BERKELEY LAB

Basics of Cost of Service Ratemaking

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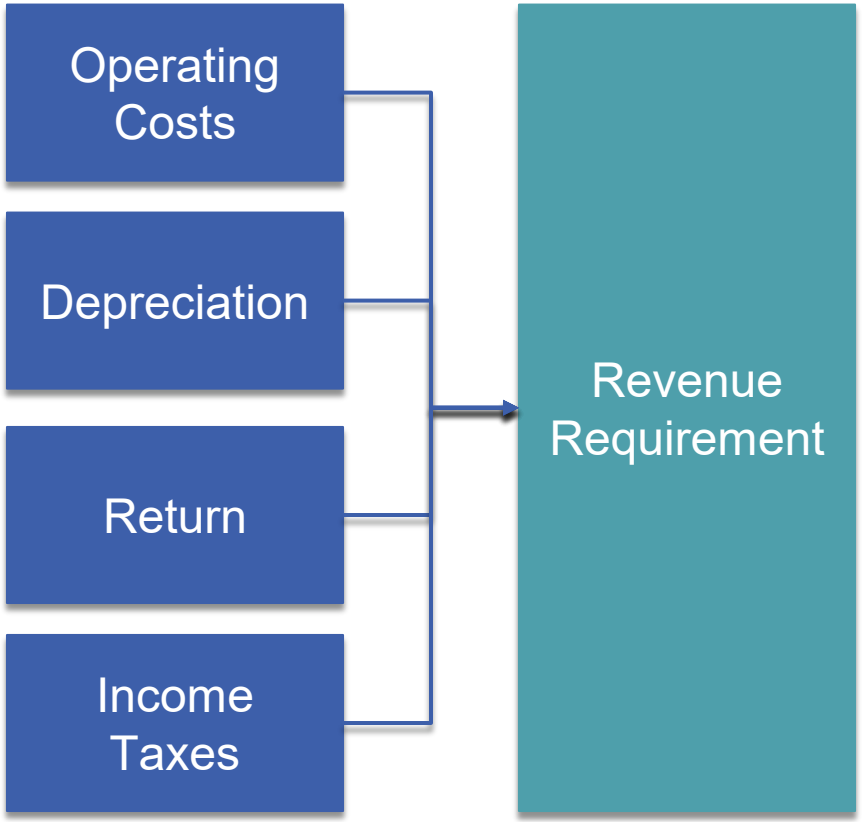
Overview of Cost of Service (COS) Ratemaking

- Regulators strive to approve rates that are reflective of the costs of the services rendered by utilities
  - Costs must be deemed to be prudently incurred for inclusion in rates
  - Assets paid for in rates should be used and useful
  - Rates must be deemed fair and reasonable
  - Rates must allow a utility **the opportunity** to both sufficiently recover its incurred costs and to earn returns comparable to what a similarly situated utility would achieve

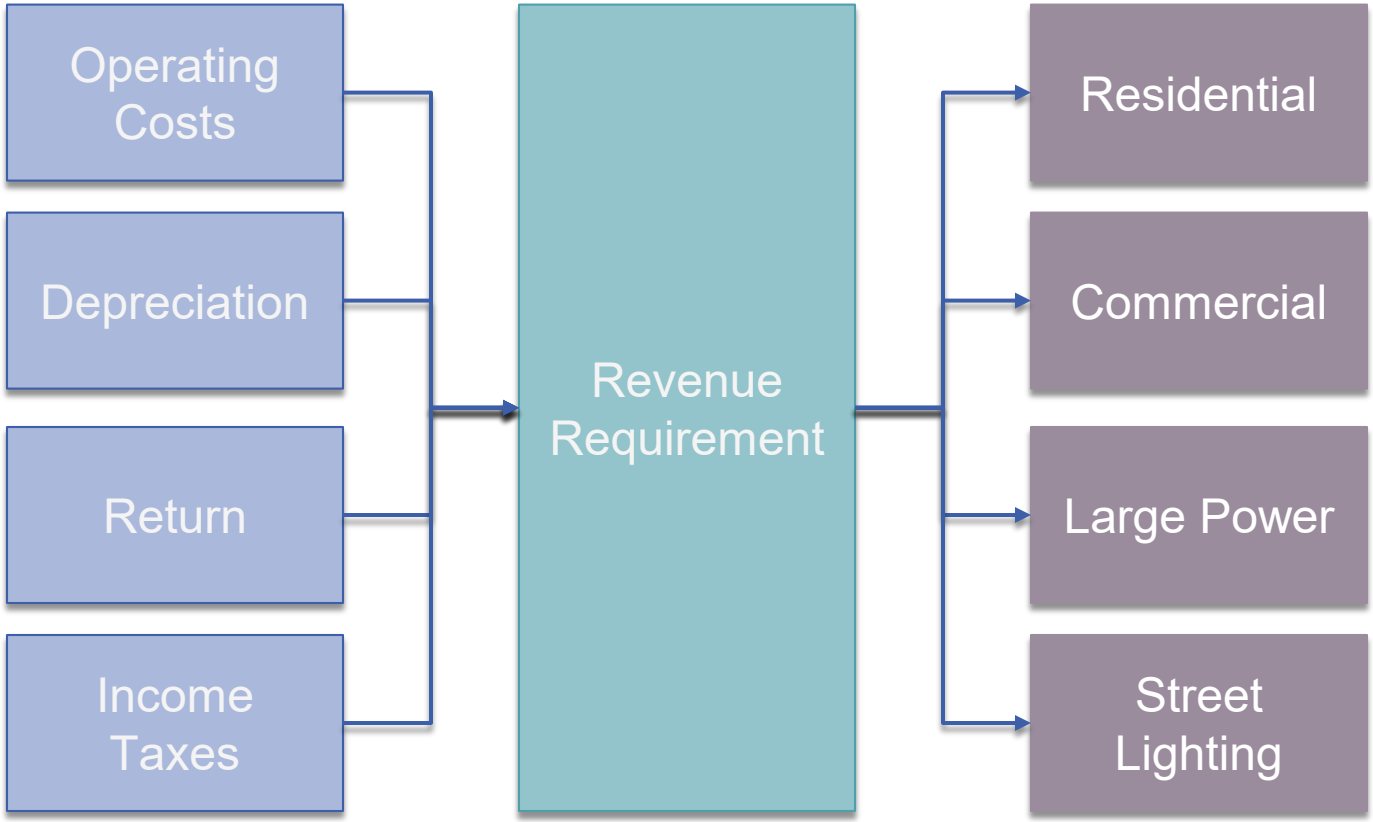
Elements of a Cost of Service (COS) Study

1. Determine the annual cost of serving all of the utility's customers



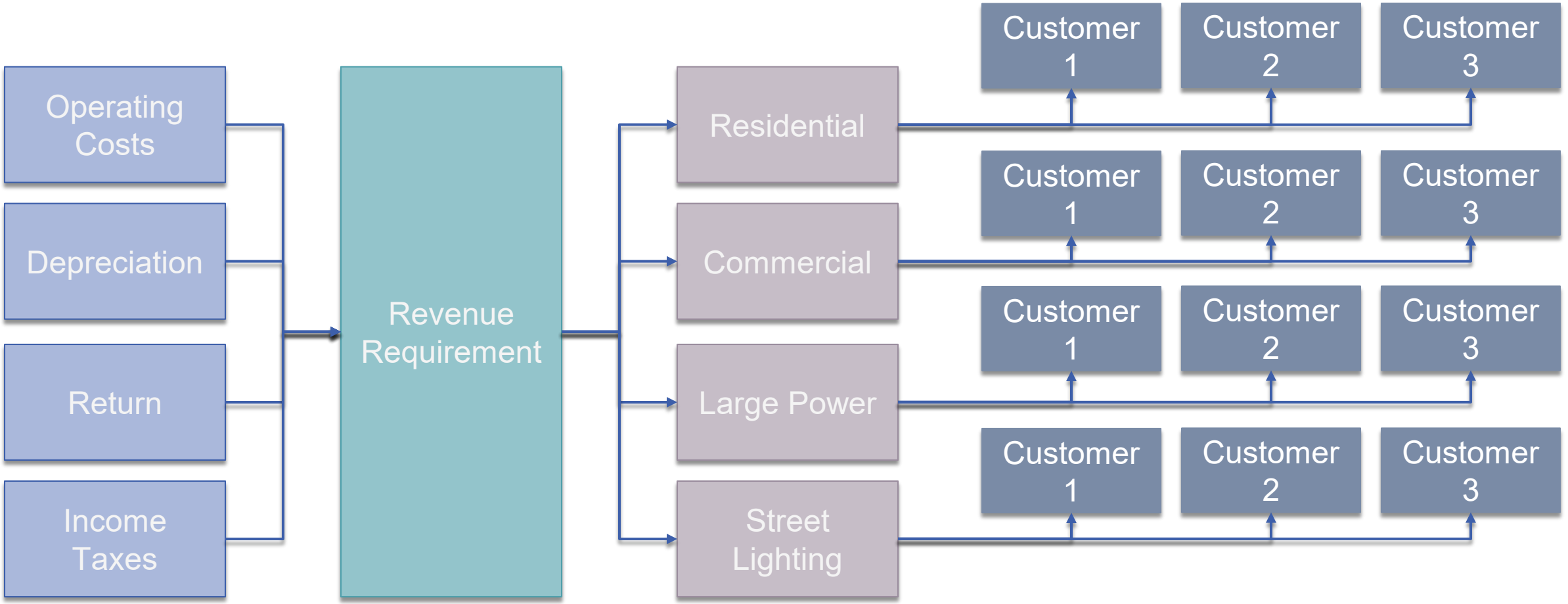
Elements of a Cost of Service (COS) Study

2. Determine the cost responsibility for each customer class



Elements of a Cost of Service (COS) Study

3. Design rates that collect class-level revenue requirement for all customers in the class



Components of Revenue Requirement (RR)

Operating & Maintenance Costs +

- Fuel & Purchased Power
- Fixed O&M
- Insurance
- Taxes (excluding income tax)
- Salaries

Depreciation +

- Return **of** utility capital invested in assets
- Depreciation is often defined as the gross investment in assets ÷ useful life of assets
- More complex depreciation expense schedules can be applied for a variety of reasons

Return +

- Return **on** capital invested in rate base assets
- Debt interest
- Equity return (ROE)

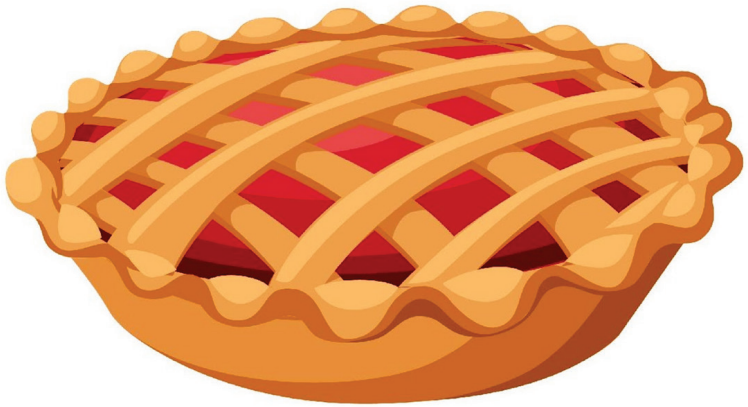
Income Tax

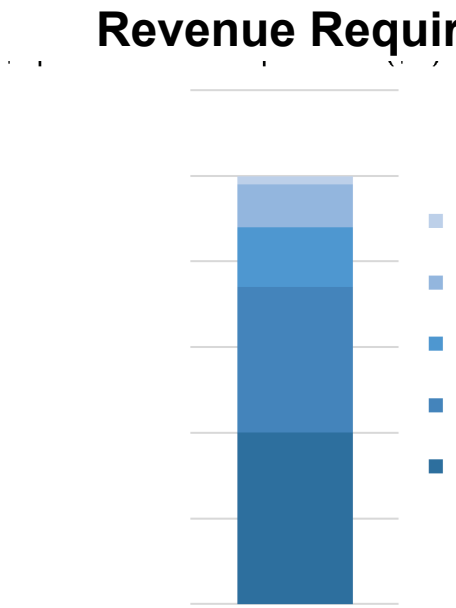
- State income tax
- Federal income tax
- Note income tax is not applicable to all utilities

POLL: Which type of capital investments are investor-owned utilities able to earn a return on?

1. Only those funded by debt
2. Only distribution and transmission investments
3. Only those funded by equity that are approved by regulators for inclusion in rate base
4. Only those approved by regulators for inclusion in rate base

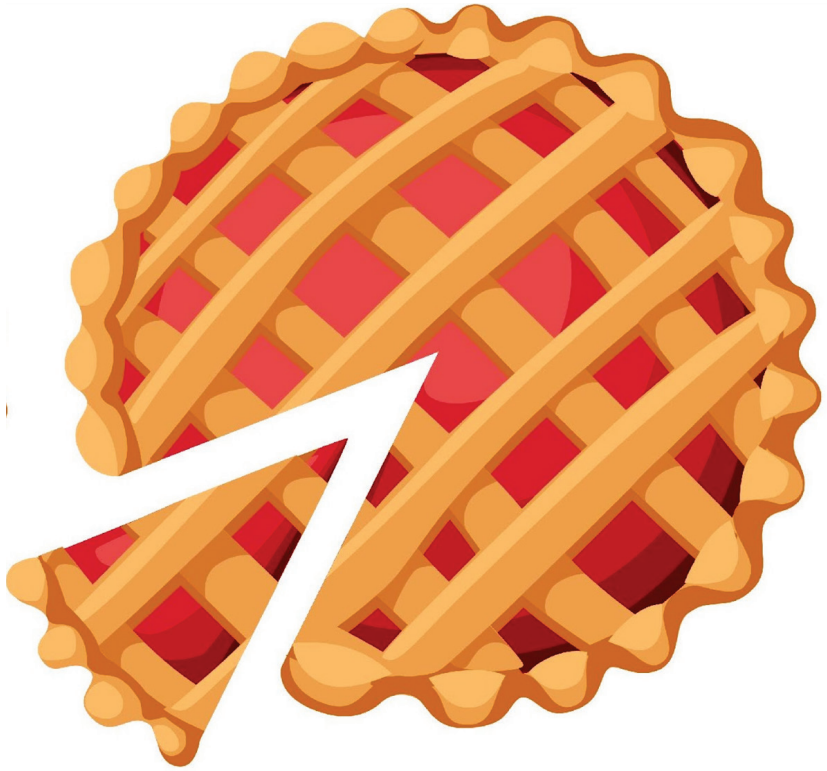
Test Year Revenue Requirement (RR)





- The annual revenue requirement amount can be compared to the size of a pie that is needed to serve all of the utility's retail customers over a year.
- The "Test Year" RR is the amount used to design rates in the general rate case. This may be a recent historical value or a future projected value.

Allocation of RR to Customer Classes

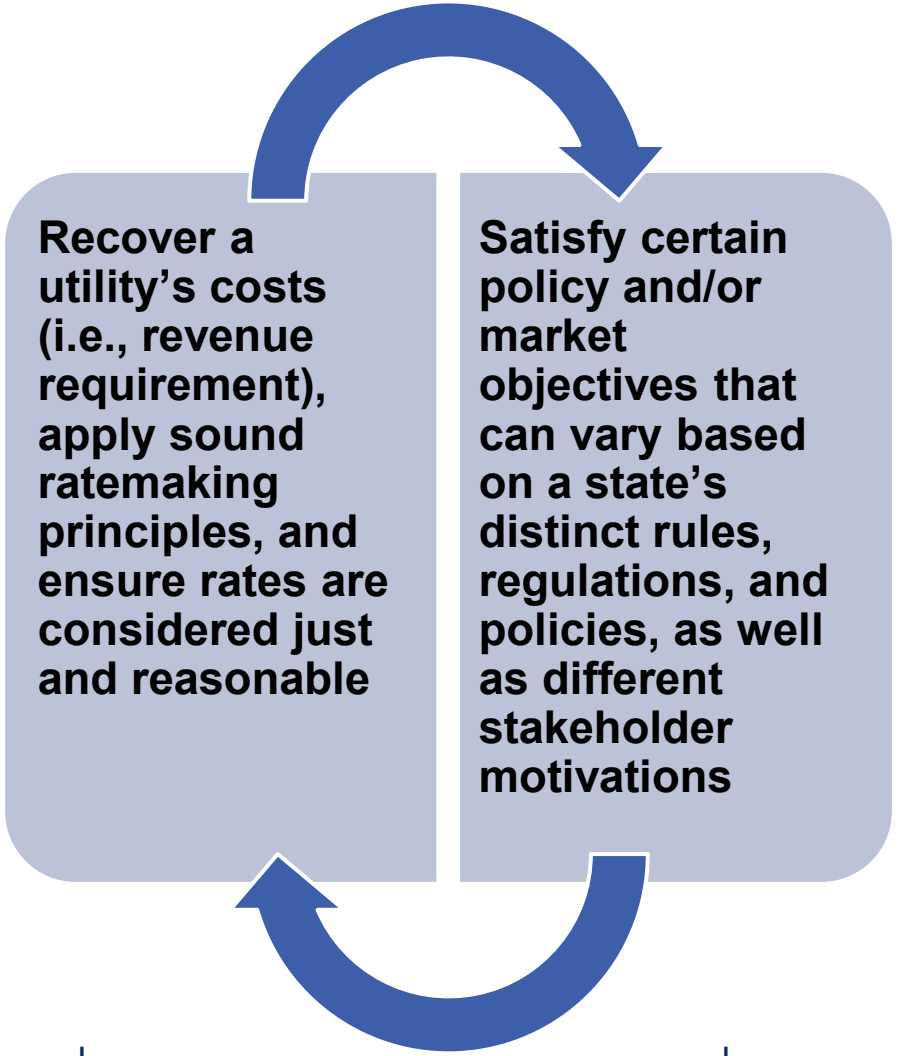


- The revenue requirement allocation determines the revenue requirement amount that each customer class is responsible for
- This is analogous to dividing the pie into slices that correspond to the revenue responsibility for <u>each customer class</u>

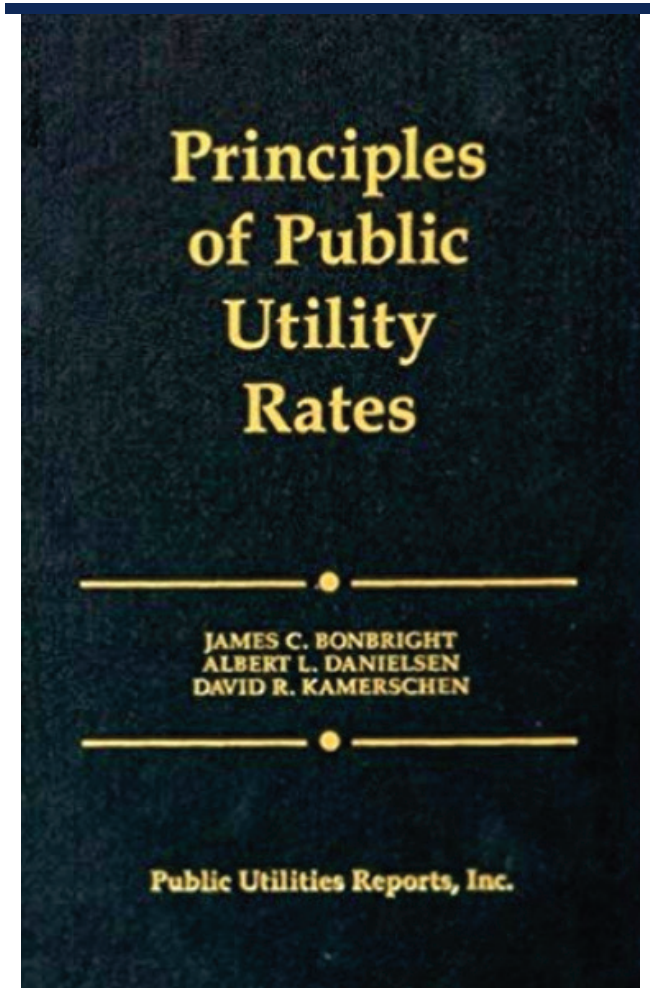
Rate Design

- Rate design determines how each slice of the revenue requirement pie is collected
- The rate design step allocates revenue responsibility to each customer in each class.
- Ideally, the entire slice of pie is collected from customers annually.

Retail rates are designed based on two broad concepts



Rate Design Criteria (Bonbright Principles)



- **Commonly employed rate design principles include the following:**
  - Customer understanding
  - Ease of implementation
  - Collect utility's cost of service
  - Fairly apportion costs among customers
  - Avoid undue discrimination
- **Balancing these principles can be more of an art rather than a science**
  - Typically involves prioritizing policy goals such as sending economically efficient price signals, achieving state policy goals, enabling or promoting adoption of distributed resource technologies

Rate Design: Common Rate Components

$/kWh Volumetric Energy Charge

- **Options**: Flat, differs by quantity (inclining/declining blocks) and/or time of use (peak vs. off-peak period).
- **Science**: Ideally based on energy costs driven by electricity usage. Can include generation capacity costs.
- **Art**: In actuality, balances policy goals and ability of customers to understand and respond to price signals.

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$/kW-mo Volumetric Demand Charge

- **Options**: Differs by customer peak demand measurement period (i.e., coincident or non-coincident). May also vary by time of use.
- **Science**: Ideally based on fixed costs driven by distribution and/or generation capacity infrastructure.
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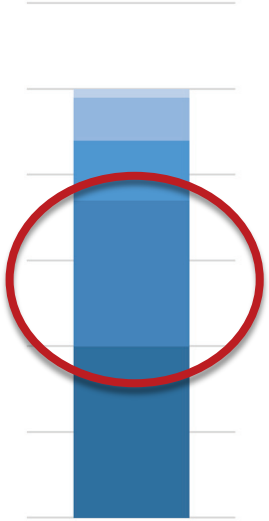
$/Month Customer Charge

- **Options**: Differs by customer class, size of customer (kWh, kW).
- **Science**: Ideally based on customer-related fixed costs (metering, billing, accounts).
- **Art**: In actuality, balances energy price signal and impacts on low-usage customers.

Rate Design Example

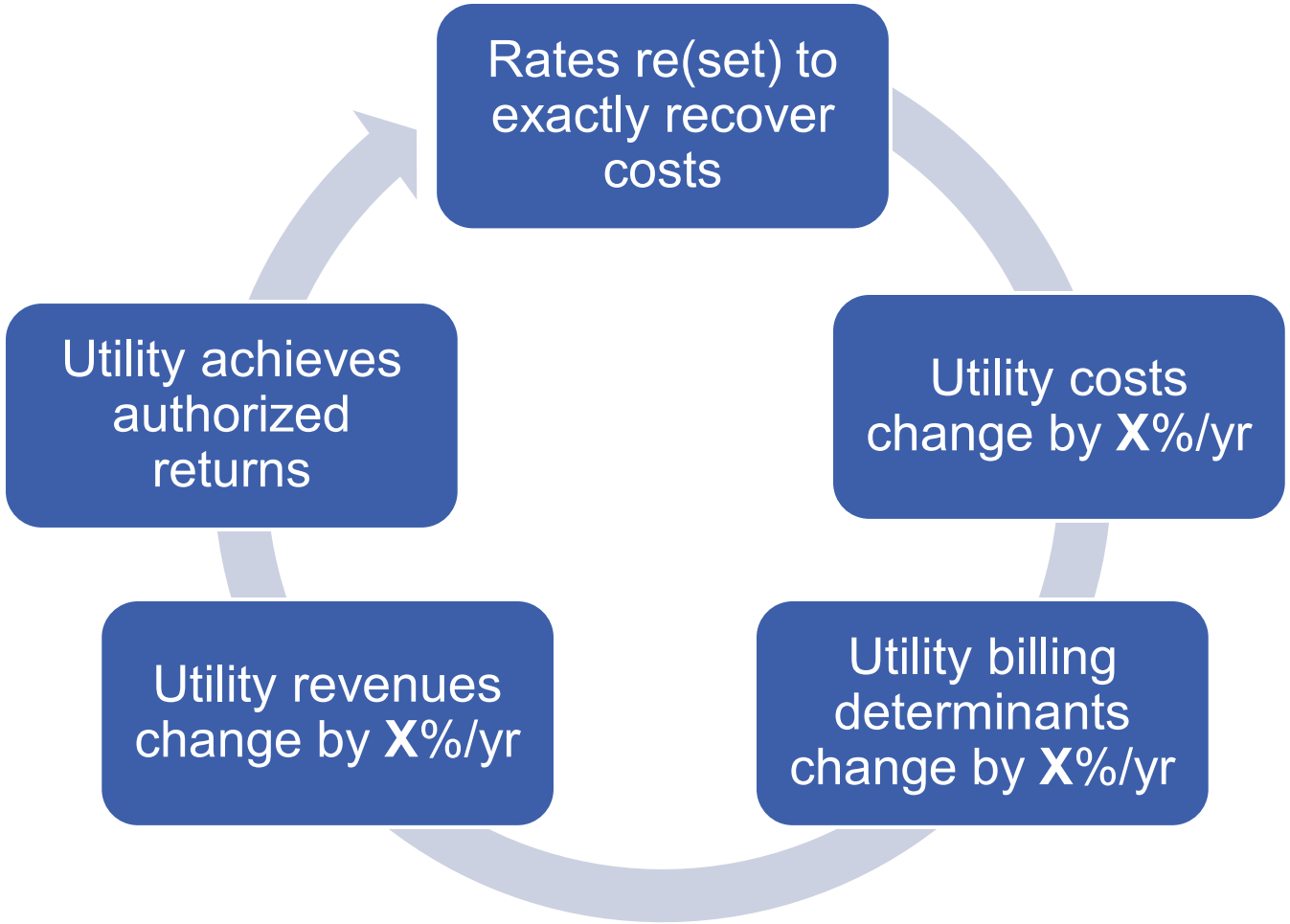
Revenue Requirement Example

RR Component	Total	Residential	Commercial
Non-fuel O&M			
(A) Allocated RR ($MM)	$85	$41	$44
(B) Billing Determinants (MWh)	600,000	230,000	370,000
Rate = A / B (¢/kWh)	**$14.2**	**$17.8**	**$11.9**

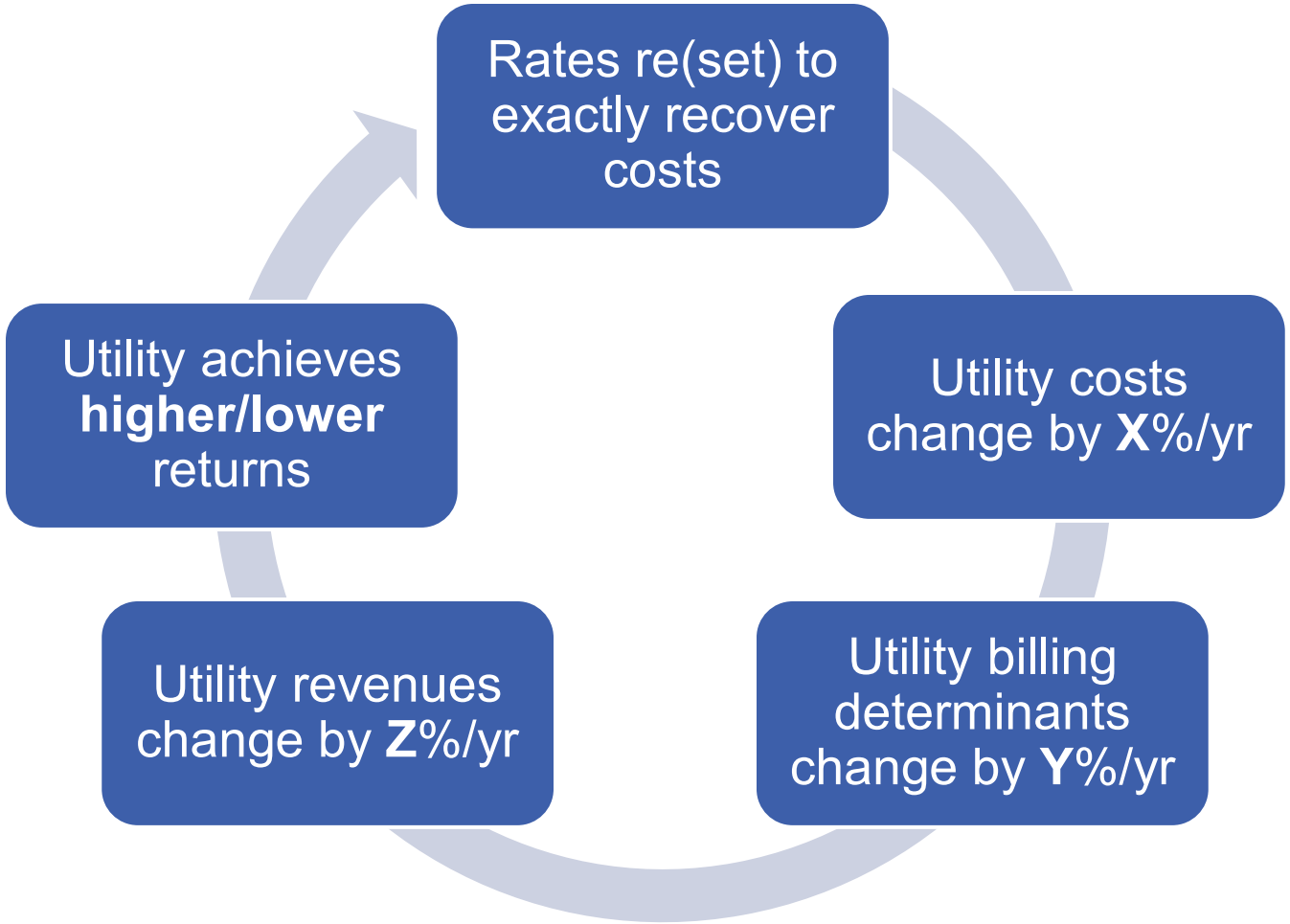


- Rates are designed to collect the revenue requirement that is allocated to each customer class
- For each class and rate component, rates equal the allocated RR ÷ billing determinants

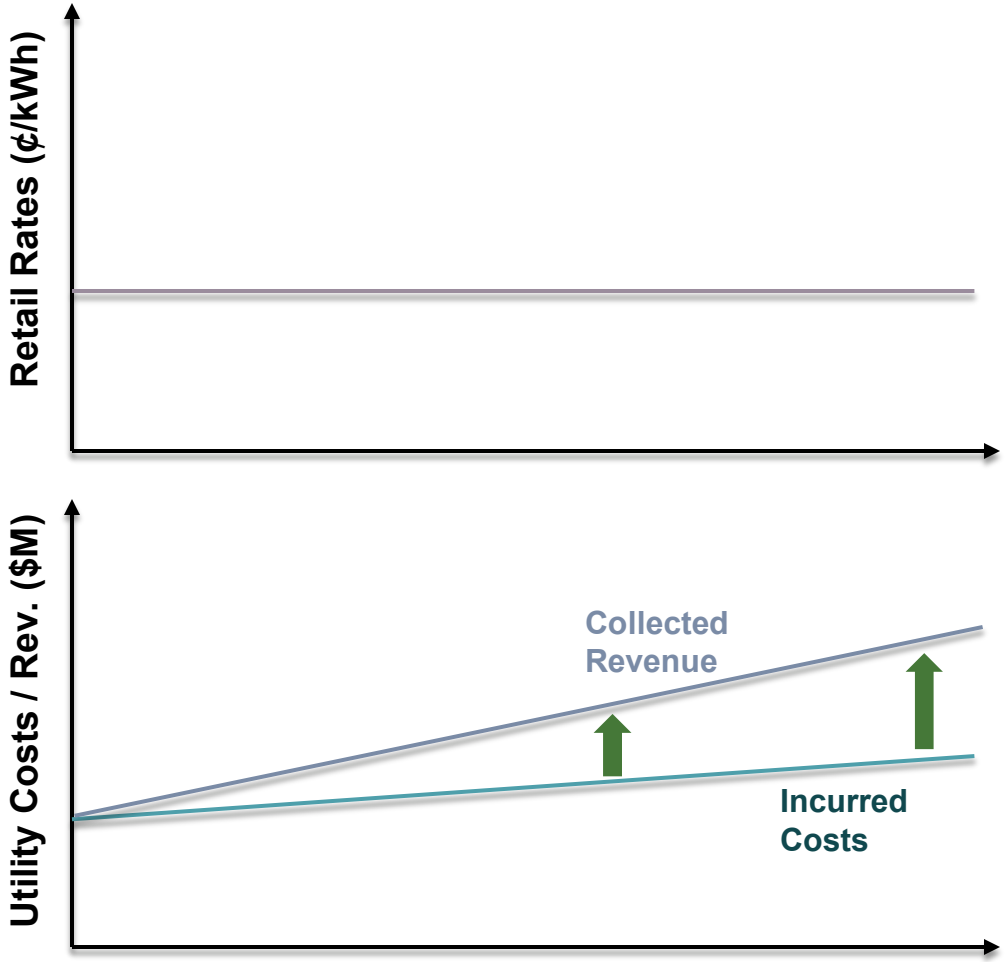
Ideal Outcome of CoS Ratemaking



Most Likely Outcome of CoS Ratemaking

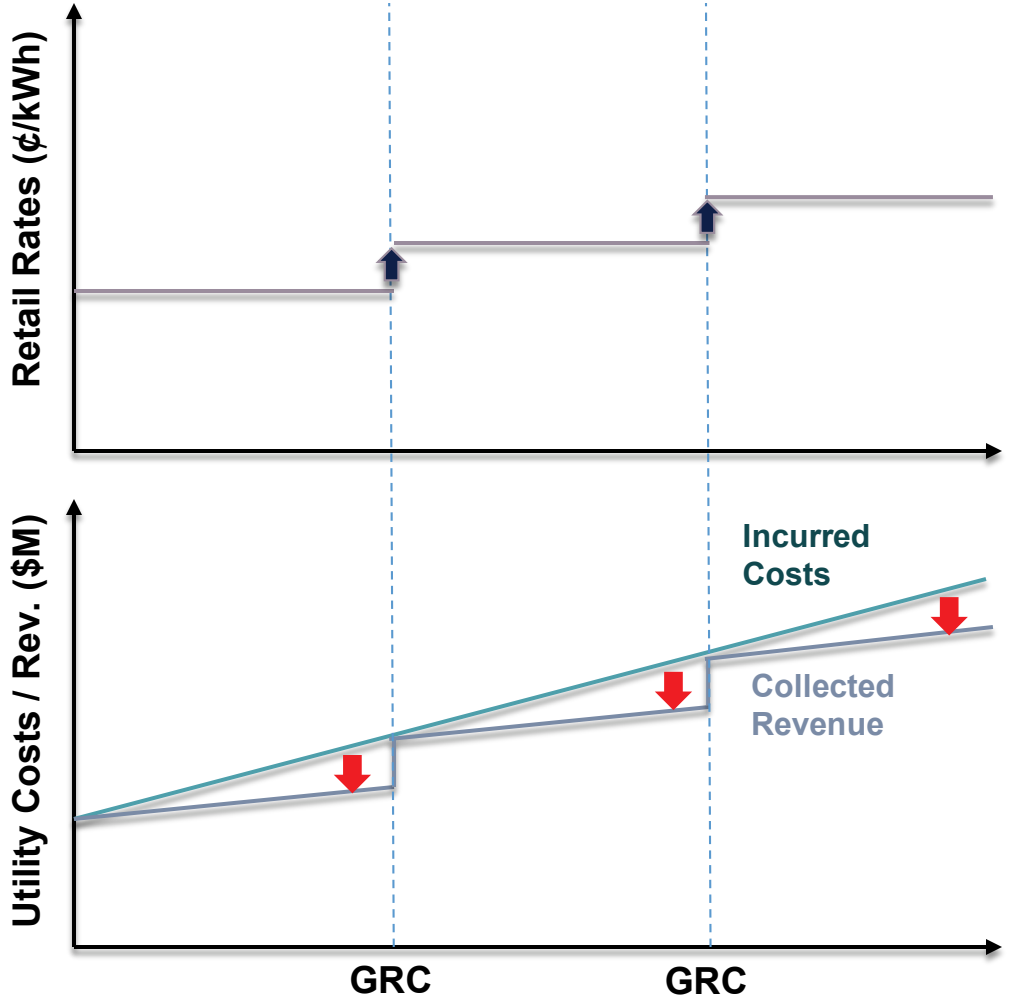


If Revenue Growth > Cost Growth



- If **revenue growth exceeds cost growth** between general rate cases (GRC), *all other things being equal*, utility **financial** picture **improves**
- Utility increases its annual profits by not filing a GRC, leaving rates as is
- Regulators would need to compel utility to file a GRC, which in this scenario would reduce rates, but this only solves the problem temporarily
  - Even if the utility files periodic GRCs, this issue persists between rate cases

If Cost Growth > Revenue Growth

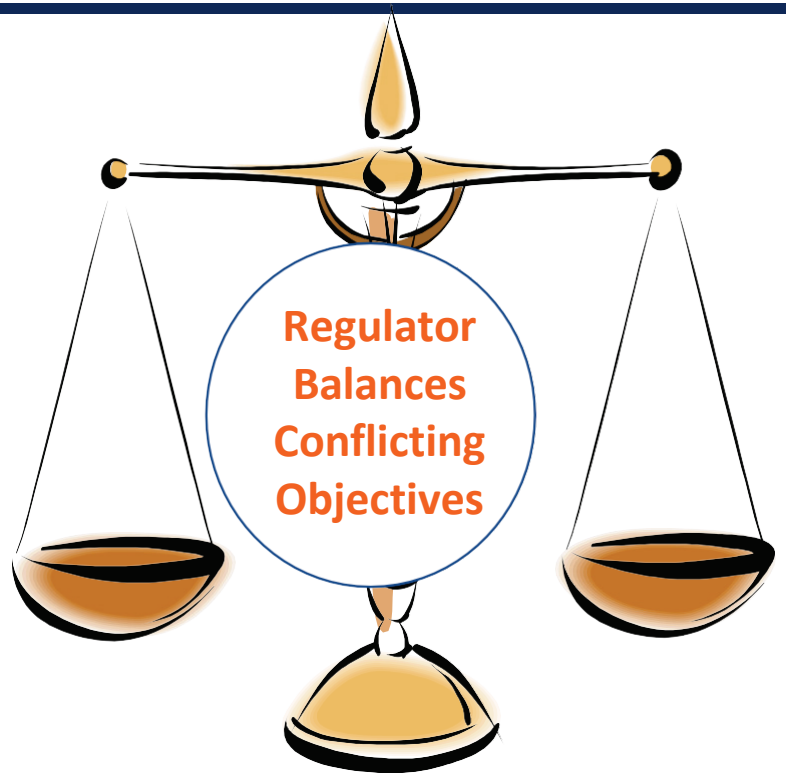


- If **cost growth exceeds revenue growth** between GRCs, *all other things being equal*, the utility **financial** picture **worsens**
- The utility can file GRCs more frequently, but that only solves the problem temporarily
  - If the utility does not file a GRC, the problem just keeps getting worse
- More systemic issues may need to be addressed

The Regulatory Balancing Act: Balancing Utility, Policy and Ratepayer Objectives

Utility Financial Health

- Allowed revenue requirement & allowed rate of return
- Allowed rate levels
- Approval of capital expenditures
- Interval between general rate cases
- Surcharges, decoupling



Impacts on Ratepayers

- Retail rate levels
- Bill impacts
- Complexity of rate structures
- Distributed resource programs, including program incentives
- Cost shifts from DER programs

Common Policy Issues:

- GRC frequency, rate designs, low-income customer protections
- Distributed energy resource adoption and utilization
- Utility vs third-party ownership of assets
- Utility shareholder incentives
- Predictable regulation to support beneficial outcomes for utility financial health

POLL: Are investor-owned utilities guaranteed to achieve their authorized return on investment?

1. Yes
2. No

Questions/Comments

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