

Principles of Water and Wastewater Rate Setting

Rates Advisory Committee

January 22, 2009

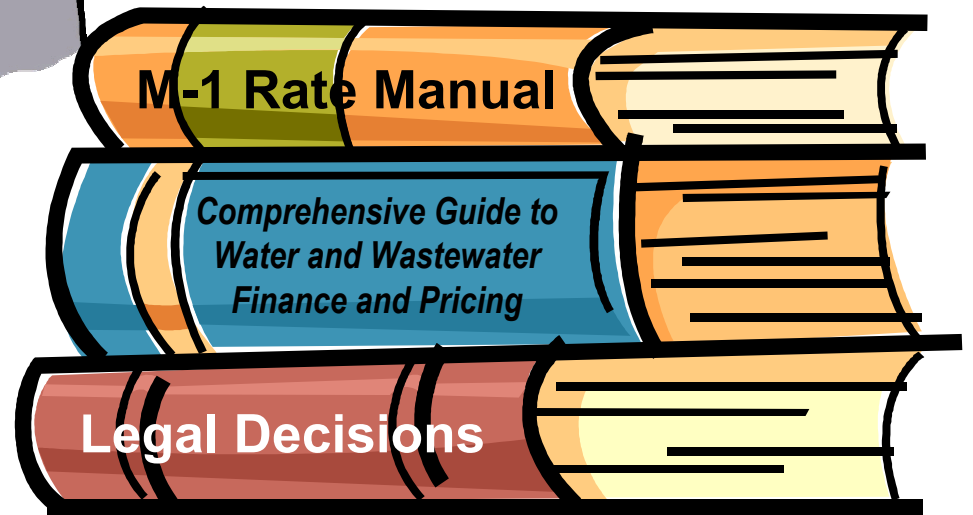
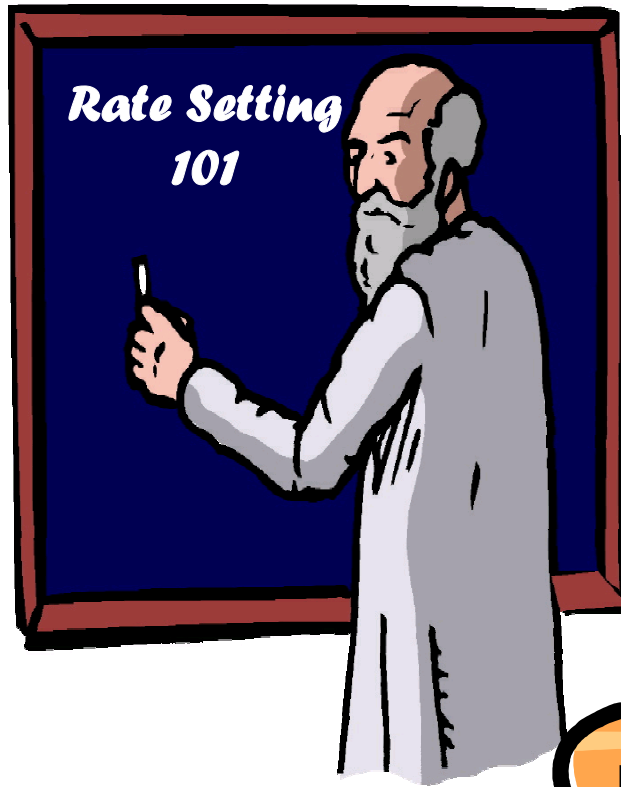
Presented by:

**Bill Stannard
Peiffer Brandt
Harold Smith**



PRO-OPS, INC.
Professional Operations, Inc.

**Rate setting “is as
much an art as it is
a science”**

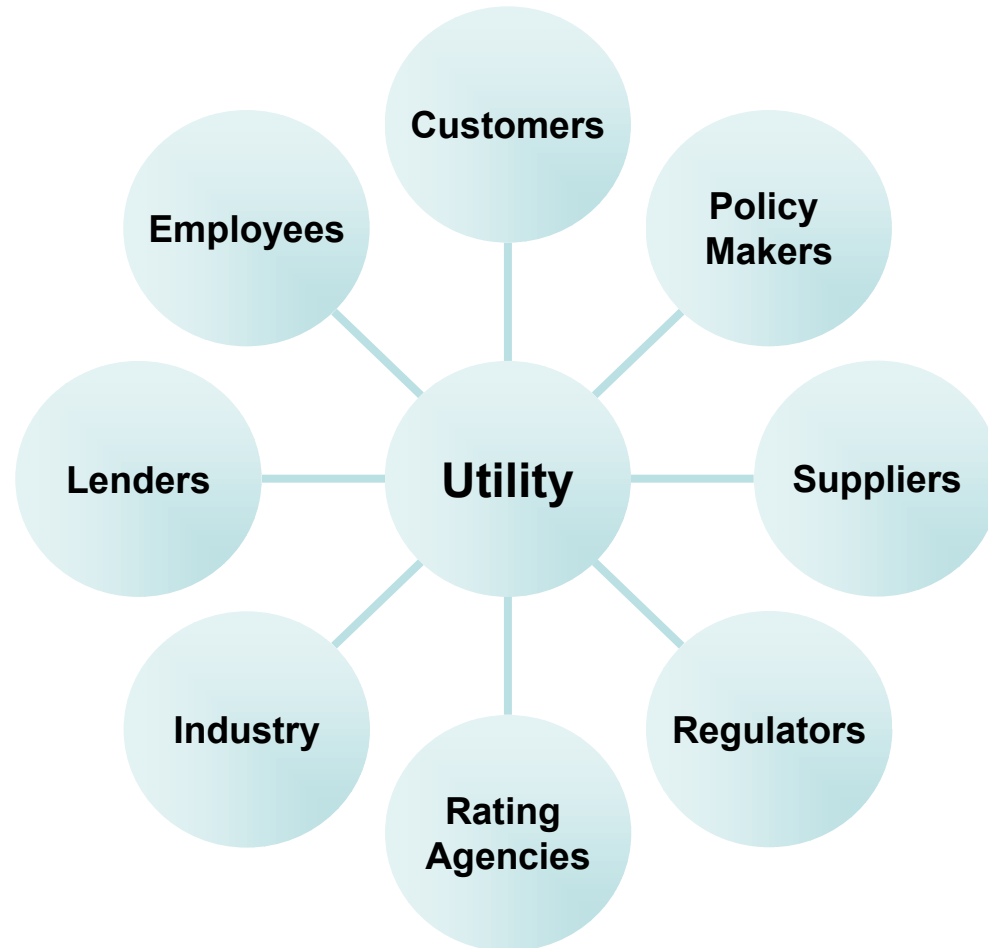


Overall Utility Pricing Goal

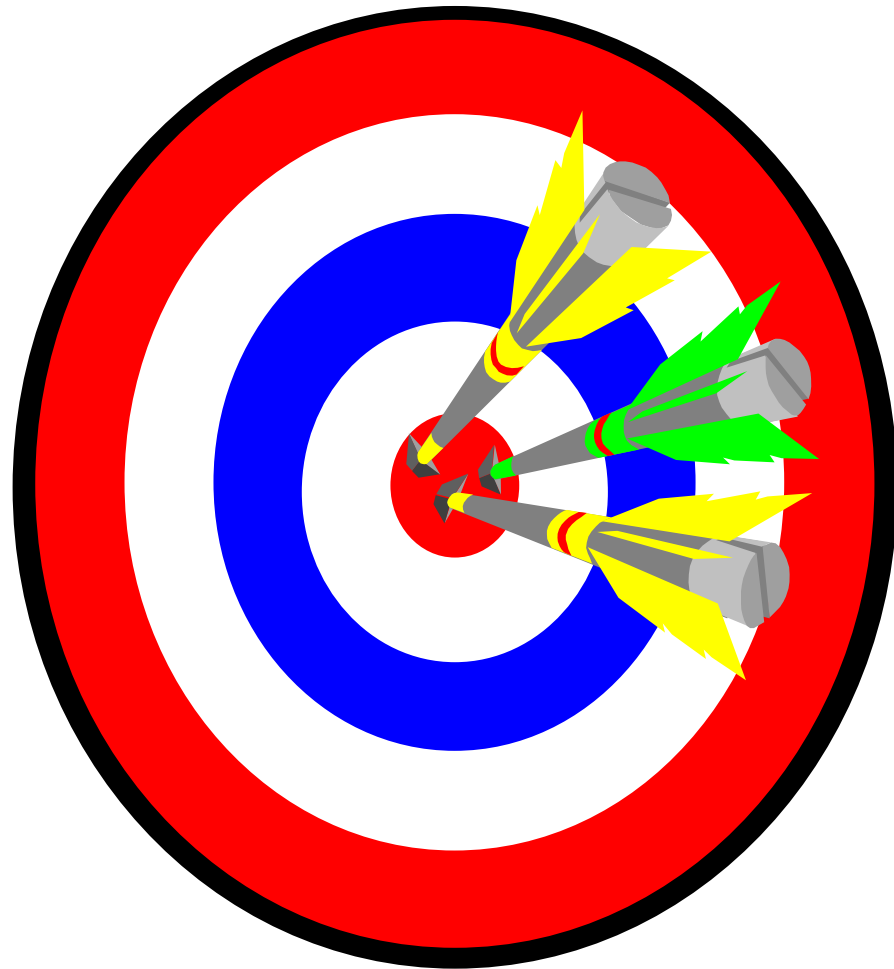
Design a rate structure that:

- Generates revenue sufficient to support the continued provision of high quality service
- Is responsive to utility and stakeholder objectives
- Is consistent with industry practices

Who Are Utility Stakeholders?



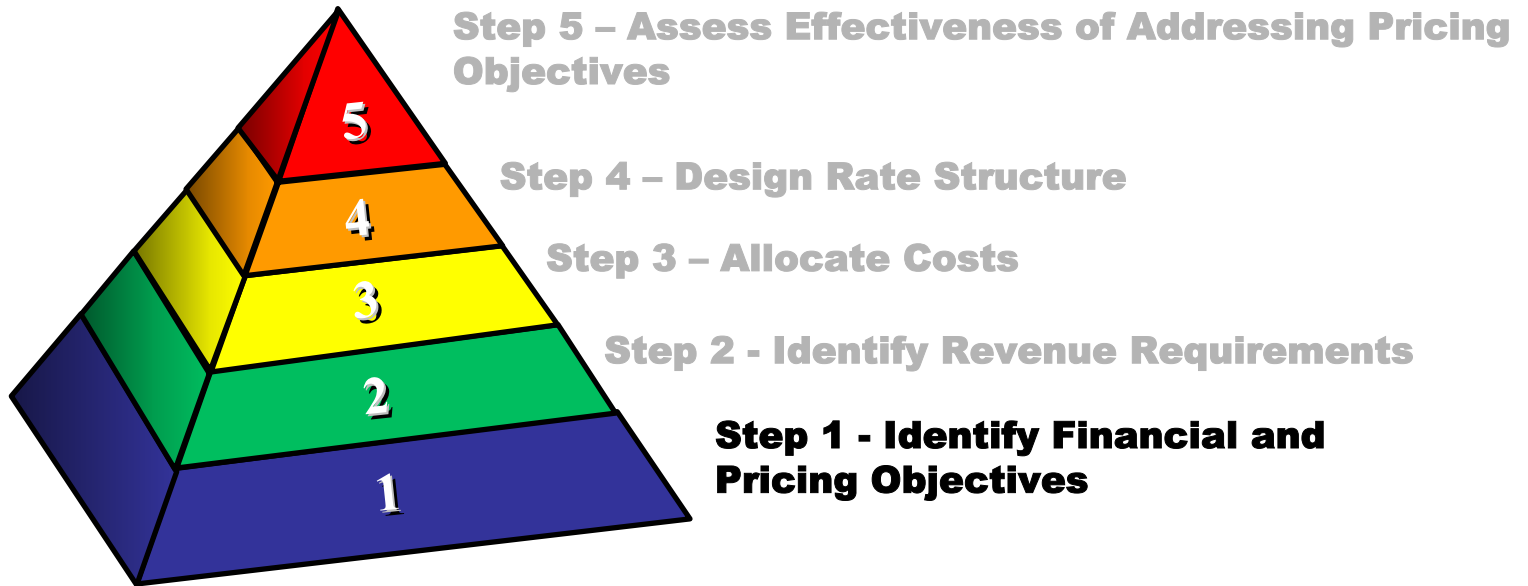
How Do We Accomplish Our Overall Goal?



Basic Steps in the Rate Setting Process

“The Short Course”

Rate Setting Process

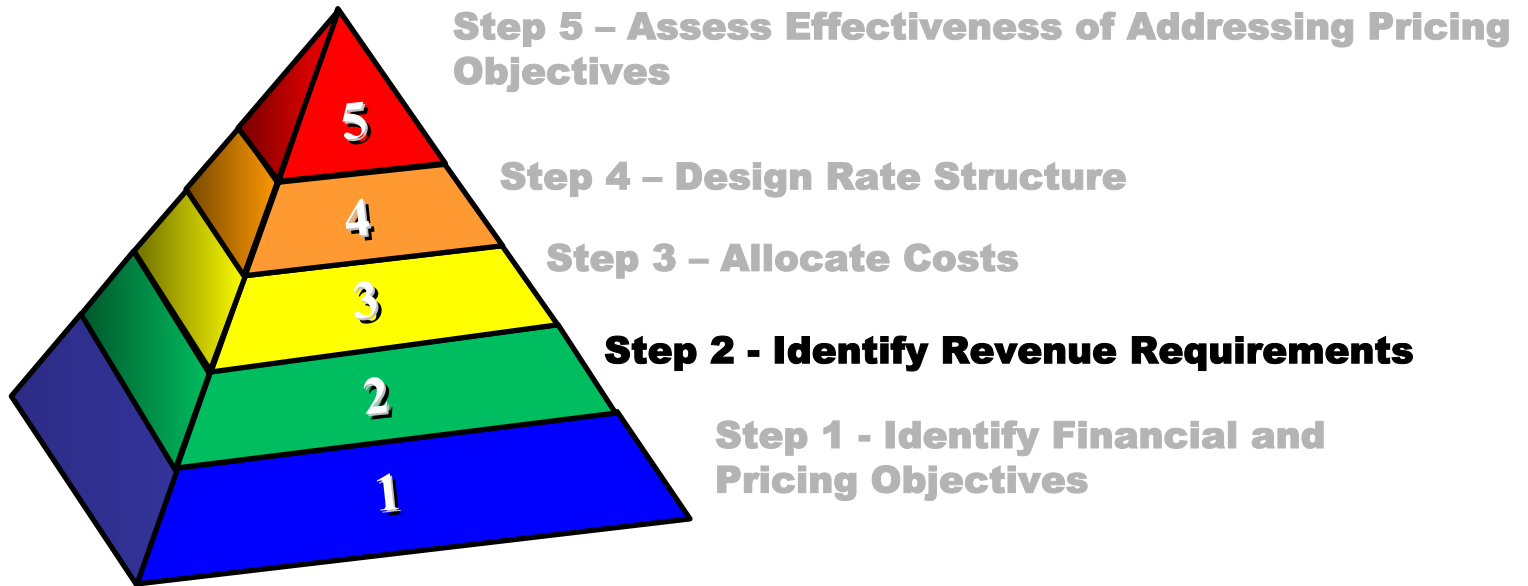


Step 1: Identify Financial and Pricing Objectives

- Financial Sufficiency
- Customer Equity
- Revenue Stability
- Minimize Customer Impacts
- Simple to Understand and Update
- Affordability
- Ease of Implementation
- Economic Development
- Rate Stability
- Conservation/Demand Management

Identify rate structures that meet objectives

Rate Setting Process



Step 2:

Identify Revenue Requirements

Concept:

In providing adequate water and wastewater service, every utility must receive sufficient revenue to ensure:

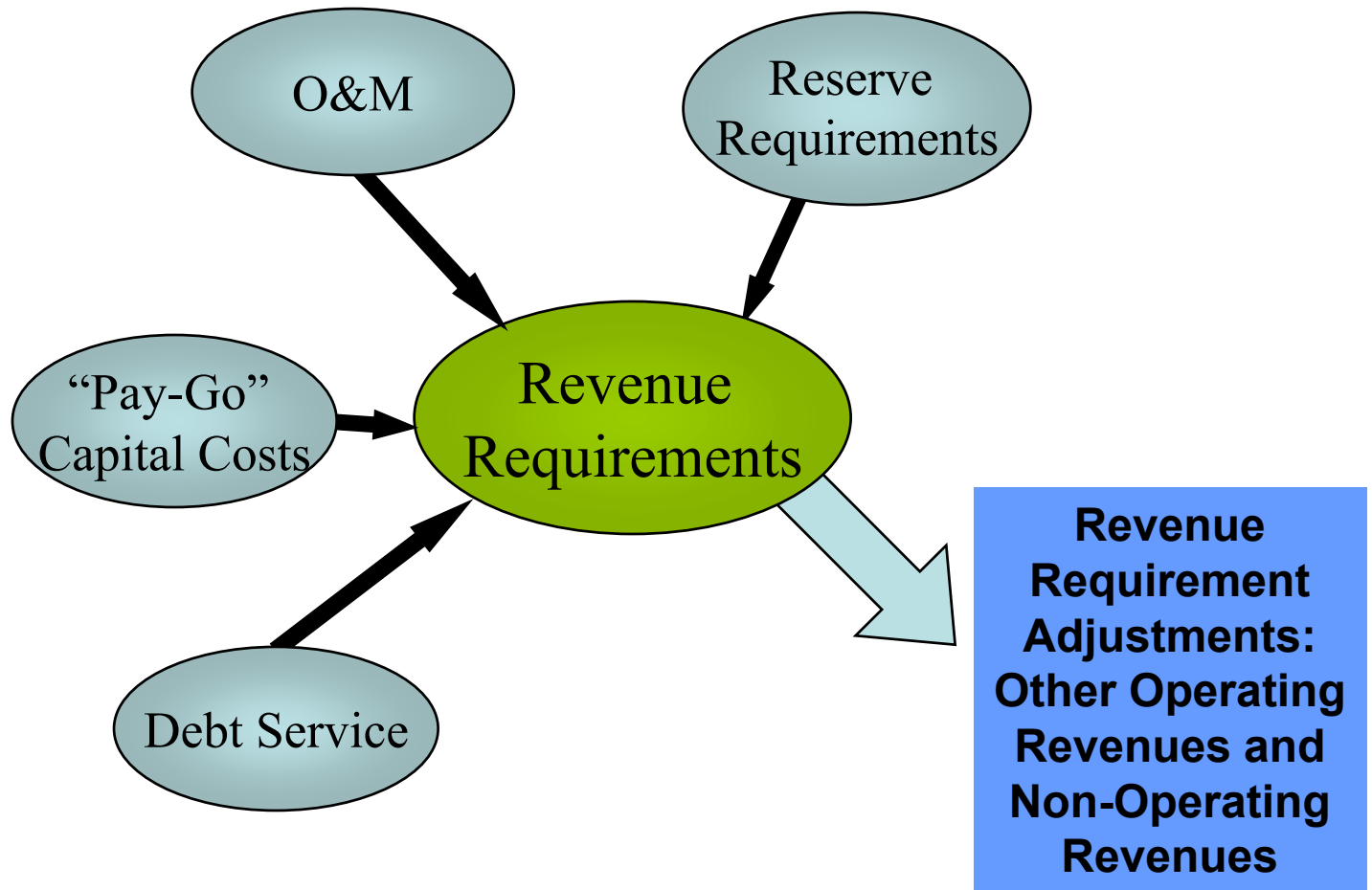
- Proper operation & maintenance (O&M)
- Development and perpetuation of the system
- Preservation of the utility's financial integrity

Source: AWWA M1

Key Revenue Requirement Considerations

- Selection of Base Year for Projections
- Projection Period
- Utility vs. Cash Approach
- Escalation Factors

Determine Revenue Requirements



Developing Revenue Requirements

Financial Planning Considerations:

- Reserve levels
- Debt policy
- Low income discounts
- Growth policy
- Financing of capital projects

Developing Revenue Requirements

Test Periods - Establishing the method of determining revenue requirements

- Projected—budgeted or forecasted
- Historical—a recent “typical” year
- Pro forma—historical base year with adjustments for “known and measurable” changes

Normalize data to account for conditions not expected to continue during forecast period

Developing Revenue Requirements

“Utility/Accrual Basis” vs. “Cash Basis”

Utility Basis

- More consistent with accounting principles
- May generate insufficient or excessive revenues
- Less flexible and more difficult to explain to customers and policy makers
- Often used for wholesale rates

Developing Revenue Requirements

“Cash Basis” vs. “Utility/Accrual Basis”

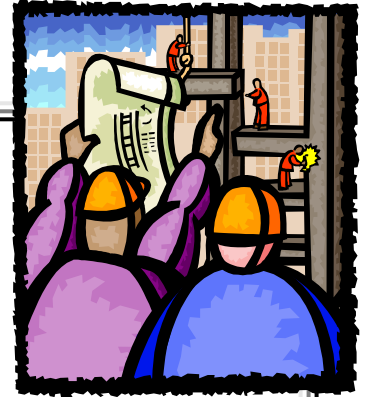
Cash Basis

- Easier to understand as revenue is matched to cash needs
- Consistent with governmental budgeting and accepted by governmental utility industry
- May result in fluctuations with financials prepared according to typical accounting principles
- Typically used for retail rates

Cash Needs Approach

Reserves

- Operating
- Rate stabilization
- Capital replacement
- Capital expansion
- Emergency and Risk Management



Escalation Factors

- Historic Trends
- Expected Occurrences
 - New Assets online
 - Regulatory requirements
- Conservative by Nature

Common Problems Determining Revenue Requirements

Inadequate operating cost detail

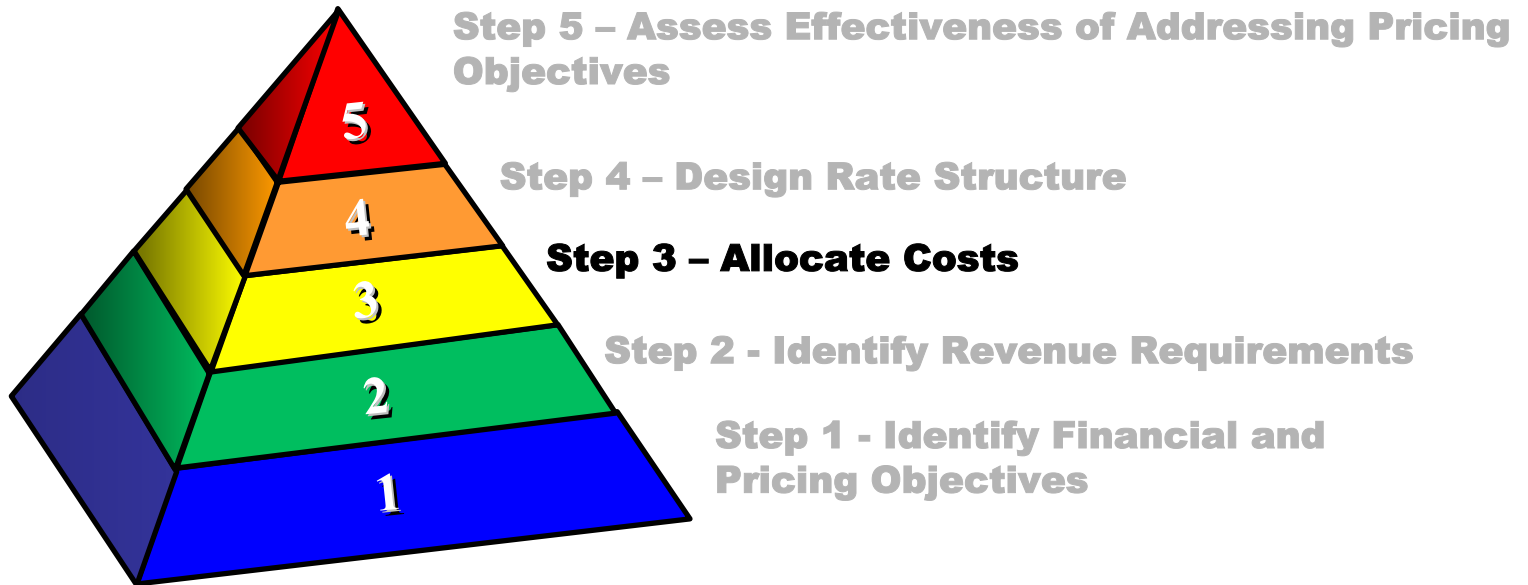
Long-range Capital Plan

- Incomplete
- Unrealistic
- Lack of capital financing policies

Lack of clear financial objectives/policies



Rate Setting Process



Cost of Service Concept

Best practices encourage cost of service as the fundamental benchmark used for establishing utility rates.

Cost of Service Concept

What Is Cost of Service?

- Cost of service is the total annual revenue requirements to be derived from utility revenues
- That is, the cost of providing service to the utility's customers must be recovered from those customers

Cost of Service Concept

Rationale:

- Different types of customers generate different costs because their patterns of use or demand characteristics are different
- Cost of service analysis allows the matching of rates charged to each group to the cost of serving them
- Each group “pays its own way”; no subsidies

Cost of Service Concept

Bottom Line

Achieve Equity:

Recover costs from users in proportion to their use of the system, and by recognizing the impact of each class on system facilities and operations

Step 3: Allocate Costs

- Categorize Costs by Function
- Allocate to Cost Components
- Develop Unit Costs

Accepted Industry Approaches

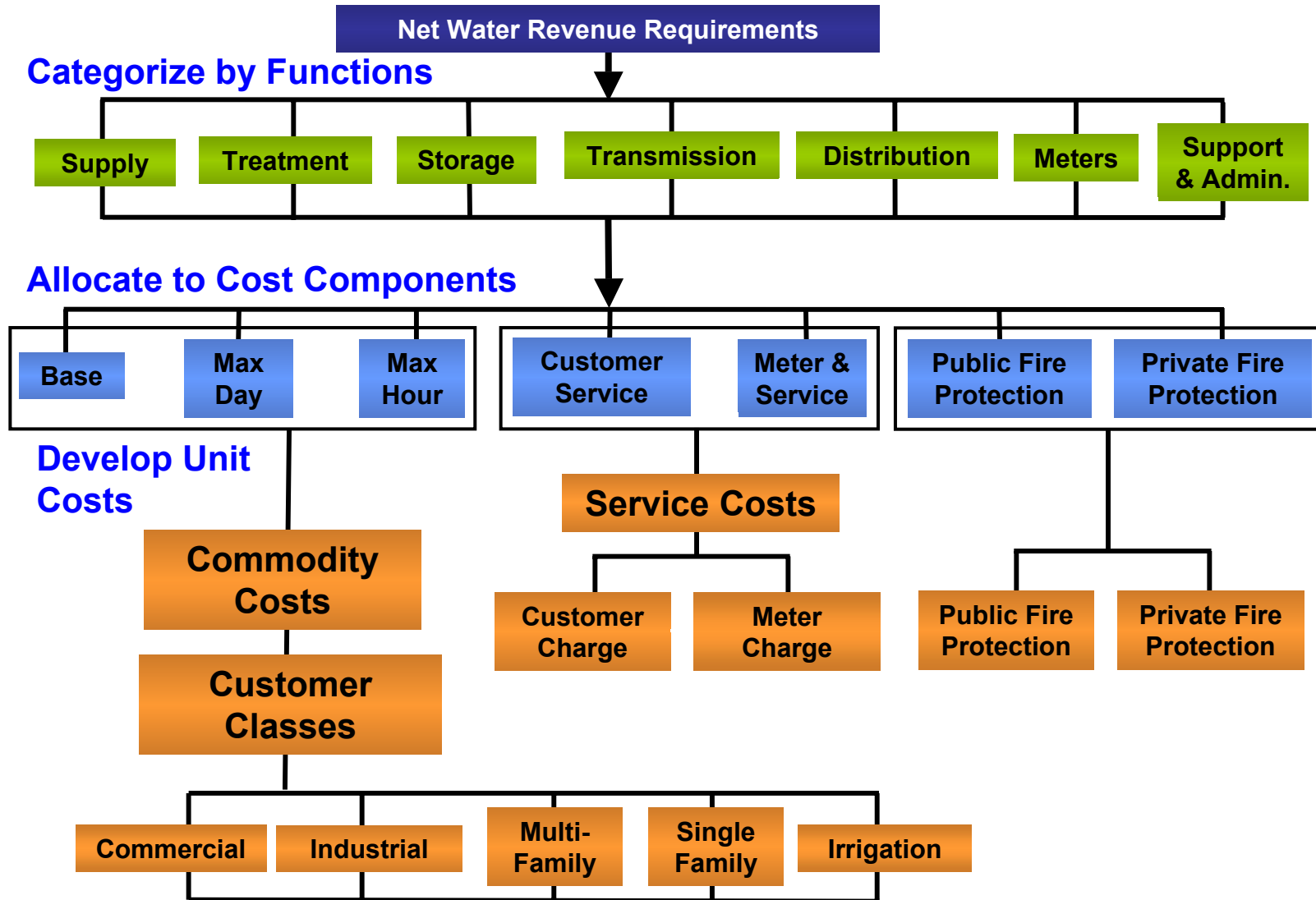
Water

- Base-Extra Capacity vs. Commodity Demand

Wastewater

- Design vs. Function

Sample Allocation of Water Costs



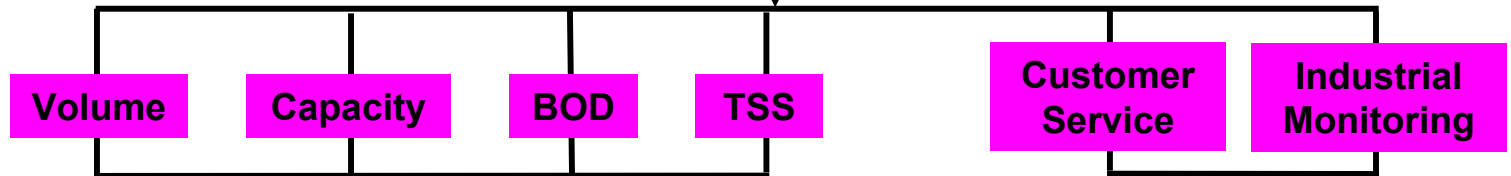
Sample Allocation of Wastewater Costs

Net Wastewater Revenue Requirements

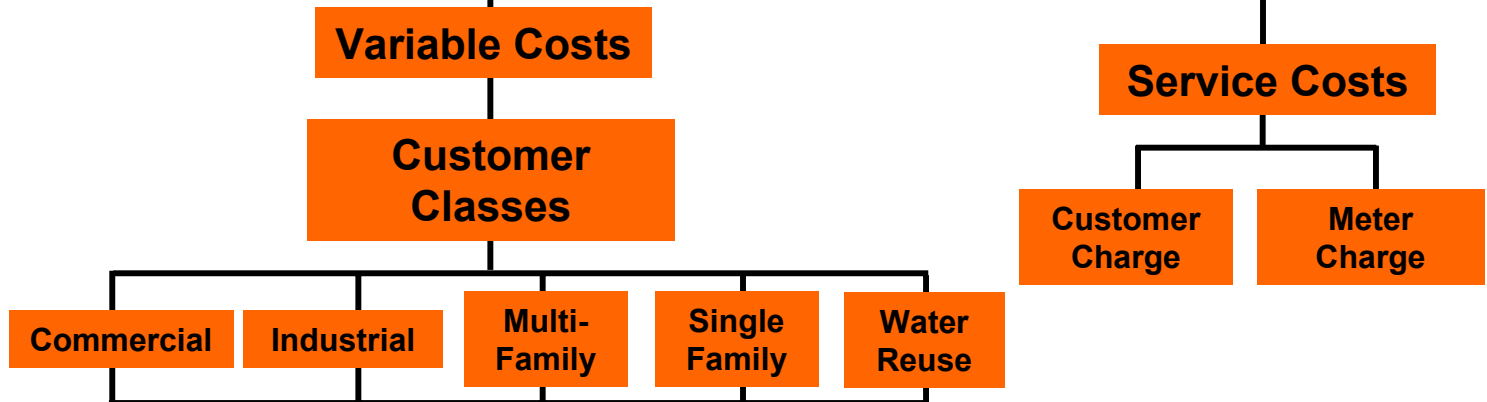
Categorize by Functions



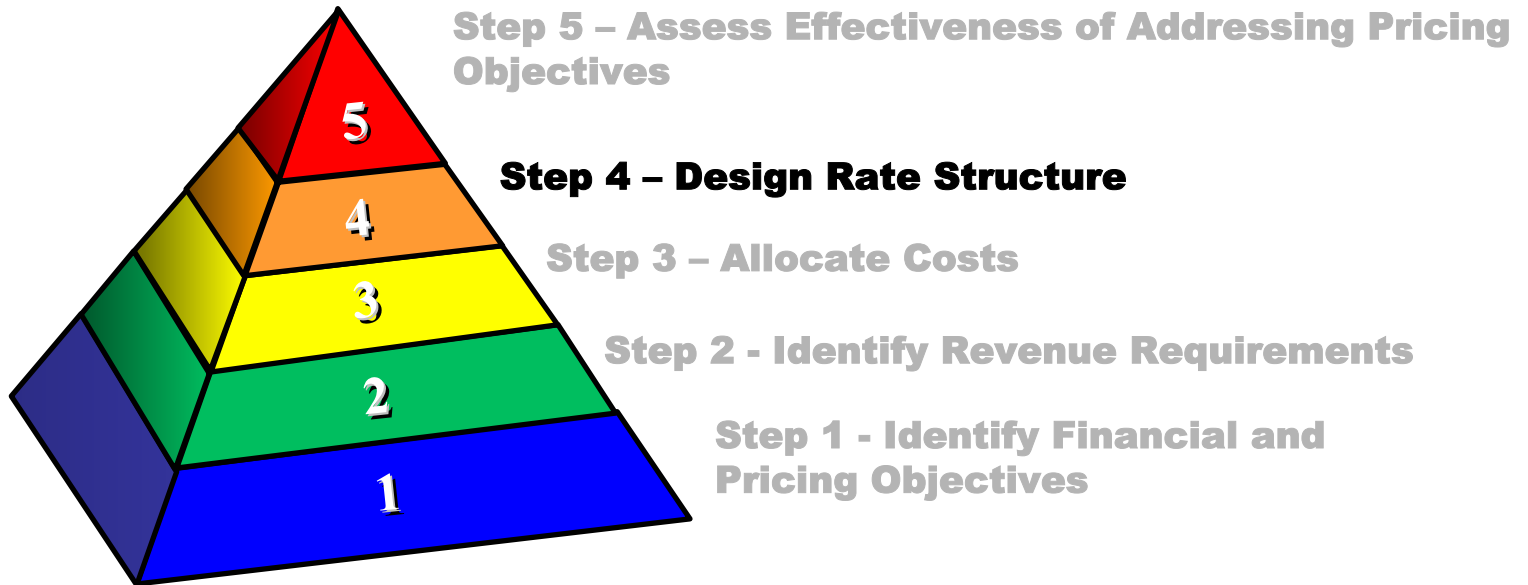
Allocate to Cost Components



Develop Unit Costs



Rate Setting Process



Step 4:

Design Rate Structure

Topics Covered:

- Fixed charges vs. variable charges
- Conservation vs. traditional rate designs
- Evaluating alternative rate structures

Fixed Charges vs. Variable Charges

o **Fixed Charges**

- Invariant with customer water usage
- Cost of service fixed charges typically recover customer related costs
- Fixed charges may include recovery of a portion of capital costs and other fixed costs

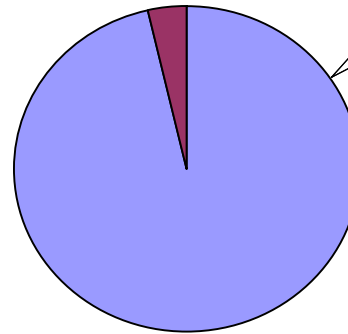
o **Variable Charges (“Consumption” Charges)**

- Vary with amount of water used
- Recover utility costs that vary with customer usage patterns
- Recover some portion of utility’s fixed costs

Use of Fixed Charge

All Surveyed Water Utilities (256 Sampled)

No Fixed Charge
4%



**96% Have a Fixed
Component**

Source: RFC/AWWA 2006 Rate Survey Data

Fixed Charges vs. Variable Charges (continued)

Typical Fixed Charges

- Customer Charge
 - Recovers costs per account basis (ex: billing, collection, etc.)
 - Charges not differentiated by meter size
- Service Charge by Meter Size
 - Recovers costs proportionately based on meter size (ex: meter cost & maintenance)
- Capacity Charge by Meter Size
 - Recovers costs proportionately based on meter flow capacity (ex: capital and demand related costs)
- Minimum Charge
 - Includes an allowance for a minimum level of consumption

Fixed Charges vs. Variable Charges (continued)

Examples of Fixed Charges

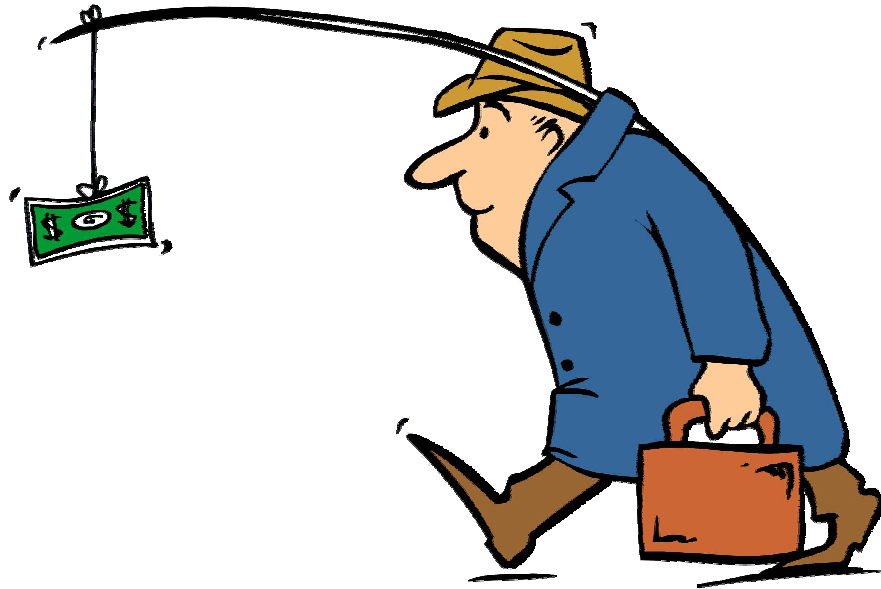
<i>Meter Size</i>	<i>Billing & Collection</i>	<i>Meters & Services</i>	<i>Other Fixed Costs</i>	<i>Total</i>
5/8"	\$2.00	\$2.50	\$3.00	\$7.50
1"	2.00	3.21	5.00	10.21
1.5"	2.00	7.86	16.00	25.86
2 "	2.00	21.50	32.00	55.50
4"	2.00	35.23	50.00	87.23
6"	2.00	54.94	200.00	256.94

Fixed Charges vs. Variable Charges (continued)

Variable Charges

- Recover all costs not recovered from the service charges
 - Water production, treatment & delivery
 - Wastewater collection, treatment & disposal
- Wastewater consumption is frequently based off a percentage of water consumption

Rate structures typically emphasize variable charges, especially when conservation is an issue.



Conservation Rates vs. Traditional Rate Designs

CONSERVATION

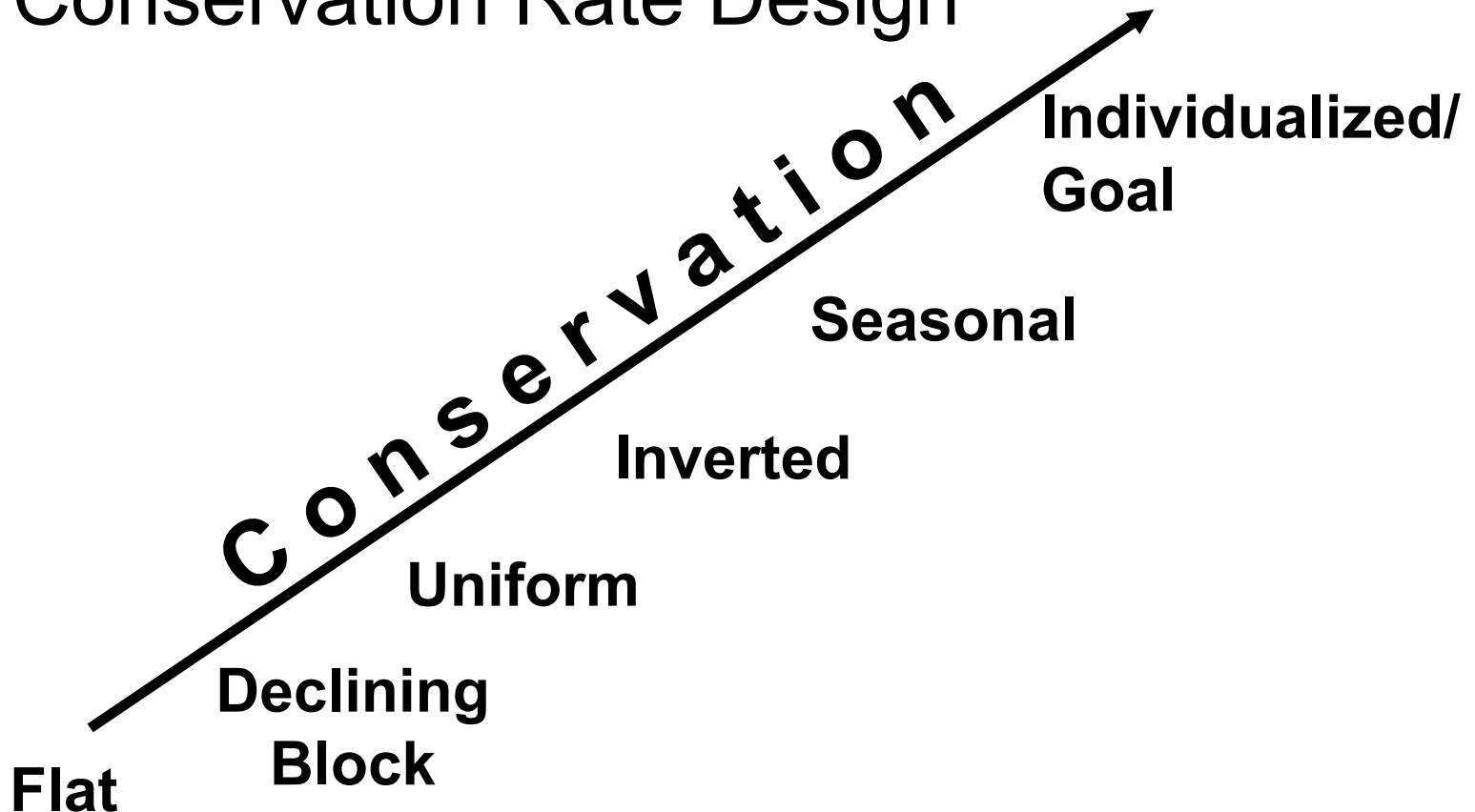
- Uniform
- Inverted Block
- Seasonal
- Individualized Rates

TRADITIONAL

- Flat
- Declining
- Uniform

Conservation Rates vs. Traditional Rate Designs (continued)

Conservation Rate Design

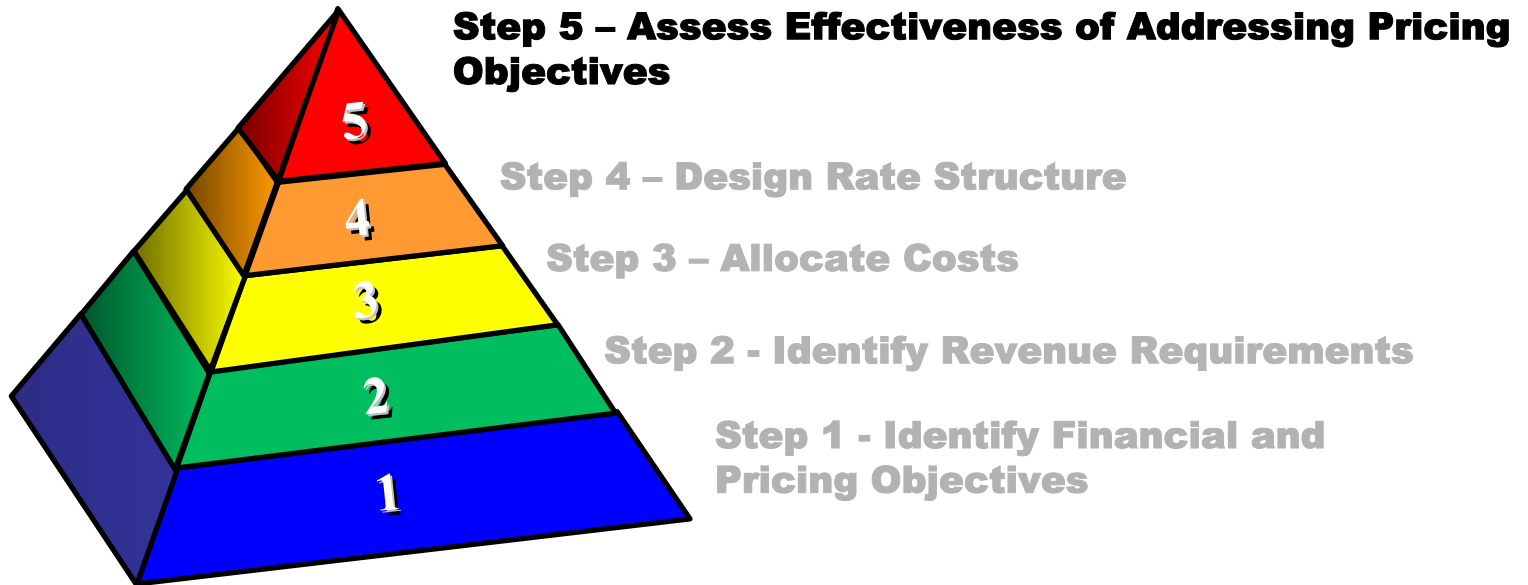


Evaluating Alternative Rate Structures

Considerations in Evaluating Alternatives

- Pricing objectives
- Revenue Generation Risks
- Availability of resources and data
- Public involvement
- Level of implementation effort
- Elements of rate structure
 - Defining customer classes
 - Frequency of billing
 - How much to charge (fixed charges and consumption charges)

Rate Setting Process



Step 5:

Factors to Consider in Assessing Effectiveness of Rate Structures

Topics Covered:

- Customer impact analysis
- Competing objectives
- Price elasticity of demand
- Comparison with other communities
- Affordability of service

Customer Impacts

With any Rate Structure Change

- Winners and Losers
- Magnitude of Impacts
- Consider phase-in to mitigate impacts

Price Elasticity

Price elasticity is a measure of the price sensitivity of consumption by consumer

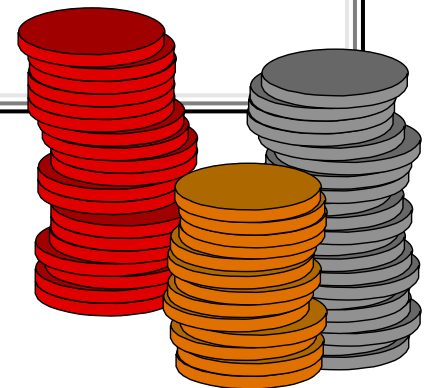
- Elasticity = $\frac{\% \text{ change in consumption}}{\% \text{ change in real price}}$
- Challenging to determine or estimate price elasticity.

Price Elasticity

- Consumers react to average bill, not final rate
- Each user class responds differently
- Peak usage is more sensitive than off peak usage
- Fixed charges affect price elasticity
- Consumer education affects price elasticity
- Timing and lags
- Other demand parameters are strong: temperature, rain, income

What is Affordability?

- Ability of consumers to pay the charges for water service in a timely manner.
- Not the same as willingness to pay.



Affordability of Service

Typical Affordability Measures

- Change Bill Frequency
- Budget Billing
- Target Usage Reduction
- Third Party Programs
- Lifeline Rates
- Percentage of Income Payment Plans
- Rate Discounts

Affordability Programs

- Who benefits
 - Low income
 - Senior Citizens
 - All Customers
- Magnitude of benefit
- Who funds shortfall
 - Internally funded by other customers
 - Externally funded

Discussion