# RATE BASE, RATE-OF-RETURN REGULATION OVERVIEW



# PURPOSE OF REGULATION

 Regulation is a proxy or surrogate for public ownership or competition

Public Ownership

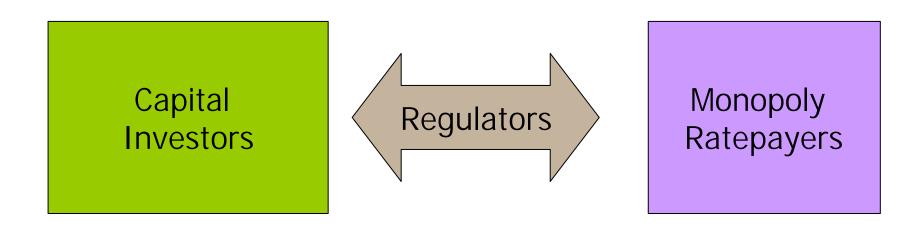
Rate Regulation

Market



# CAUGHT IN THE MIDDLE

Regulation is a balancing act between ratepayers and investors.





# PURPOSES FOR REGULATION

- Substitution for a competitive market
- Provides a check on monopoly power
- Provides a check on monopoly pricing
- Ensures openness, transparency, and due process
- Establishes minimum service standards
- Allows establishment of competitive environment
- Generally protects the public interest



## REGULATORY EXPECTATIONS

- General obligation to serve in exchange for monopoly status
- Service will be safe, adequate, and reliable
- Reasonable opportunity to earn a return on investment (Not a guaranteed return)
- Recovery of reasonable costs and investments
- Investments will be prudent and used/useful
- Rates will be just and reasonable
- No undue discrimination in rates or service



## **COMMISSION ROLES**

- Quasi-judicial
  - Make decisions like a court does
- Quasi-administrative
  - Make rules and hold meetings like a bureaucratic agency
- Quasi-legislative
  - Make policy like a legislative body



- Determination of Revenue Requirement
  - Total Revenues necessary to recover prudent investment, to recover reasonable and necessary costs, and to earn a fair profit
  - Driven by actual or projected costs
- Allocation of Costs to Customers
  - Generally based on usage
  - Cost causer pays balanced by social/economic issues
- Establishment of Actual Rates to Customers (e.g., Usage based versus Flat Rates)
  - Price Elasticity
  - Subsidization
  - Affordability
  - Price Signals



#### BASIC REGULATORY CONCEPTS

#### Public Interest

- In the eye of the beholder
- Regulators generally take the longer term view rather than thinking that lower rates are always best for customers
- Consider service as well as price

#### Used and Useful

- The property, asset, or other investment is deemed to be in service, or is providing a benefit to customers at the current time, rather than in the past or in the future.
- It is deemed to be necessary or beneficial to the provision of utility service.



#### BASIC REGULATORY CONCEPTS

- Matching
  - Plant, depreciation, expenses, taxes, revenues must be matched for the period being examined.
- Just and Reasonable
  - Example, from Wyoming law:
    - In determining what are just and reasonable rates the commission may take into consideration availability or reliability of service, depreciation of plant, technological obsolescence of equipment, expense of operation, physical or other values of the plant, system, business and properties of the public utility whose rates are under consideration.



#### BASIC REGULATORY CONCEPTS

#### Known and Measurable

- Adjustments should have a strong degree of certainty associated with them
- One should be reasonably able to measure the item under consideration

#### Regulatory Lag

- Inability to change prices instantaneously such that company either has to absorb portion of cost increases or can keep earnings from superior performance
- Incentive for more cost effective or efficient management
- Can serve as a deterrent to waste and inefficiency



# REVENUE REQUIREMENT FORMULA

- Expenses + Return on Investment = Revenue Requirement
- Revenue Requirement =

Operating Expenses + Depreciation + Taxes + Return on Investment

Operating Expenses include operations, maintenance, administrative and general

Return on Investment is computed on Net Plant (Gross Plant less Accumulated Depreciation) plus any other capital items necessary to provide utility service funded with investor capital.



# ESSENTIAL ELEMENTS OF REVENUE REQUIREMENT

Test Year

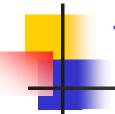
Rate Base

Net Operating Income

Allowed Rate of Return



- A recent twelve-month period
  - A measurement for a <u>recent</u>, consecutive,
     12-month period containing a full year of operations
  - Traditionally, has been a historic period but many are starting to use a projected period (or historical period indexed into the future)



#### TEST YEAR

- Used to examine earned returns (profit levels) compared to previously authorized returns or requested earnings
- Needs to be representative of the time period that rates are to be in effect.



## ADJUSTMENTS TO TEST YEAR

- Types of Adjustments
  - Correcting or Out of Period
    - Remove recovered revenue associated with prior period
  - Annualizing
    - Incorporate a rate change that occurred during the course of the test year
  - Normalizing
    - Reflect a full year of revenue even though system was out of service for part of an unusual year due to weather
  - Pro Forma or Attritional
    - Salary increase for upcoming period that the rates are to be in effect
  - Ratemaking Expenses
    - Disallowance of political contributions



#### ADJUSTMENTS TO TEST YEAR

- Threshold Questions
  - Are the adjustments and the results prudent and reasonable?
  - Will making this adjustment lead to fairer, more reasonable, and/or more sufficient rates?



## **ALWAYS REMEMBER**

JUDGEMENT

GREY – NOT BLACK AND WHITE

JUDGEMENT



- The total of the investor funded or supplied plant, facilities, and other investments used by the utility in providing utility services to its customers
- It is the investment base to which a fair rate of return is applied to arrive at the revenue requirement



- What to watch for
  - Goldplating
    - Facilities should be reliable and adequate but should not be extravagant or extreme
  - Overcapitalization
    - Some theorize that utilities tend to overcapitalize in order to earn a return on that capital (Averch-Johnson effect)



- Net Plant in Service
  - 13 month average or year end balances?
  - Valuation Method
    - Original Cost
    - Fair Value
    - Reconstruction Cost
    - Other



- Plant Held for Future Use
  - Plant that is owned and held for a future purpose, and not yet in active service.
  - Many regulators include in rate base if there is a definite, near-term plan for using this equipment.
- Construction Work in Progress
  - Plant that is still under construction and not yet in service.
  - Different policies on including in rate base by different regulators.



- Acquisition Adjustment (Goodwill)
  - The difference between the original cost of the plant and the purchase price.
  - Case-by-case in many jurisdictions as to whether to include in rate base.
    - What benefits are being received by customers due to the purchase at higher than original net book value?



- Cash Working Capital
  - Measure of investor funding of daily expenditures and a variety of non-plant investments that are necessary to sustain on-going operations of the utility until those expenditures can be recovered through revenues.
    - Formula Method
    - Balance Sheet Method
    - Lead-Lag Study



- Cash Working Capital
  - Formula Method
    - 45/365 of operating costs
  - Balance Sheet Method
    - Current and accrued assets compared to current and accrued liabilities
    - Compare rate base to the return bearing capitalization if capitalization exceeds rate base, the difference is cash working capital – if capitalization less than rate base, difference is cost free source of capital
  - Lead-Lag Study
    - Measurement of the time between a utility's out-of-pocket payment to expenses compared to the collection of revenues for a service. Result is multiplied times the average daily balance of operating expenses



- Prepayments
  - May want to use a monthly average to smooth out lumpiness
- Materials and Supplies
  - May want to use a monthly average to smooth out lumpiness



- Customer Deposits
  - Reduction to Rate Base or Zero Cost Capital since Customer Supplied Capital
- Customer Advances/ Contributions-in-Aid of Construction
  - Reduction to Rate Base since Customer Supplied Capital
- Accumulated Deferred Income Taxes
  - Balance of accumulated difference between level of taxes allowed in rates and level of taxes paid to government
  - Balances caused by expense/depreciation timing differences or allowances



#### Other

- Deferral/Regulatory Assets/Regulatory Liabilities
- Addition of other items for which investors should earn a return
- Deduction of other items which were provided at zero-cost capital to the utility



## NET OPERATING INCOME

Net Operating Income =
 Operating Income – Operating Expense

Excludes Revenues and Expenses not related to regulated operations

Includes operations and maintenance expenses, administrative and general expenses, depreciation and taxes. Does not include interest expense. Does not include expenses that are specifically excluded, such as lobbying expenses or self-promotional advertising expenses.



#### Allowed Rate of Return

The level of return used to establish a fair and reasonable rate level that is high enough to allow continued attraction of capital and low enough that it does not result in speculative level profits.

#### Earned Rate of Return

 The amount of money a utility earns, over and above its expenses, expressed as a percentage of the rate base



- Two critical standards that come from U.S. Supreme Court cases from the early 1900's
  - Bluefield Waterworks
    - The public utility is entitled to such rates as will permit it to earn a return on the value of the property...to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties...
  - Hope Natural Gas
    - ...the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.



- Capital Structure
  - Example:

Debt	2,000,000	40%	8%	3.2%
Equity	3,000,000	60%	12%	7.2%
TOTAL	5,000,000			10.4%

Overall rate of return multiplied by rate base as part of revenue requirement computation.

Cost of debt determined by average of the actual interest (coupon) rate on the debt issuances.

Rate of Return on Equity determined by regulator.



- Common Methods of Determining Rate of Return on Equity
  - Discounted Cash Flow

Growth commonly on combination of growth in dividends, earnings per share, and/or book value



- Common Methods of Determining Rate of Return on Equity
  - Capital Asset Pricing Model

Risk Free Rate + Beta Risk (Required Rate of Return on the Overall Market - Risk Free Rate) = Rate of Return on Equity

Beta is the measure of the systematic risk (non-diversifiable) of the security. The risk free rate can often be measured by a government issued security, such as a U.S. Treasury bill.



- Common Methods of Determining Rate of Return on Equity
  - Risk Premium Method

Risk Free Rate + Premium = Rate of Return on Equity

Risk Free Rate is often measured by a government issued security, such as a U.S. Treasury bill.

Premium represents amount to compensate investors for assuming additional risk in holding the asset. Can be measured by subtracting risk free rate from the overall average of returns for the industry being examined.



### PUTTING IT ALL TOGETHER

Rate Base

- x Allowed Overall Rate of Return
- Computed Allowed Profit
- Earned Operating Income
- = Earnings Shortfall or Excess
- x Net to Gross Tax Multiplier
- Required Increase or Decrease in Revenues



## NET TO GROSS TAX MULTIPLIER

Necessary to recognize that additional revenues will increase taxable income and income taxes to be paid. If not included, company would never be able to earn its allowed return.

#### Formula:

1 / (1- tax rate)



# CONTACT INFORMATION

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