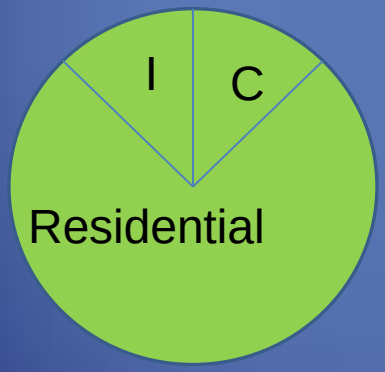
- Steps in Setting Rates
  - Establish utility's revenue requirement
  - Allocate revenue requirements to customer classes
  - Design rates to recover revenue requirements
  - Schedules
  - Establish Rates

Rate Design
or "How the Pie is Sliced"

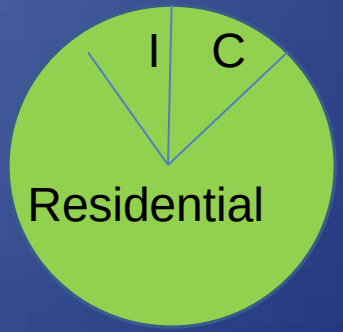
Determine Cost to Serve

Total revenue Requirements

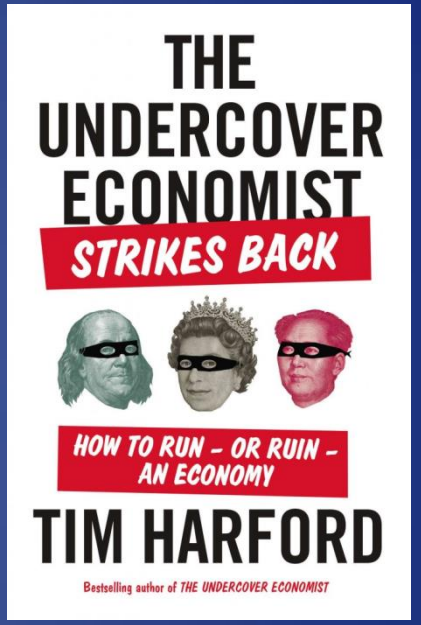
Allocate Costs to Classes

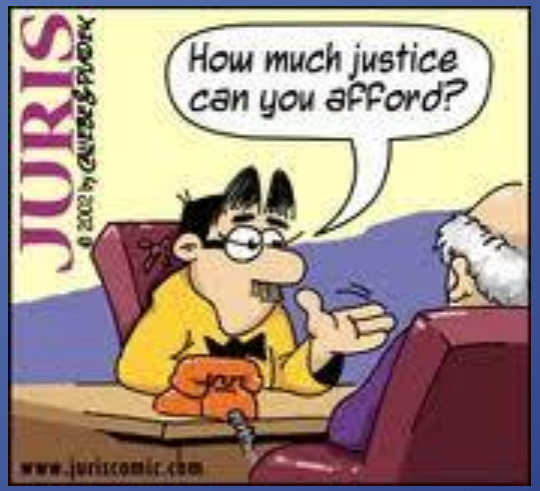


Design Rates to Reflect Cost and Produce Required Revenue by Customer Class



PSC Rate Players





Information for Allocating Costs and Designing Rates

- Costs
- Consumption
- Billing Determinants
- Tariff

Rate = Cost/Billing Determinants

Charge = Rate * Billing Determinants

Consumption

- Number of customers by class
- Kilowatt-hour sales by class
- Class coincident peak
  - Requires statistical sampling with demand meters
- Revenue by class
- Provide test-year actual information and any adjustments
  - Weather normalization adjustment or customer adjustment (classification or number)
- Annual and monthly information, historical information

Concepts Relating to Demand Charges

- **Demand or load:**
  - Rate of consumption at a specified time or over a time
  - Demand on a utility system is the amount of energy consumed at a specific time
- **Coincident peak demand (CP)**
  - A customer's or customer class's demand at the time of a utility system's peak demand
  - CP may be used to allocate costs to customers
- **Non-coincident peak demand (NCP)**
  - A customer's or customer class's maximum demand, regardless of when the system peak occurs
  - Commercial and industrial customers may pay monthly demand charge based on their NCP
- **Average demand**
  - The total amount of energy consumed during a period divided by the number of hours in the period

Forecasting

- Focus on conceptual aspects of forecasting billing determinants.

Forecasting Energy Consumption (easier)

(1) econometric way: time series data

(2) bottom-up engineering approach: special equipment

accurate forecast:

naïve forecast; sophisticated forecast; *simultaneous equations*

Expenses, Invested Capital,

- Fuel
- Purchased Power
- Operations and Maintenance
- Factoring, uncollectible
- Depreciation, amortization
- Payroll Taxes
- State and Local Taxes
- Cost of Debt
  - Cost of Equity

Rate Models

Seasonal rates

Time-of-use rates

--incorporate the *time dependence of consumption*.

Drawbacks of these two:

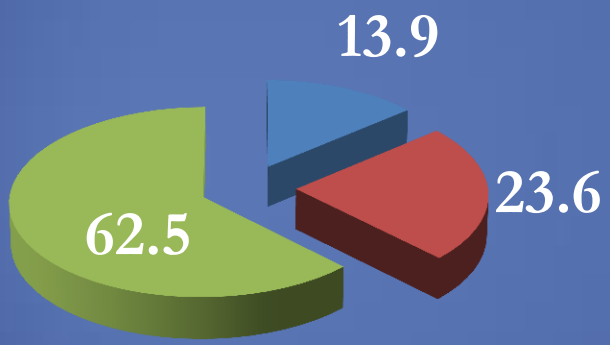
(1) Customers do not like overall rates to increase in peak seasons, perceiving that the utility is taking advantage of them.

(2) *Time-of-use* rates can only be implemented if customers have more sophisticated meters that measures consumption in each hour.

(3) Both conflict with regulatory goals of rate stability.

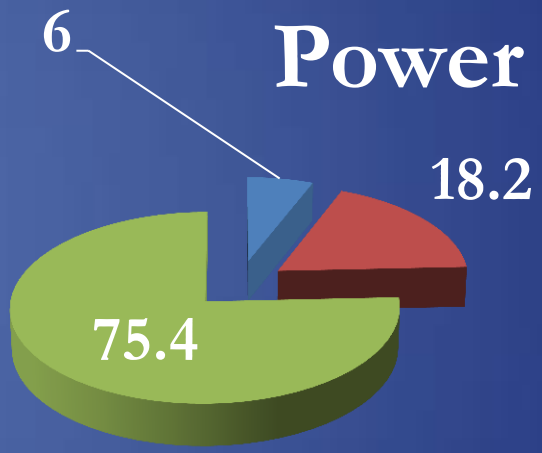
Customers and Production

Customers



- Municipal
- Cooperatives
- Investor Owned

Generated Power



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