

# Rate Setting 101

*Presented By:*

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# Presentation Schedule



Introduction	9:30-10:00
Pricing Objectives	10:00-10:30
Break	10:30-10:45
Revenue Requirements	10:45-11:30
Cost of Service	11:30-12:15
Lunch	12:15-1:15
Rate Design	1:15-2:00
Break	2:00-2:15
Rate Assessment	2:15-2:45
Public Involvement	2:45-3:15
Questions/Discussion	3:15-4:00

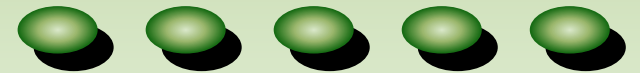


**Rate setting “is as  
much an art as it is a  
science”**





DA VINCI



# Rate Setting 101



*Comprehensive Guide to Water and Wastewater Financing*

**M-1 Rate Manual**

**Legal Decisions**

# Overall Utility Pricing Goal

## Design rate structure:

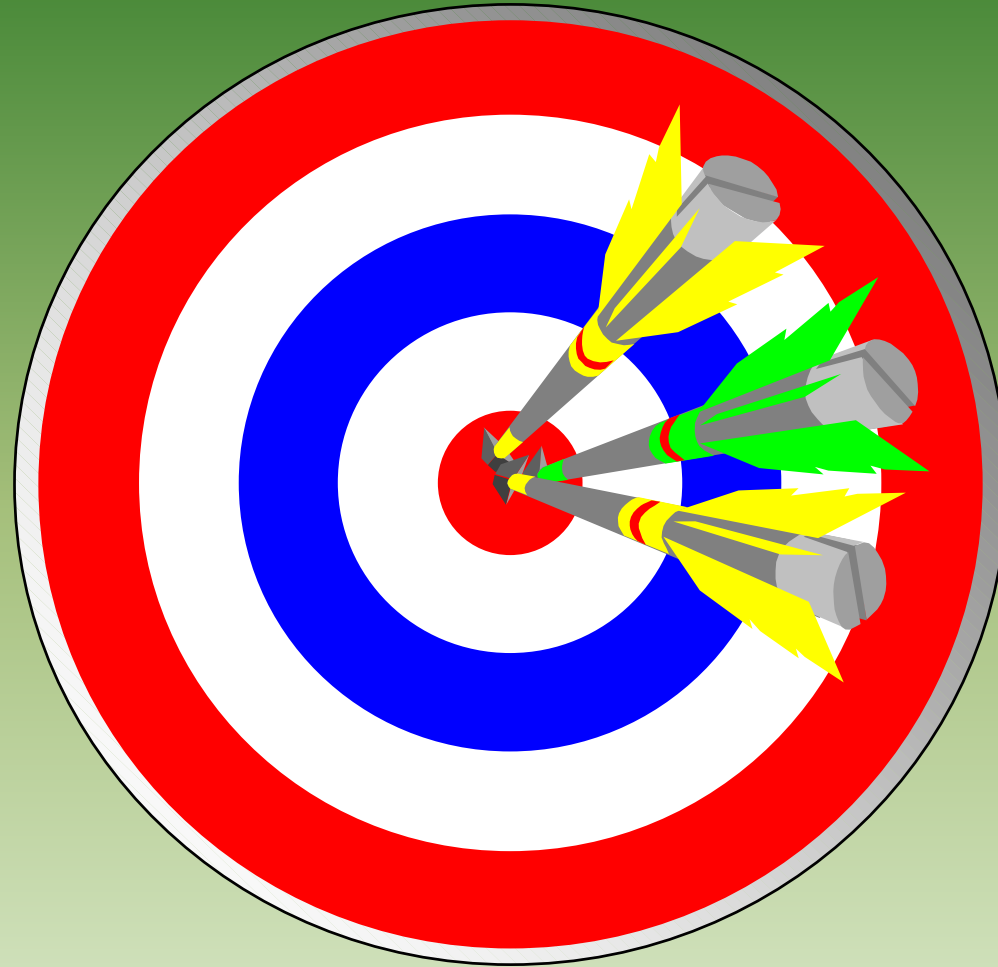
- Consistent with industry practices
- Responsive to utility and stakeholder objectives



# Who Are Utility Stakeholders?



# How Do We Accomplish Our Overall Goal?





# Introduction to Topics: “The Short Course”

Basic Steps in the Rate Setting Process



# Rate Setting Process

**Step 5 – Assess Effectiveness of Addressing Pricing Objectives**

**Step 4 – Design Rate Structure**

**Step 3 – Allocate Costs**

**Step 2 - Identify Revenue Requirements**

**Step 1 - Identify Financial and Pricing Objectives**

**Public Involvement**



# Step 1:

## Identify Financial and Pricing Objectives

- Legality
- Financial Sufficiency
- Cost of Service Based Allocations
- Minimizing Customer Impacts

- Affordability to Disadvantaged Customers
- Conservation/Demand Management



# Step 1:

## Identify Financial and Pricing Objectives (continued)

- Equitable contributions from new customers
- Simple to understand and update
- Ease of implementation

- Revenue stability
- Rate Stability
- Economic Development



## Step 2:

# Identify Revenue Requirements

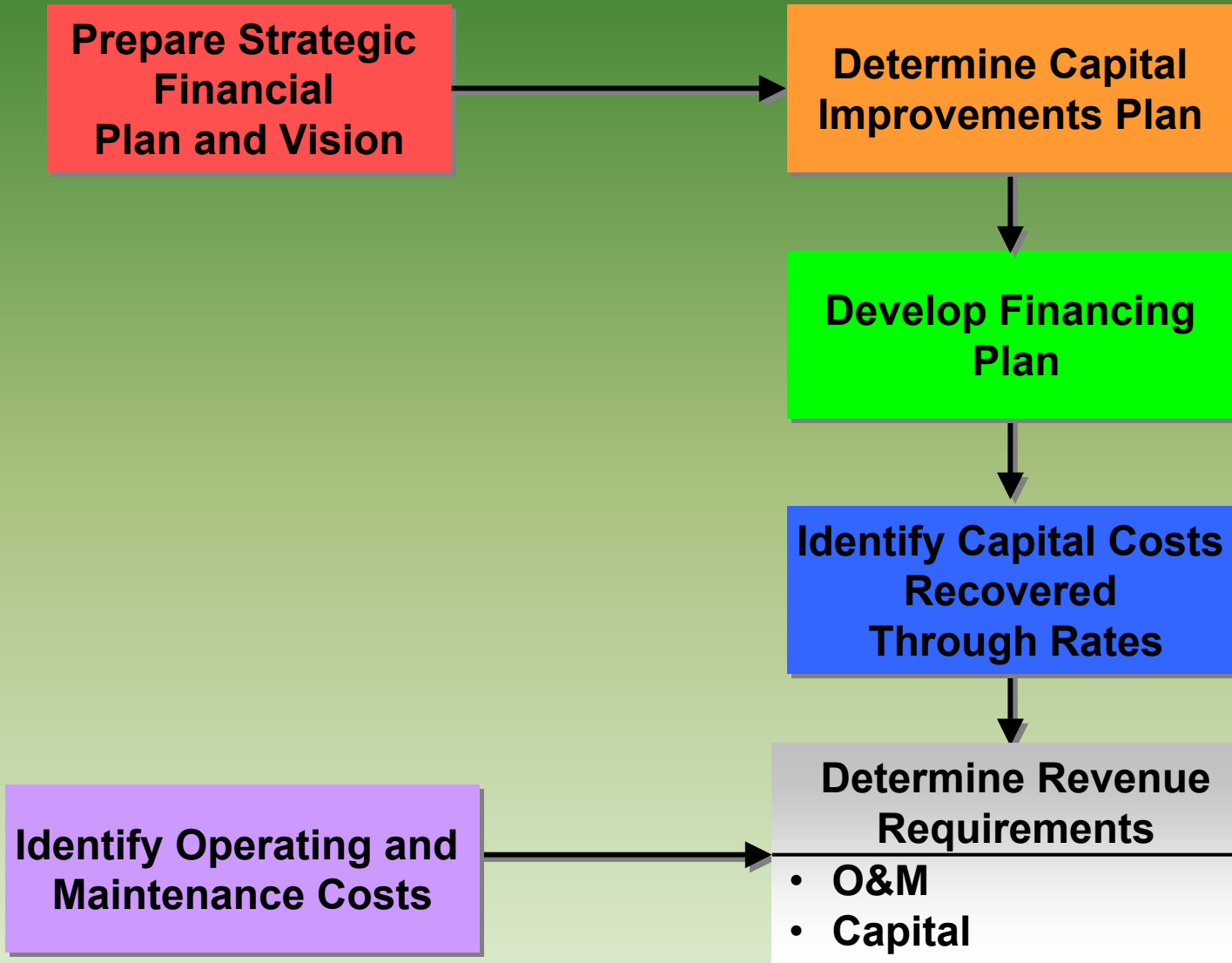
### Concept:

In providing adequate water service, every water 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



# Determine Revenue Requirements



# Key Revenue Requirement Considerations

- Selection of Test Year
- Projection Period
- Cash vs. Utility Approach
- Impact on Forecasted Demand
- Escalation Factors



# Step 3:

## Allocate Costs

- Cost of Service Concept

- Cost of Service

Alternatives

- *Base-Extra Capacity*
- *Commodity Demand*
- *Design vs. Function*

- Allocate Costs of Service to Cost Components

- Functional Cost Allocations

- Categorization of Costs

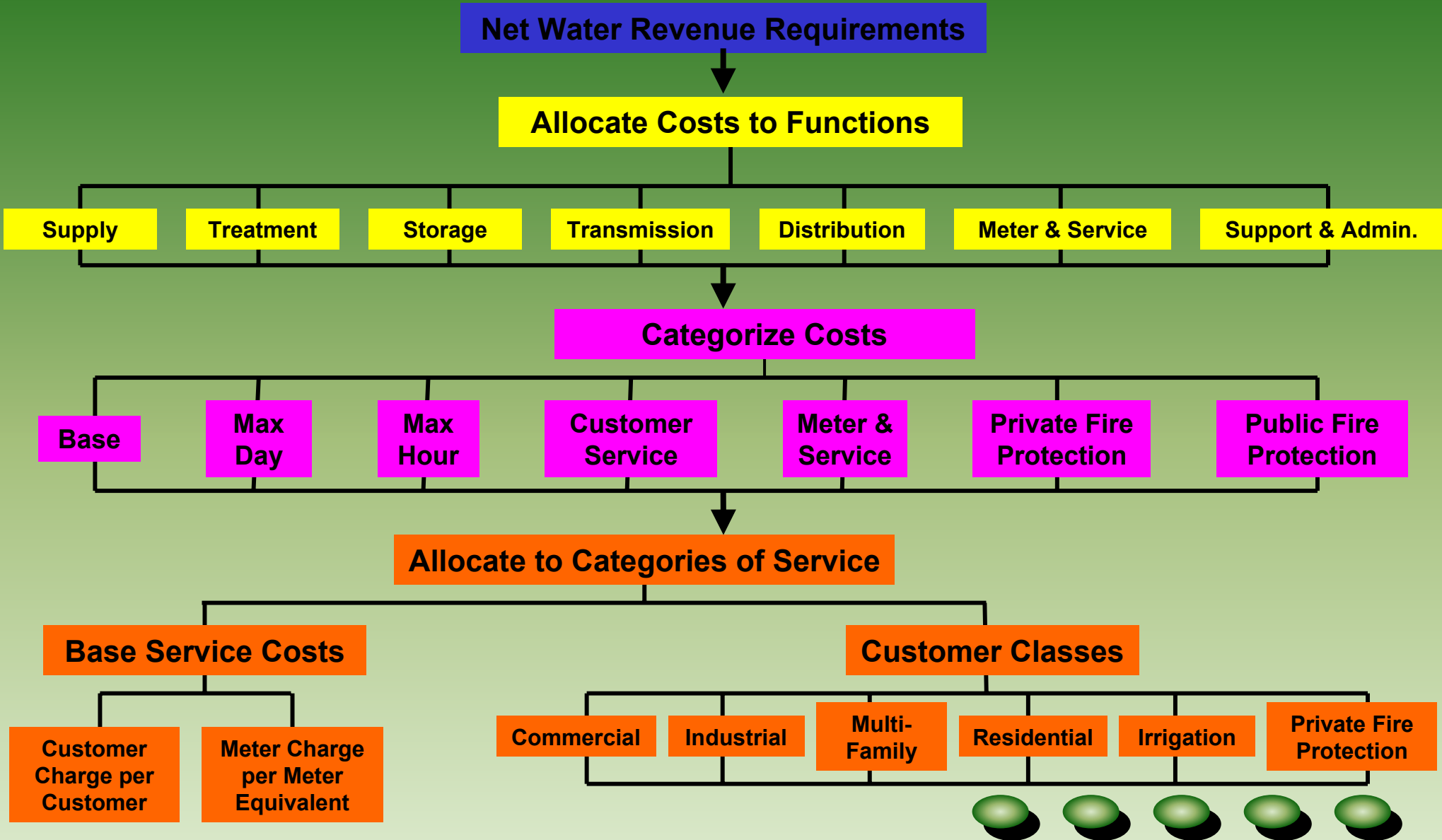
- Customer Classes

- Units of Service





# Sample Allocation of Water Costs



# Step 4:

## Design Rate Structure

- ❑ Recovery of Full Costs of Service
- ❑ Fixed vs. Variable Charges
  - Service Charges
  - Consumption Charges
  - High Strength Surcharges
- ❑ Evaluating Alternative Rate Structures

- ❑ Conservation vs. Traditional Rate Designs
  - Flat Rate
  - Declining Block Rates
  - Uniform Rates
  - Increasing Block Rates
  - Seasonal Rates
  - Individualized Rates



# Step 5:

## Assess Effectiveness of Addressing Pricing Objectives

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



# Public Involvement Considerations

- Why is it important?
- Communication tools
- Ten steps to successful public involvement



# Rate Setting Process

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**Public Involvement**



# Step 1:

## Identify Financial and Pricing Objectives

- Financial Sufficiency
- Cost of Service Based Allocations
- Minimizing Customer Impacts
- Economic Development
- Conservation/Demand Management
- Rate Stability



# Identify Financial and Pricing Objectives (continued)

- Equitable contributions from new customers
- Simple to understand and update
- Ease of implementation
- Legality
- Revenue stability
- Affordability to disadvantaged customers



# Identify Financial and Pricing Objectives (continued)

## Legality



- Consistency with:
  - Accepted practice and industry standards
  - Local & state statutes, contractual obligations, etc.
- Potential for litigation
- Effective in meeting bond covenants





# Identify Financial and Pricing Objectives (continued)

## Financial Sufficiency

- ❑ Manage utility like a business
  - Accepted practice and industry standards
  - Local & state statutes, contractual obligations, etc.
- ❑ Rates “**should be**” set to recover the “full cost” of utility operations
- ❑ Rates “**should be**” set to recover long-term financing of new facilities and water resources



# Identify Financial and Pricing Objectives (continued)

## Cost of Service Based Allocations

- Recovery of costs from customers and customers classes in proportion to cost of providing service
- “Level of Equity” tradeoff



# Identify Financial and Pricing Objectives (continued)

## Minimizing Customer Impacts

- Avoiding large cost increases
- Customer service implications
- Should rate increases be phased?



# Identify Financial and Pricing Objectives (continued)

## Affordability to Disadvantaged Customers

- Lifeline rates
- Percentage of income payment plans
- Rate discounts



# Identify Financial and Pricing Objectives (continued)

## Conservation/Demand Management

- Should the pricing structure encourage more efficient water use?
- Which demand is targeted?
- Which customer classes should be targeted?



# Identify Financial and Pricing Objectives (continued)

## Equitable Contributions From New Customers

- System development charges
- “Growth pays for growth”
- Intergenerational equity



# Identify Financial and Pricing Objectives (continued)

## Simple to Understand and Update

- Communication with customers and elected officials
- Customer service impacts
- Administration and updating



# Identify Financial and Pricing Objectives (continued)

## Ease of Implementation

- Impact on customer service staff
- Billing software capability
- Data requirements and costs





# Identify Financial and Pricing Objectives (continued)

## Revenue Stability

- Revenues are predictable and stable
- Cash flows matched with expenditures



# Identify Financial and Pricing Objectives (continued)

## Rate Stability

- Smooth program of rate adjustments is usually preferable
- Volatile swings should be avoided



# Identify Financial and Pricing Objectives (continued)

## Economic Development

- Water and sewer service as incentive for economic development
- Comparability with our neighbors?

- Potential rate structures
  - Interruptible rates
  - Subsidized rates
  - Marginal cost rates
- Potential legal and political risks



# Ranking Main Objectives

Objectives	Stakeholders		
	A	B	C
Legality	1	3	1
Financial Sufficiency	3	1	2
Cost of Service Based Allocations	2	2	3
Minimizing Customer Impacts	5	4	6
Affordability to Disadvantaged Customers	4	6	5
Conservation/Demand Management	6	7	4
Equitable Contributions-New Customers	7	5	9
Ease of Implementation	8	8	8
Rate Stability	10	10	7
Economic Development	9	9	10

*Objectives will vary depending on specific situations*



# Rate Setting Process

**Step 5 – Assess Effectiveness of Addressing Pricing Objectives**

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**Step 1 - Identify Financial and Pricing Objectives**

**Public Involvement**

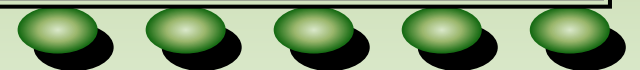


## Step 2:

# Identify Revenue Requirements

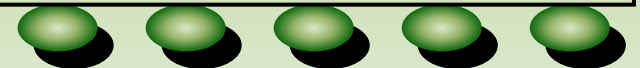
### Topics Covered:

- Steps to determine revenue requirements
- Overview of developing revenue requirements
- Forecasting considerations
- Cash needs approach
- Utility approach basis
- Capital costs vs. operating costs



# Steps to Determine Revenue Requirements

- Gather financial data
- Gather non-financial data
- Interview key staff
- Assemble data
- Determine key factors like inflation, interest rates, etc.
- Common problems



# Steps to Determine Revenue Requirements (continued)

## Financial Data:

- Audits, CAFRS
- Budget document
- Actual expenditures

- Monthly cash flows
- Bond Official Statements
- Debt service schedules





# Steps to Determine Revenue Requirements (continued)

## Non-Financial Data:

- Customer records
- Billed usage
- Functional breakdown of costs
- Design capacity and costs associated with peak demand
- Customer survey information



# Steps to Determine Revenue Requirements (continued)

## Common Problems:

- Inadequate operating cost detail
- Long-range Capital Plan
  - Incomplete
  - Unrealistic
  - Lack of capital financing policies
- Lack of clear financial objectives/policies



# Overview of Developing Revenue Requirements

- ❑ Compare sources of funds with applications of funds
- ❑ 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
- ❑ “Cash Basis” vs. “Utility/Accrual Basis”



# Steps to Determine Revenue Requirements (continued)

## Financial Planning Considerations:

- Debt service coverage ratios
- Reserve levels
- Financing of capital projects



# Forecasting Considerations

- ❑ Test year
- ❑ Generally from 3 to 10 years
- ❑ Important to provide a reasonable forecast
  - Avoid surprises in future years
  - Allows gradual “ramp up” of rates over years instead of spikes
- ❑ Should be considered living document and reviewed annually



# Cash Needs Approach

## Components:

- Operation and maintenance costs
- Indirect charges from General Fund
- Payment in lieu of taxes
- Franchise fees, etc.
- Capital costs



# Cash Needs Approach

## Operation and Maintenance Costs:

- Water production, distribution, etc.
- Sewer Collection and treatment
- Laboratory



- Meter reading and service
- Billing and collections
- Administrative

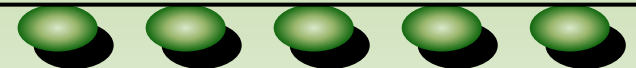


# Cash Needs Approach

## Capital Costs:

- Debt service
- Capital Improvements  
(rate funded)
  - Principal
  - Interest
  - Debt service coverage factor

- Reserves
  - Operating
  - Capital projects
  - Rate stability
  - Capital replacement





# Cash Needs Approach

## Capital Improvements:

### Examples:

- Routine replacement
- Normal extensions and improvements
- Major capital replacements and improvements

How these affect rates depends upon funding policy agency has established

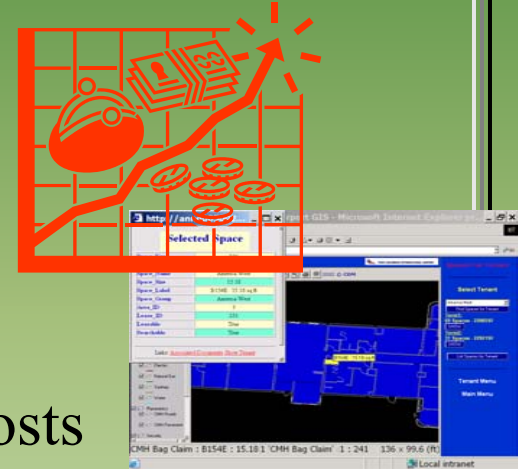
- Estimates of contributions received from developers and customers, grants and other non user fee sources
- Major capital usually funded by combination of long term debt, revenues, and rates



# Cash Needs Approach

## Methodology:

- ❑ Projections generally based on historical data adjusted for:
  - Inflation
  - Changes in conditions
  - Growth of demand affecting variable treatment costs
- ❑ Normalize historical data to account for conditions not expected to continue during forecast period





# Utility Basis Approach

## Approach Generally Used By Investor Owned Utilities



- Includes:
  - Private investors organized as Sole Proprietor, Partnership, or Corporation
  - Non-Profit Organizations, POA/HOA, Church, Camps, etc.
  - For-Profit Mobile Home Communities
- Rate Increase must be approved by Public Service Commission



# Utility Basis Approach

## For Municipal Water Utility Serving Outside Its Corporate Boundary

- Compensation for rights and risks of ownership or other costs
- May want to charge more to outside customers than in-city
- For policy or political reasons



# Utility Basis Approach

## For Municipal Water Utility Serving Outside Its Corporate Boundary

- If not regulated or by agreement, sometimes charge outside customer a multiple of in-city rate
- Normally, some cost justification required, particularly where rates to outside customers are regulated
- Common method is to use combination of cash and utility bases



# Utility Basis Approach

## For Municipal Water Utility Serving Outside Its Corporate Boundary

Does owning municipality truly bear risk?

- Risk of loss due to injuries, damages, catastrophic event
- Financial risk

Are incremental costs incurred to serve outside city?

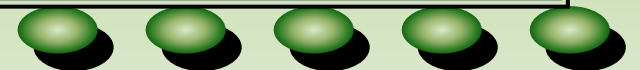
- Location of supplies
- Economies of scale



# Utility Basis Approach








## Issues and Pitfalls That Can Arise


- ❑ Availability of necessary data such as net plant investment and depreciation
- ❑ Determination of appropriate rate of return
- ❑ High cash capital outlay requirements can cause rates to reverse
  - Must be prepared to accept results
  - Can't just switch back and forth





# Advantages of Cash-Needs vs. Utility Basis Approach

	<i>Cash-Needs</i>	<i>Utility Approach</i>
<b>Consistent with government budgeting practices</b>		
<b>Less subjective</b>		
<b>Easier to understand</b>		
<b>More flexibility</b>		
<b>Matches cost of service with beneficiary use</b>		
<b>Consistent with CAFR</b>		
<b>Consistent with bond covenant requirements</b>		

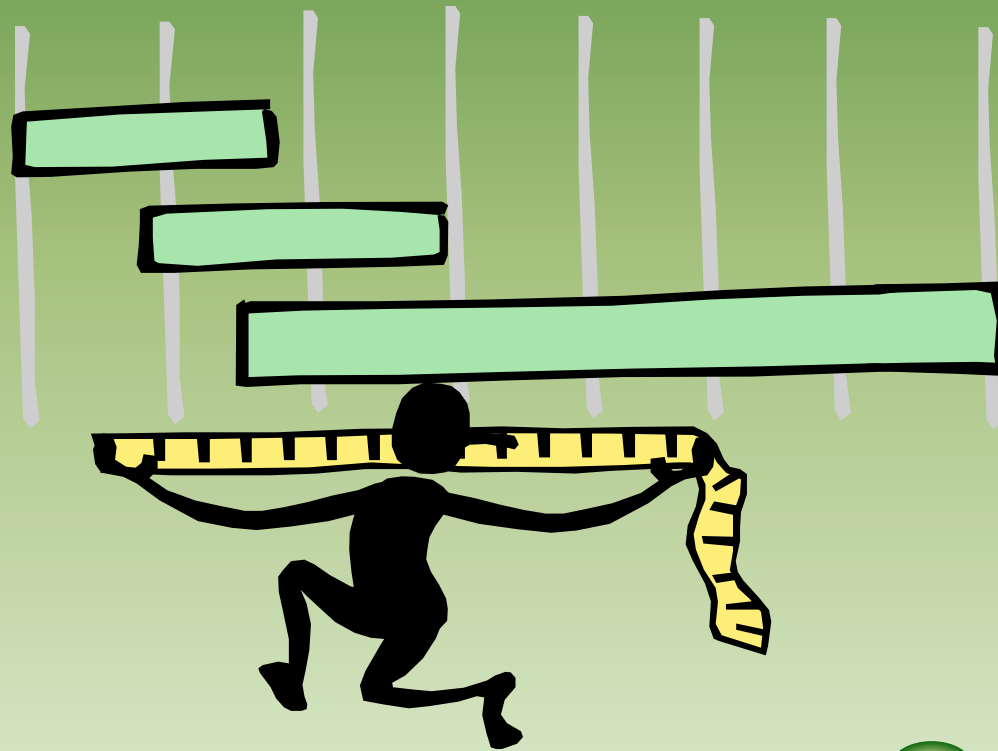


# Comparison of Cash-Needs vs. Utility Basis Approaches

	Cash-Needs	Utility
O&M	\$21,000	\$21,000
Depreciation		3,200
Allowable Return		19,200
Debt Service	19,900	
Rate Funded Capital Projects	1,800	
Reserve Fund Contribution		
Operating	500	
Replacement	1,000	
Expansion	1,000	
Insurance	500	
Rate Stability	500	
Debt Service	1,000	
<b>Total Revenue Requirements</b>	<b>\$47,200</b>	<b>\$43,400</b>



# Capital Costs vs. Operating Costs



# Capital Costs vs. Operating Costs

Operations and Maintenance

+ Capital Requirements

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= Total Revenue Requirement

Which cost goes where?

- Minor costs vs. major costs
- Ongoing vs. one-time costs
- Must do today vs. sooner or later



# Capital Costs vs. Operating Costs

## Types of Capital Costs:

- Rehabilitation** – expenditures for repair due to damage, wear, or decay to restore facilities to normal or optimum condition.
- Replacements** – expenditures for components replacing existing units.
- Improvements** – betterments or upgrades to increase value, quality, or usefulness.
- Expansion** – expenditures to enlarge capacity of facilities or extend system to new areas.



# Capital Costs vs. Operating Costs

## Definition of O&M Costs:

- Operating costs** includes those system costs required during the process of providing water or wastewater service.
- Maintenance costs** are those expenditures “required to maintain the system in good operating condition, and include repairs or replacements of minor property components less than the size of a retirement unit.” \*



# Rate Setting Process

**Step 5 – Assess Effectiveness of Addressing Pricing Objectives**

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**Public Involvement**



# Step 3:

## Allocate Costs

### Topics Covered:

- Cost of Service Concept
- Cost of Service Alternatives
- Allocate Cost of Service to Cost Components

- Categorization of Costs
- Functional Costs Allocations
- Classes of Customers
- Units of Service





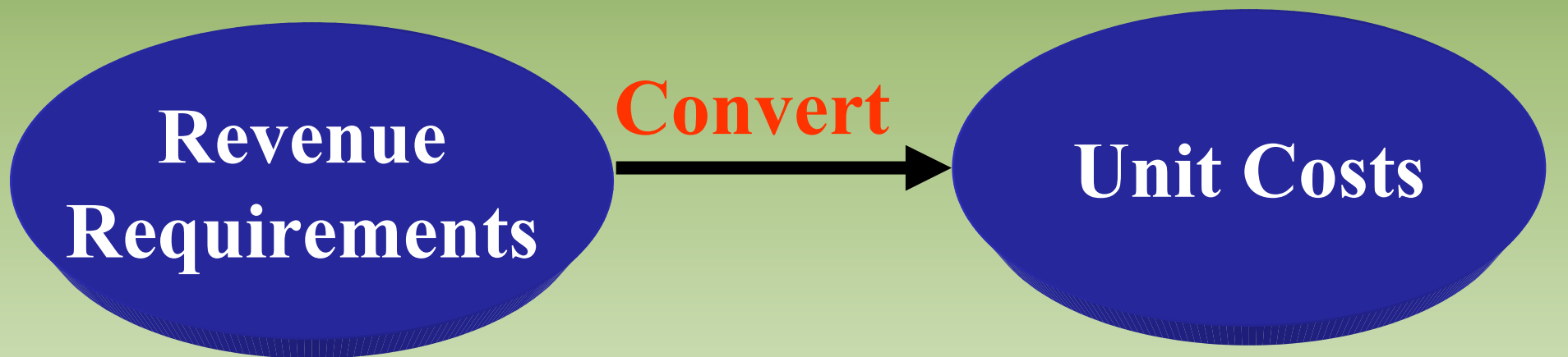
# Cost of Service Concept

***Cost of service is the fundamental benchmark used for establishing utility rates in the United States***



# Cost of Service Concept

A cost-based process of converting revenue requirements into unit costs



# 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 the utility's revenues.



# Cost of Service Concept

## Rationale

- Different types of customers generate different costs because their patterns of use or characteristics are different.
- Cost of service 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:**

The attempt to 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.



# Cost of Service Alternatives

O&M Allocation

Capital Cost Allocation

➤ Cash Basis

➤ Utility Basis  
(Depreciation and Rate Base/Return)

Allocation Methodologies

➤ Water

- Base-extra capacity
- Commodity-demand

➤ Wastewater

- Design basis allocation
- Functional based allocation



# Allocate Cost of Service to Cost Components

- ❑ Recognize Cost Causation (Design Basis)
- ❑ Cost Components

## ➤ Commodity costs

- Volume
- Strength

## ➤ Demand costs

- Maximum day
- Maximum hour

## ➤ Customer costs

- Meters & services
- Billing (Meter reading, billing, collection)

## ➤ Other

- Fire protection
- Customer specific



# Allocate Cost of Service to Cost Components (Continued)

## □ Capital related costs (debt service, other)

- Allocate rate base (plant investment) to cost components
- Allocate capital related costs in proportion to rate base

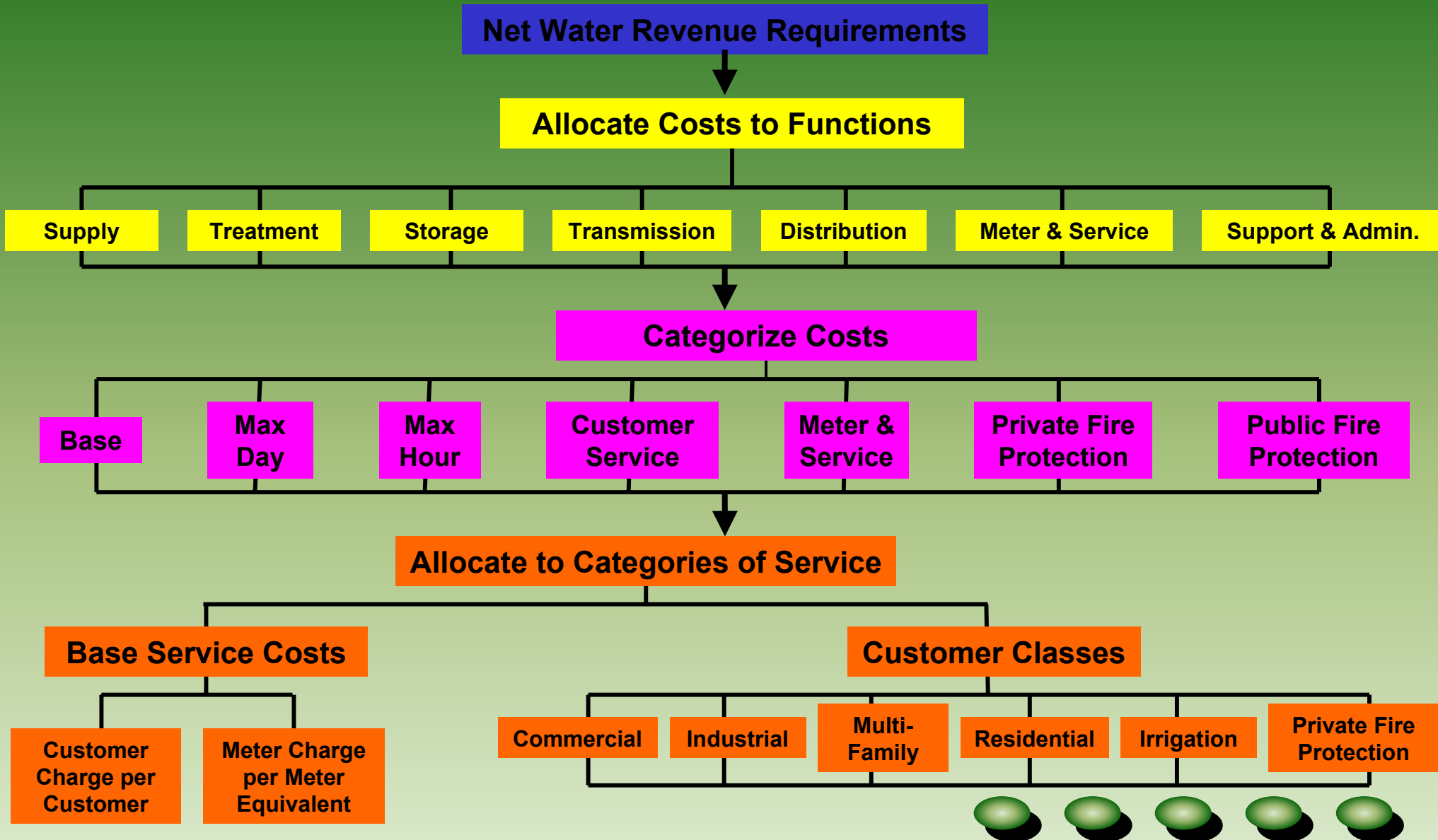
## □ Operation & maintenance expense

- Similar allocation to rate base
- Power (commodity/demand)
- Chemicals (commodity)

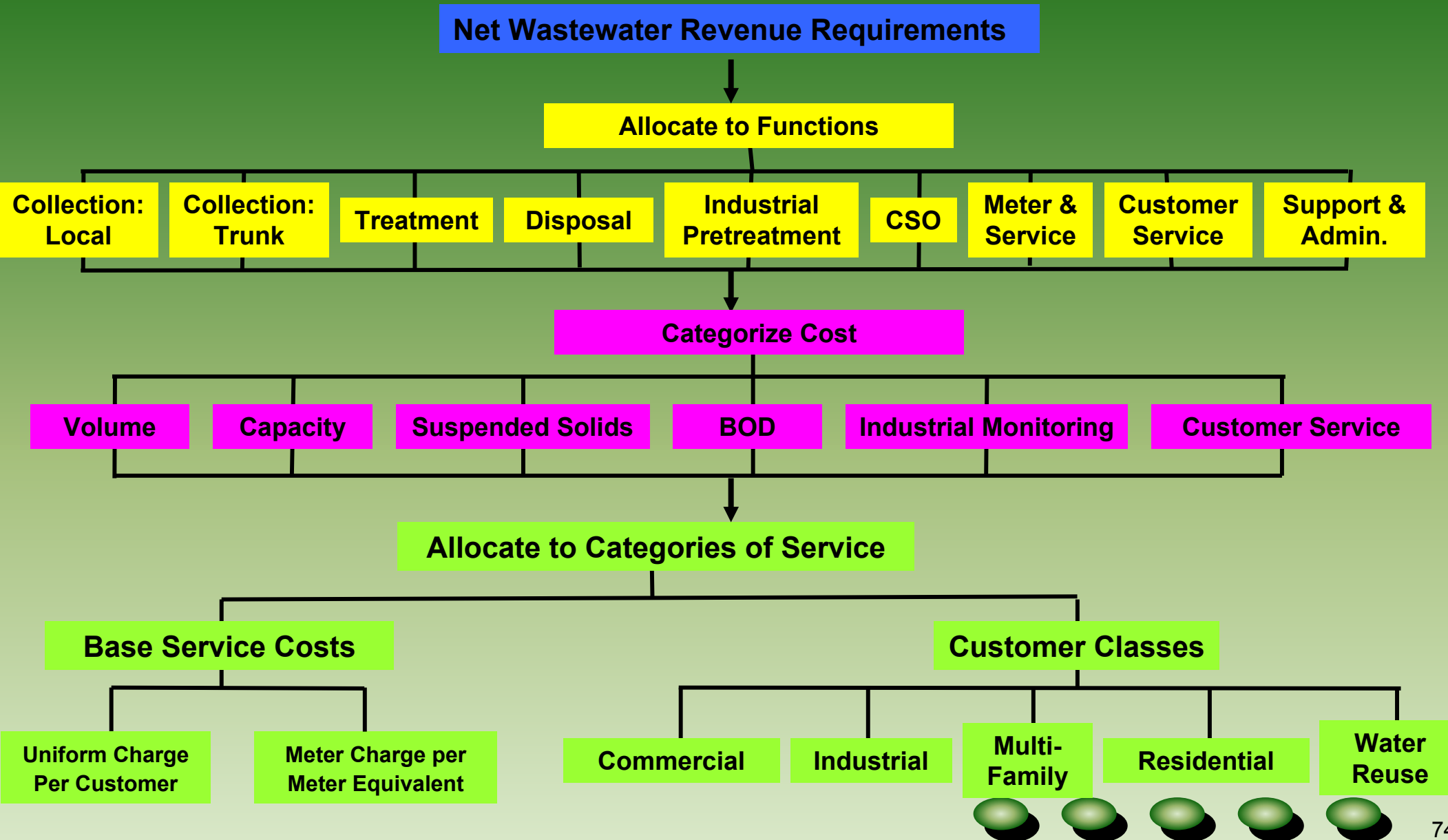




# Sample Allocation of Water Costs



# Sample Allocation of Wastewater Costs



# Classes of Customers

## Distribute Costs to Customer Classes

- ❑ Determine unit cost of service by cost component
  - Operation & maintenance expense
  - Capital cost
- ❑ Apply unit costs to customer class units of service



# Classes of Customers

## Indicative Revenue Increase by Class

- Overall system revenue increase required
- Indicated increases by class to meet allocated cost of service
- Provides decision makers with basis for:
  - Establishing defensible rates
  - Identifying levels of subsidy if rates vary from cost of service
- May require phase-in to achieve full cost of service



# Units of Service

## Sources of Data

### □ Billing Records

- Number of meters by size
- Number of meters by class
- Annual metered use by class
- Monthly variation in metered use by class
- Wastewater pollutant strengths

### □ Operational Records

- System water demand (annual, max day, max hour)
- Treated wastewater volumes and strengths (customers, infiltration/inflow)

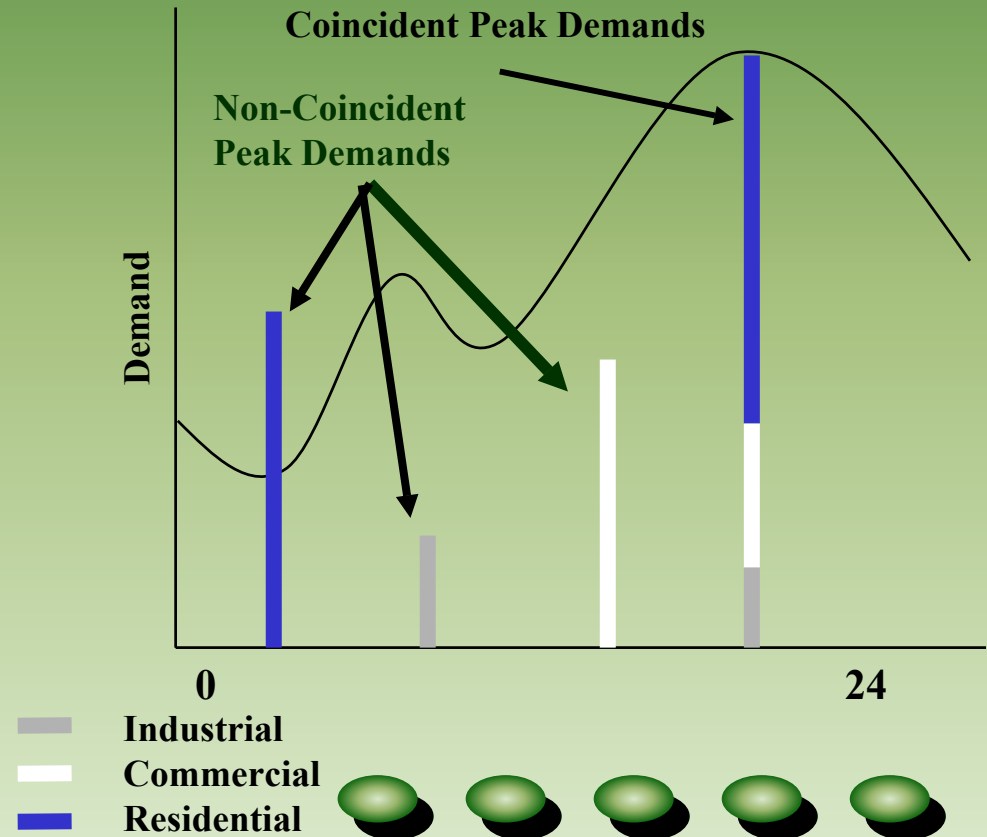


# Water Demand Factors

## Coincident vs. Non-Coincident Peaking Factors

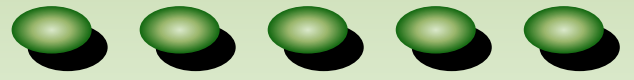
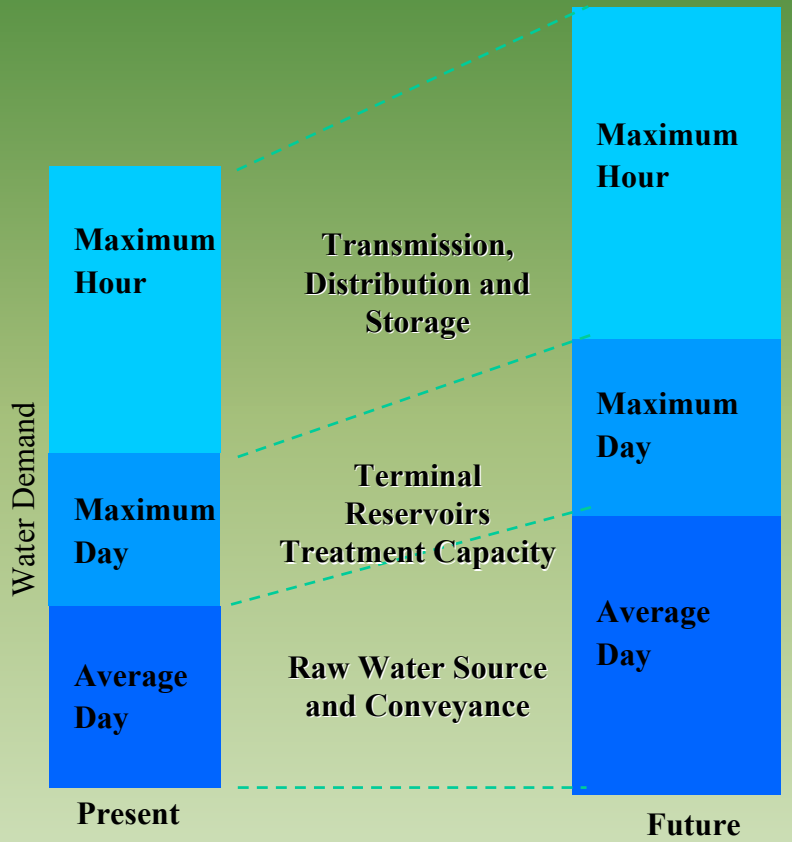
### Issue

Should allocations use coincident peaking demands, non-coincident peaking demands, or some combination of both?



# Coincident vs. Non-Coincident Peaking Factors - Arguments & Implications

- ❑ **Benefits of Coincident:**
  - Cost allocations are to reflect cost causation; costs are incurred due to coincident peaking
- ❑ **Benefits of Non-Coincident:**
  - Benefits of diversity of customer demands should be spread to all customers



# Rate Setting Process

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# Step 4:

## Design Rate Structure

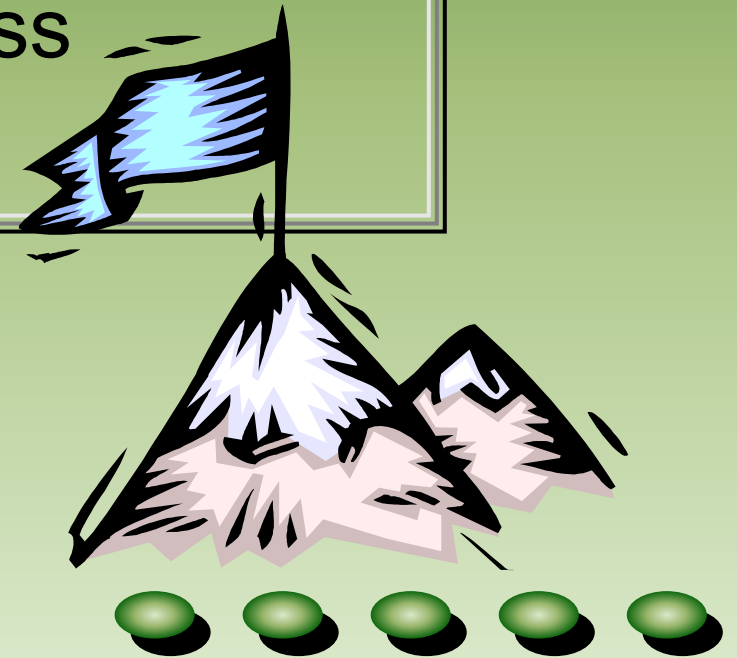
### Topics Covered:

- Recovery of full costs
- Fixed charges vs. variable charges
- Evaluating alternative rate structures
- Conservation vs. traditional rate designs



# Recovery of Full Costs

Goal is to recover costs of service  
from each customer class



# Fixed Charges vs. Variable Charges

## □ Fixed Charges

- Invariant with customer water usage
- Cost-of-service fixed charges reflect customer related costs
- Fixed charges may include portion of capital costs

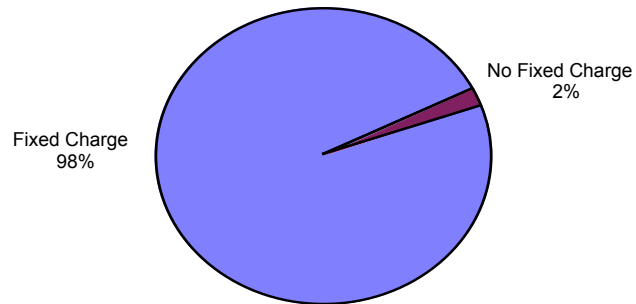
## □ Variable Charges ('Consumption' Charges)

- Vary with amount of water used
- Recover utility costs that vary with customer usage patterns

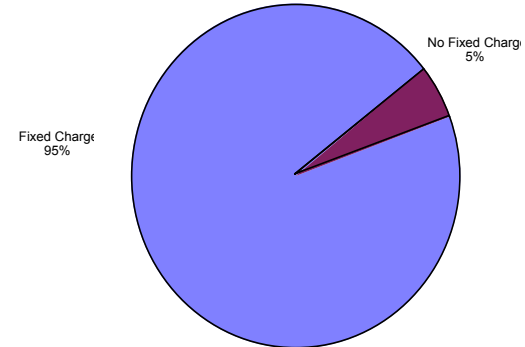


# Summary of Water Utilities with Charges for No Consumption 2000 Survey of 174 Water Utilities

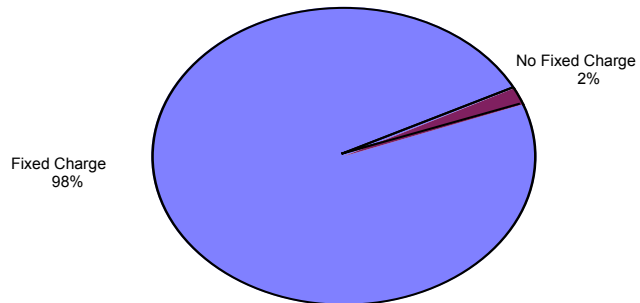
**All Surveyed Water Utilities**  
(174 Sampled)



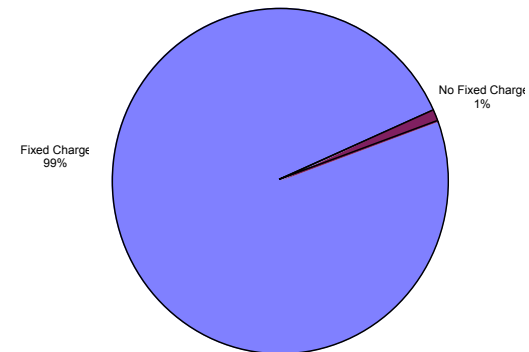
**Large Water Utilities**  
(42 Sampled)



**Medium Sized Water Utilities**  
(52 Sampled)



**Small Water Utilities**  
(80 Sampled)



Notes: Large systems sold over 75 mgd, Medium sized systems sold between 20 and 75 mgd, and Small systems sold less than 20 mgd.

Source: Raftelis Financial Consulting, PA, Raftelis Financial Consulting 2000 Water and Wastewater Rate Survey. Charlotte, N.C.: Raftelis Financial Consulting, PA, 2000



# Fixed Charges vs. Variable Charges (continued)

## Examples of Fixed Charges

<i>Meter Size</i>	<i>Billing and Collecting</i>	<i>Meters and Services</i>	<i>Meter Charge</i>	<i>Total</i>
5/8 - inch	\$2.00	\$2.25	\$4.20	\$8.45
3/4 - inch	2.00	2.45	4.45	8.90
1-inch	2.00	3.10	5.10	10.20
2-inch	2.00	6.50	8.45	16.95
3-inch	2.00	24.50	26.50	53.00
4-inch	2.00	31.25	33.20	66.45
6-inch	2.00	46.80	48.80	97.60



# Fixed Charges vs. Variable Charges (continued)

## Historical Perspectives/Policy Considerations for Fixed Charges



- Variable charges not possible prior to availability of metering
- Fixed charges above customer costs remain prevalent
- Revenue recovery often cited as basis for “high” fixed charges
- Special considerations for resort communities (e.g., part-time residents)



# Fixed Charges vs. Variable Charges (continued)

- ❑ Certain costs are recovered as a fixed component of a customer's bill:
  - Customer service, billing & collection
  - Meter reading and meter maintenance
  - Portion of debt service – “readiness to serve” component
- ❑ These costs are incurred by the utility regardless of usage.
- ❑ Revenues are generated regardless of usage.



# Fixed Charges vs. Variable Charges (continued)

## Typical Fixed Charges

### Customer or Base Charge

- Included costs are recovered on a per account basis (example: billing, collection, etc.)
- Charges are not differentiated by meter size

### Service Charge by Meter Size

- Included costs are recovered proportionately based on meter size (example: meter installation & maintenance)

### Minimum Charge

- Includes an allowance for a minimum level of consumption





# Fixed Charges vs. Variable Charges (continued)

## Variable Charges

- Recovers all costs not recovered from the service charges
  - Water production, treatment & delivery
  - Wastewater collection, treatment & disposal
- Customer costs vary depending on customer usage characteristics (volume - demands)
- Typically measured through water meter readings
- Wastewater consumption is frequently based off a percentage of water consumption



# Fixed Charges vs. Variable Charges (continued)

## Advantages vs. Disadvantages

### Fixed Charges

#### Advantages

- Contributes to revenue stability
- May reflect customer related costs

#### Disadvantages

- Limits customer control of bill / conservation incentives

### Variable Charges

#### Advantages

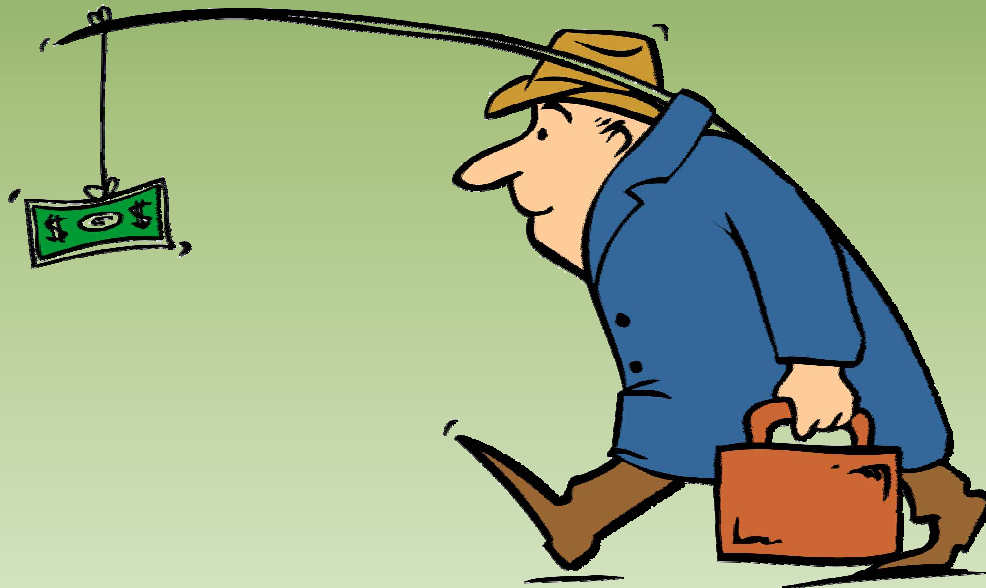
- Recover volume-related costs based on usage
- Address policy objectives including conservation

#### Disadvantages

- Administrative costs associated with metering consumption / advance rate designs



# Rate structure typically reflects variable charges



# Evaluating Alternative Rate Structures

## Considerations in Evaluating Alternatives

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



# Evaluating Alternative Rate Structures (continued)

## Common Elements of Rate Structure

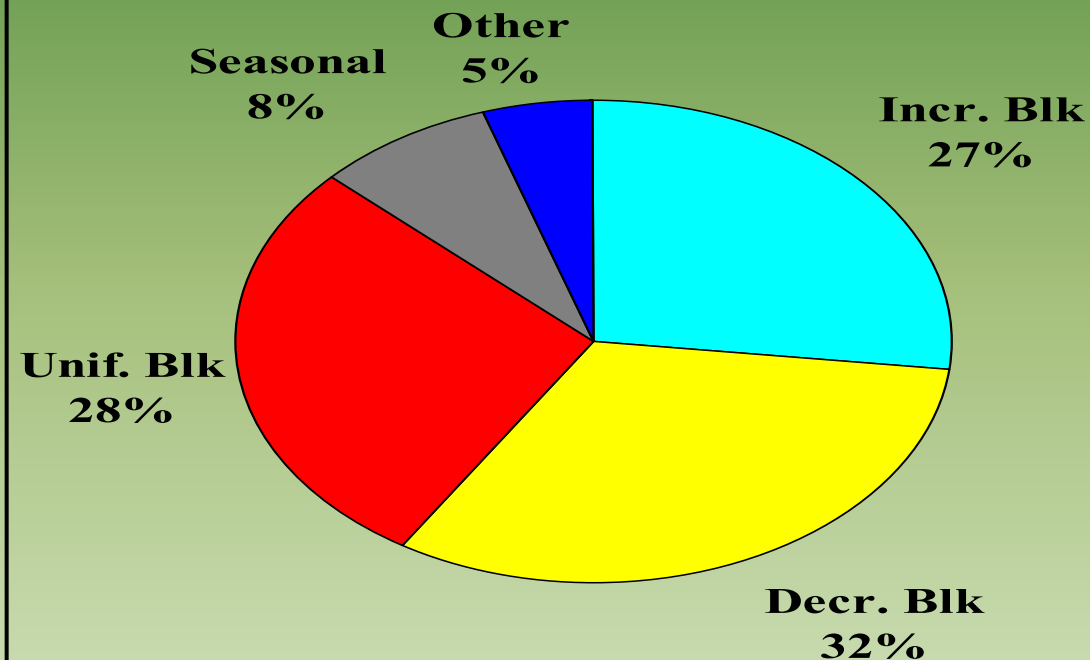
- Defining customer classes**
  - Who will be charged
- Frequency of billing**
  - How often customers are charged
- How much to charge (fixed charges and consumption charges)**
  - What rates apply
  - Most of the time is spent here



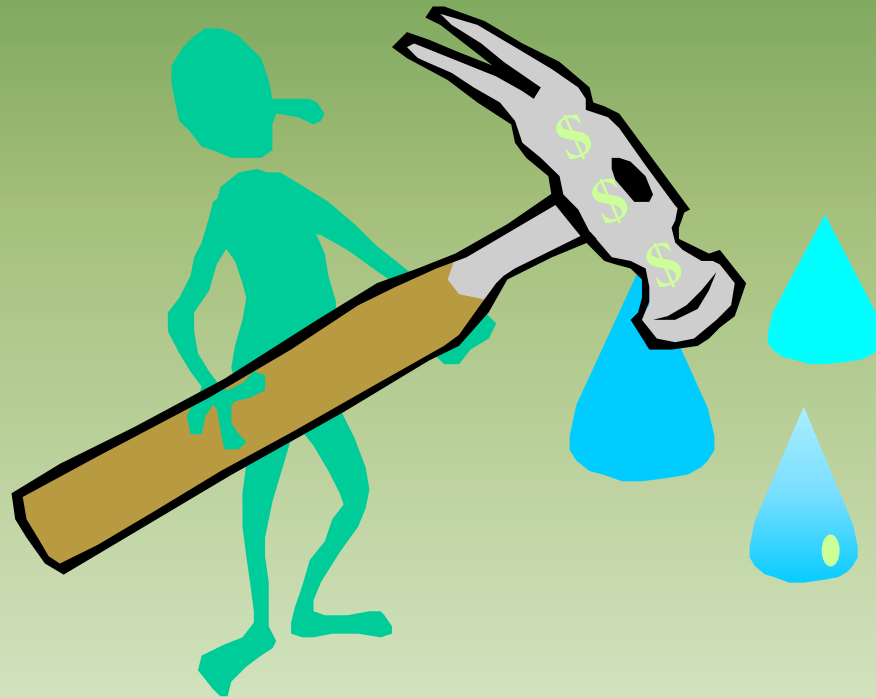
# Evaluating Alternative Rate Structures (continued)

## One Size Does Not Fit All

- Rate designs vary by utility and by region
- Rate levels vary by utility
  - ▮ Generally a function of the utility's costs and the customers demands
- Rates reflect diverse and competing objectives



# Conservation Rates vs. Traditional Rate Designs



# Conservation Rates vs. Traditional Rate Designs

## CONSERVATION

- Uniform
- Inverted Block
- Seasonal
- Individualized Rates

## TRADITIONAL

- Flat
- Declining





# Conservation Rates vs. Other Rate Designs (continued)

## Conservation Pricing Objectives

### I. Demand Management Objectives

#### □ Primary

- Reduce peak usage
- Reduce season usage
- Reduce system demand

#### □ Secondary

- Reward economically efficient water users
- Surcharge nonessential and non-efficient water use
- Communicate conservation consciousness



# Conservation Rates vs. Other Rate Designs (continued)

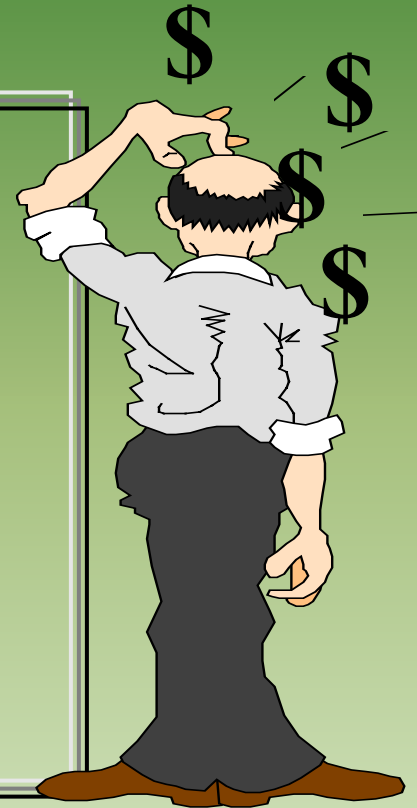
## Conservation Rate Design



# Conservation Rates vs. Other Rate Designs (continued)

## Factors Affecting Conservation Rate

- Frequency of billing
- Billing format
- Fixed vs. variable
- Message sent
- Consumer's ability to react



# Conservation Rates vs. Other Rate Designs (continued)

## Flat Rate

### Major Advantages

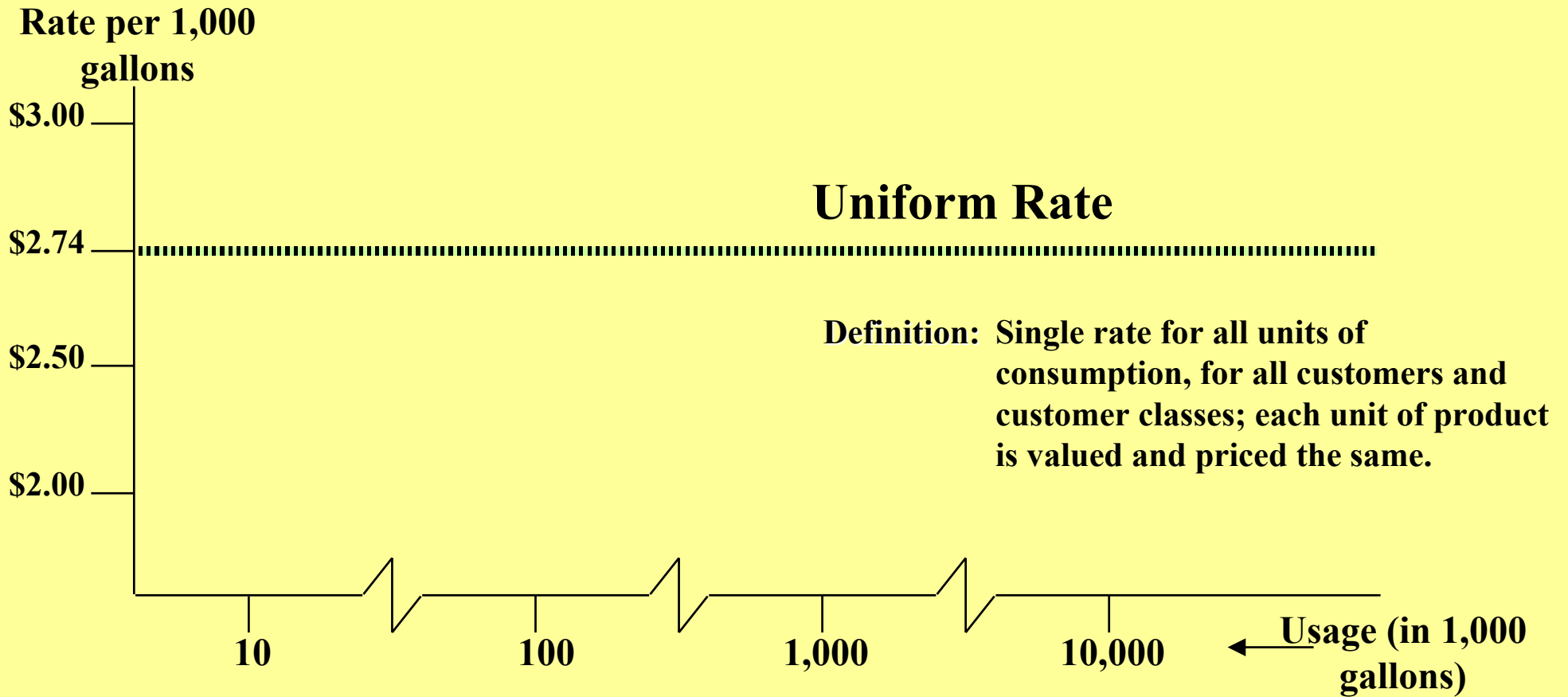
- Revenue stability
- Easy to understand
- Seen as favorable by bond investors

### Major Disadvantages

- Does not equitably recover costs from different user classes
- Does not promote efficient use of water resources



# Conservation Rates vs. Other Rate Designs (continued)



**Example:** Usage: All units of consumption  
Rate: \$2.74 per 1,000 gallons



# Conservation Rates vs. Other Rate Designs (continued)

## Uniform Rates

### Major Advantages

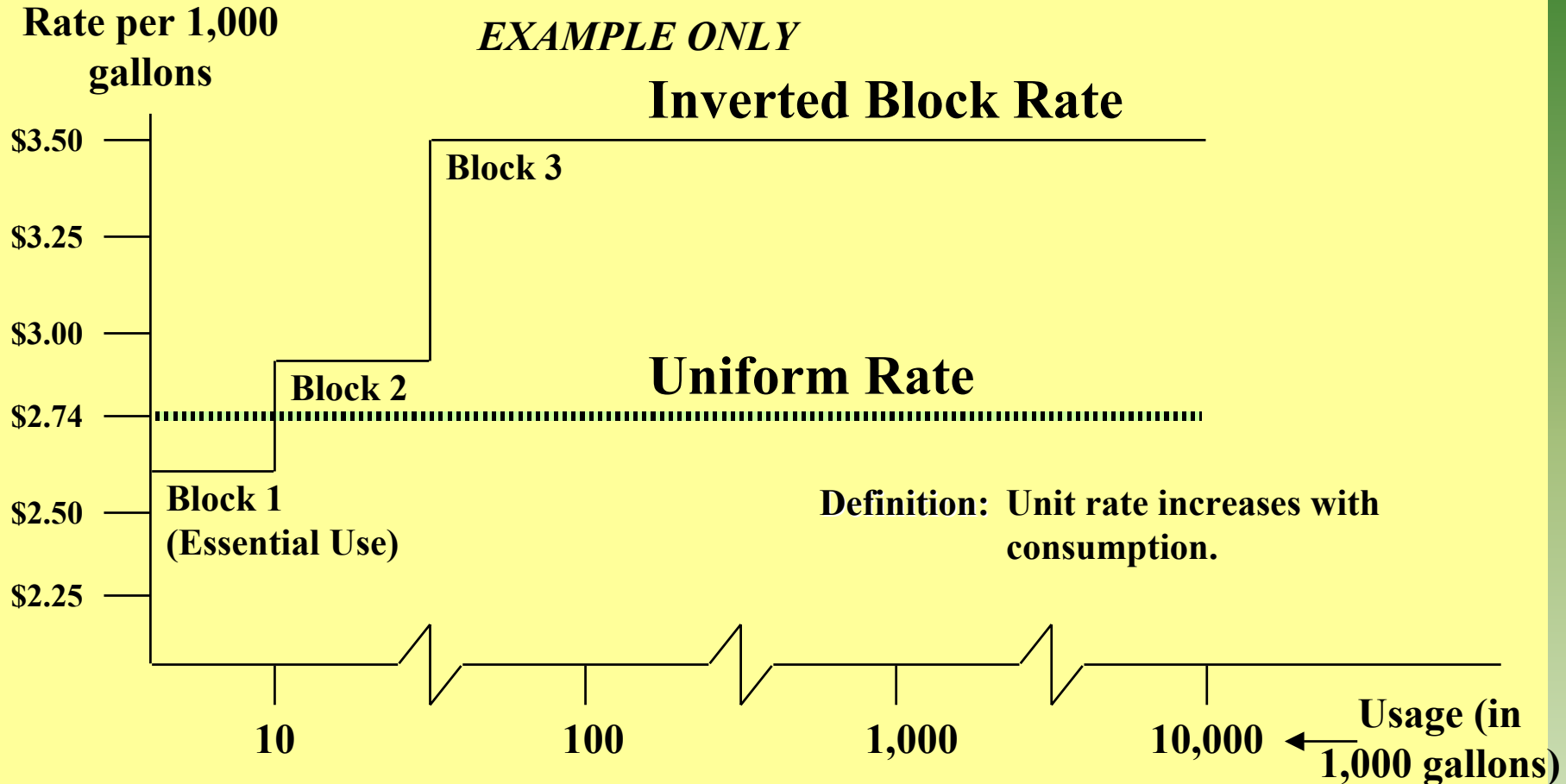
- Are generally easy to implement, administer, and update
- Are understandable and accepted by most customers

### Major Disadvantages

- Does not fully allocate system costs associated with peak/seasonal demand to usage which creates the peaks.
- May only marginally achieve conservation objectives



# Conservation Rates vs. Other Rate Designs (continued)



**Example:**

<u>Usage</u>	<u>Rate (per 1,000 gallons)</u>
First 10,000 gallons	\$2.60
Next 15,000 gallons	\$2.85
Over 25,000 gallons	\$3.50



# Conservation Rates vs. Other Rate Designs (continued)

## Inverted Rates

### Major Advantages

- Can be highly conservation oriented
- Are generally understandable by customers

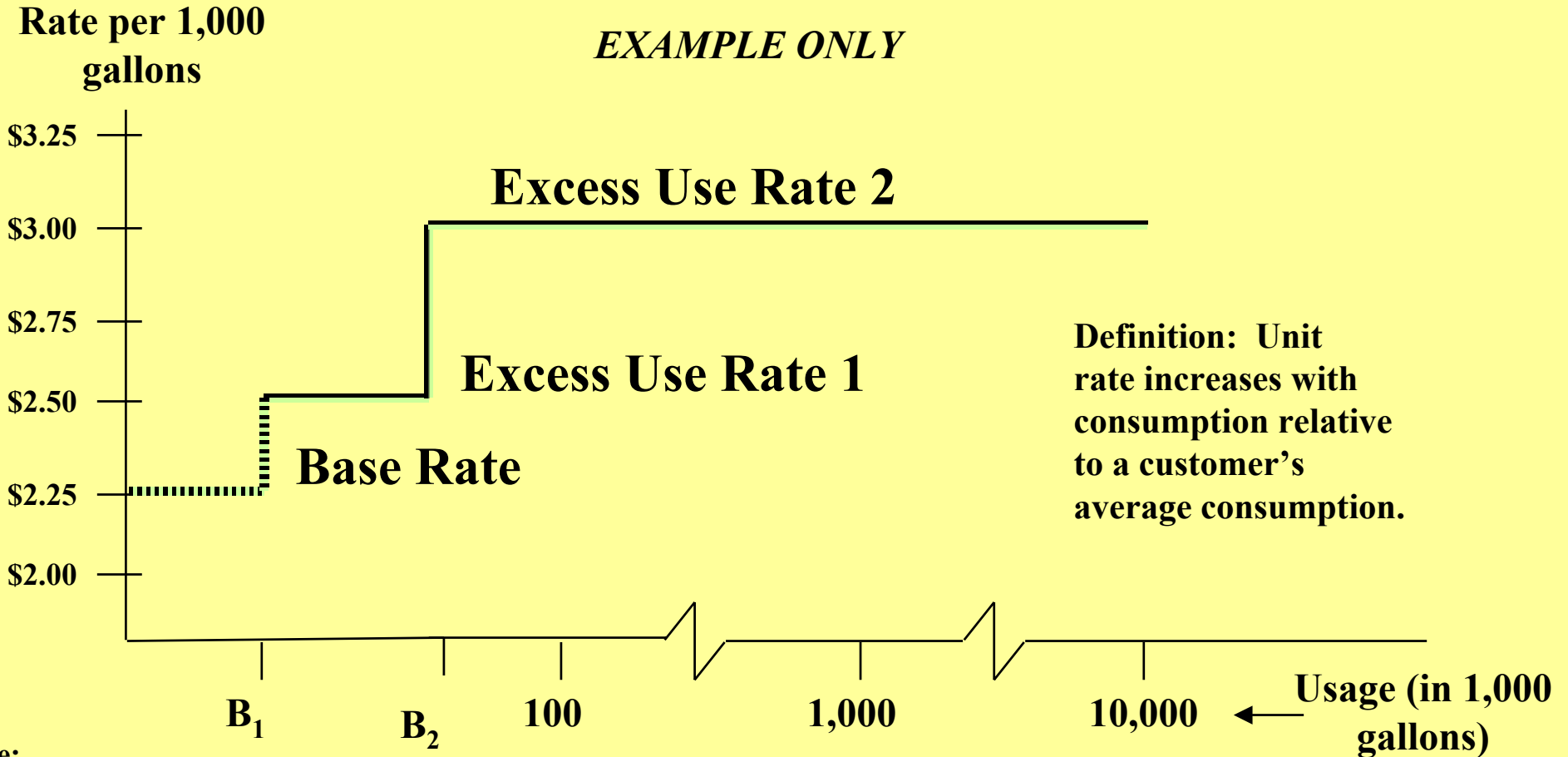
### Major Disadvantages

- May result in revenue instability
- Pose challenges in developing appropriate block cutoffs and unit rates
- May have substantial impact on high volume customers





# Conservation Rates vs. Other Rate Designs (continued)



**Example:**

**Usage Blocks**

B1 - 110% of Average Winter Consumption

B2 - 111-250% of AWC

B3 - > 250% of AWC

**Rate (per 1,000 gallons)**

\$2.25

2.50

3.00



# Conservation Rates vs. Other Rate Designs (continued)

## Excess Usage Rates (Individualized)

### Major Advantages

- Produces the most equitable conservation structure
- Highly rewards conservation-minded customers
- Places more cost burden on non-efficient water users

### Major Disadvantages

- Can be more difficult to calculate rates
- Imposes billing system challenges
- May have the most dramatic differentials in customer bills
- May be difficult for the customer to understand

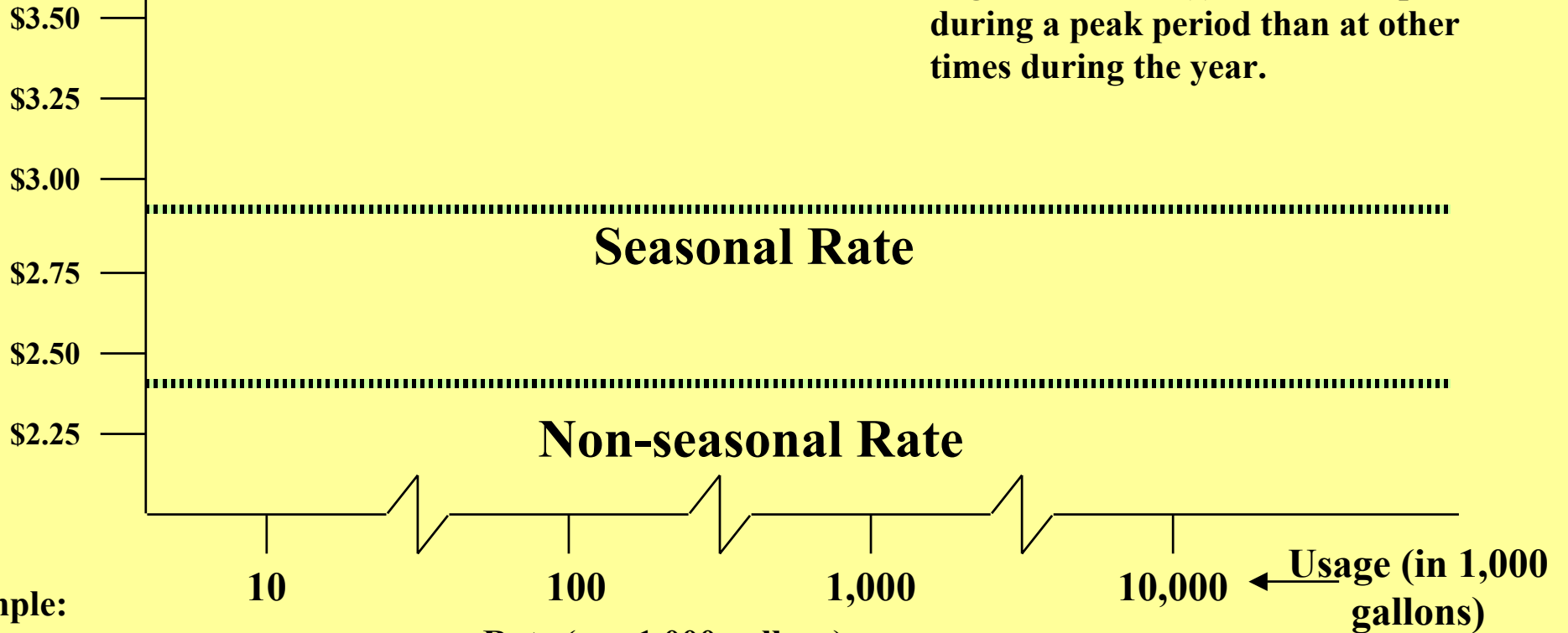


# Conservation Rates vs. Other Rate Designs (continued)

*EXAMPLE ONLY*

Rate per 1,000 gallons

**Definition:** Higher unit rate(s) for consumption during a peak period than at other times during the year.



Example:

Usage

Rate (per 1,000 gallons)

Specific Rate Approach  
All units of consumption

Non-Seasonal  
\$2.40

Seasonal  
\$2.90



# Conservation Rates vs. Other Rate Designs (continued)

## Seasonal Rates

### Major Advantages

- Are based upon cost of service allocation concepts
- Are generally understandable and accepted by customers

### Major Disadvantages

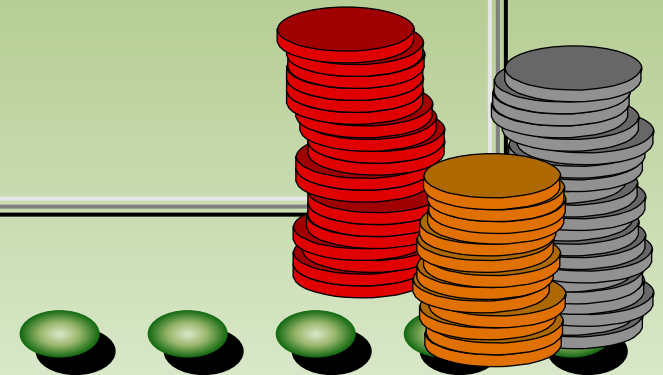
- May have substantial impact on high volume customers
- May have less predictable impact on demand, and therefore revenue



# Conservation Rates vs. Other Rate Designs (continued)

## Hybrid Approach

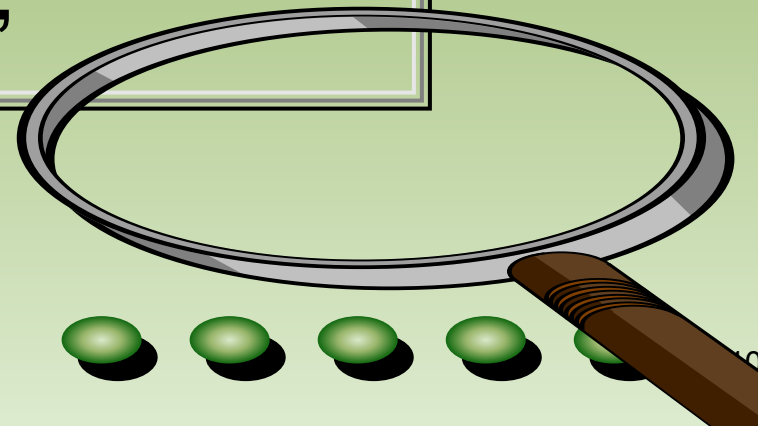
- Rate structure varies by customer class
- Any combination of rate structures may be used
- Addresses implementation issues for each customer class



# Conservation Rates vs. Other Rate Designs (continued)

## Design Features Affecting Conservation Aggressiveness of Rate Structure

- Block cutoffs
- Number of blocks
- Magnitude of unit charges
- Definition of “season”



# Conservation Rate Structure Evaluation Matrix (Example)

	Uniform	Inverted Block	Excess Use	Seasonal
<b><u>Demand Management Goals</u></b>				
<i>Primary Goals</i>				
Reduce Peak Usage	C	B-	A-	B-
Reduce Season Usage (Maximum Seasonal Demand)	C	B	A-	B+
Reduce System Demand (Average Day Demand)	C	B+	B+	B-
<b>Overall</b>	C	B	A-	B
<i>Secondary Goals</i>				
Reward Economically Efficient Water User	C	B-	A-	B+
Surcharge Non-essential and Non- efficient Water Use	C	B	C	B
Communicating Conservation Consciousness	C	A-	A	A-
<b>Overall</b>	C	B+	A-	B+



# Rate Setting Process

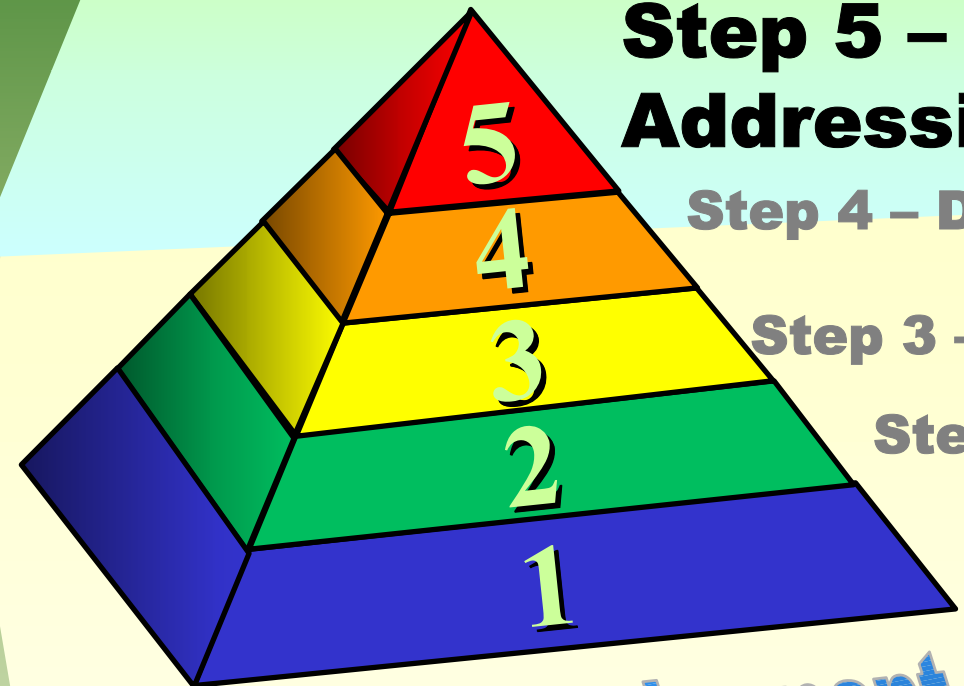
## Step 5 – Assess Effectiveness of Addressing Pricing Objectives

Step 4 – Design Rate Structure

Step 3 – Allocate Costs

Step 2 - Identify Revenue Requirements

Step 1 - Identify Financial and Pricing Objectives



**Public Involvement**





## Step 5:

# Assess Effectiveness of Addressing Pricing Objectives

### Topics Covered:

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



# Customer Impact Analysis

- ❑ Impact on individual customers
  - Typical single family residential
  - Typical commercial
- ❑ System impact
  - Sample of residential/non-residential accounts
  - All accounts



# Competing Objectives

## General Rate Structure Evaluation Matrix

	Uniform	Inverted Block	Excess Use	Seasonal
<b><u>General Pricing Goals</u></b>				
Encourage Cost of Service Equity	B-	B-	A-	A-
Minimize Litigation Potential	A-	B-	B-	B
Minimize Negative Impact on Rates	A	B-	B	B
<b>Overall</b>	<b>B+</b>	<b>B-</b>	<b>B</b>	<b>B</b>
<b><u>Related Goals</u></b>				
Lifeline Rates	C	B-	A-	B+
Enhance Implementation	A-	B-	C	B
Encourage Simplicity	A-	B-	C+	B
Encourage Use of Reclaimed Water	C	B+	B+	B+
<b>Overall</b>	<b>B</b>	<b>B-</b>	<b>B-</b>	<b>B</b>



# Price Elasticity of Demand Defined

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

- Elasticity = 
$$\frac{\% \text{ change in consumption}}{\% \text{ change in real price}}$$
- Elasticity is usually expressed as a decimal percentage number. For example, given an elasticity of  $-0.1$ , and a  $60\%$  upward price change, the resulting consumption change is a downward  $6\%$  or  $(-0.1 \times 60)$ .
- Challenges to determine or estimate price elasticity.



# Price Elasticity of Demand

- ❑ Price effects can be small if little change in real prices.
- ❑ Other demand parameters are strong: temperature, rain, income.
- ❑ Timing and lags.
- ❑ Fixed and Wastewater charges affect price elasticity.
- ❑ Consumers react to average bill, not final block rate.
- ❑ Each user class responds differently.

- ❑ Residential summer usage is more sensitive than winter usage.
- ❑ Peak usage is more sensitive than off peak usage.
- ❑ Southwest tends to be more price sensitive than other areas.
- ❑ Consumer education affects price elasticity.
- ❑ Literature reviews are imperfect for specific areas.



# Price Elasticity of Demand

## Impact on Rates

- ❑ Existing rates are \$1.00 per thousand gallons
- ❑ New costs to be recovered are \$110 thousand
- ❑ Demands are 100 thousand gallons

- ❑ **New rate equal:**  
 $\$110,000 / 100 \text{ thous. gal.} = \$1.10$   
per thousand gal (10% increase)
- ❑ **Price elasticity of demand is -0.3; therefore expected decrease in demand is 3%**
- ❑ **Revised rates equal:**  
 $\$110,000 / 97 \text{ thous. gal.} = \$1.13$   
per thousand gal (13% increase)



# Comparison with Other Communities

Community	Water	Wastewater	Total
Austin	\$15.59	\$31.69	\$47.28
Fort Worth	\$19.50	\$23.10	\$42.60
Tulsa	\$17.71	\$18.95	\$36.66
Dallas	\$12.89	\$23.59	\$36.48
Average	\$15.32	\$19.28	\$34.60
Albuquerque	\$16.70	\$16.85	\$33.55
<b>San Antonio</b>	<b>\$14.34</b>	<b>\$14.83</b>	<b>\$29.17</b>
Denver	\$13.52	\$13.56	\$27.08
El Paso	\$12.32	\$11.66	\$23.98



# Affordability of Service

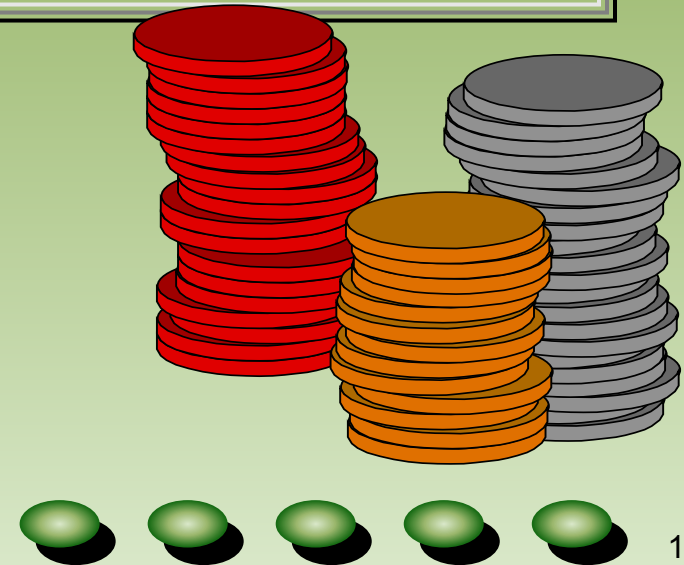
- ❑ Ability of Consumers to Pay Charges
- ❑ Ways to Improve Ability to Pay
  - Change Bill Frequency
  - Budget Billing
  - Target Usage Reduction
  - Third Party Programs
  - Life Line Rates
  - Percentage of Income Payment Plans
  - Rate Discounts





# What is Affordability?

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



# Customers Who May Experience Ability-to-Pay Problems

## Fixed incomes

- TANF recipients
- Unemployed
- Elderly
- Disabled

## Low incomes

- Welfare-to-work households
- Single parent headed household with children



# Conditions that Can Exacerbate Affordability Problems

- High summer bills
  - May be result of increased consumption unrelated to outdoor usage (e.g., children home all day)
  - Come at same time that energy bills peak
- Extraordinary expenses in other areas
  - May create a temporary inability to pay (e.g., medical bills)



# **Ways to Improve Ability to Pay:**

## **Non-Rate Changes**



# Change Bill Frequency

- Many low-income households find it easier to pay smaller monthly bills than larger bills delivered bimonthly or quarterly.
- Does not require changing to monthly billing for all customers (can be an option available to customer).
- Bill should be delivered on the same day each month.



# Budget Billing

- Levelizes high seasonal bills
- Improves ability of household to budget
- Improves cash flow to utility



# Targeted Usage Reduction

- Plumbing fixture replacement
- Leak repair
- Education
- Joint funding may be available from energy provider for hot water savings



# Third Party or Voluntary Programs

- Utilities can create fund to which customers (and utility) contribute to assist low-income consumers
- Piggyback on energy funds
- Third-party charitable organizations can administer fund





# Ways to Improve Ability to Pay:

## Rate Changes



# Lifeline Rates

- Below-cost rate for meter charge and water needed for minimum sanitary requirements.
- Should be targeted to households in need.
- Amount of water may vary with household size.



# Percentage of Income Payment Plans

- Water bill set to a percentage of household income.
- Percentage may vary with income level.
- Timely bill payment a condition of remaining in plan.



# Rate Discounts

- ❑ Fixed percentage discount applicable to customers that meet certain criteria
  - Entire bill or just a portion
- ❑ Applications
  - All elderly heads of household
  - All low-income households
  - All households in certain locations



# Rate Setting Process

**Step 5 – Assess Effectiveness of Addressing Pricing Objectives**

**Step 4 – Design Rate Structure**

**Step 3 – Allocate Costs**

**Step 2 - Identify Revenue Requirements**

**Step 1 - Identify Financial and Pricing Objectives**

**Public Involvement**



# Public Involvement Considerations

## Topics Covered:

- Why Is It Important?
- Communication Tools
- Ten Steps to Successful Public  
Involvement



# Rate Issues Are the Most Difficult to Communicate

Issue	Frequency of Responses	Percent of Respondents
<b>Rates</b>	29	17
Drought, Conservation, Supply	26	15
Specific Contaminants	22	13
Water Quality	20	11
Projects	19	11
Management	19	11
Consumer Confidence Reports	18	10
Regulations	12	7
Fiscal	12	7
Pollution	10	6



# Most Difficult Audiences

- 1. Residential Customers**
- 2. Citizens' Groups**
- 3. Media**
- 4. Business Customers**
- 5. Regulators**
- 6. Elected Officials**
- 7. Employees**



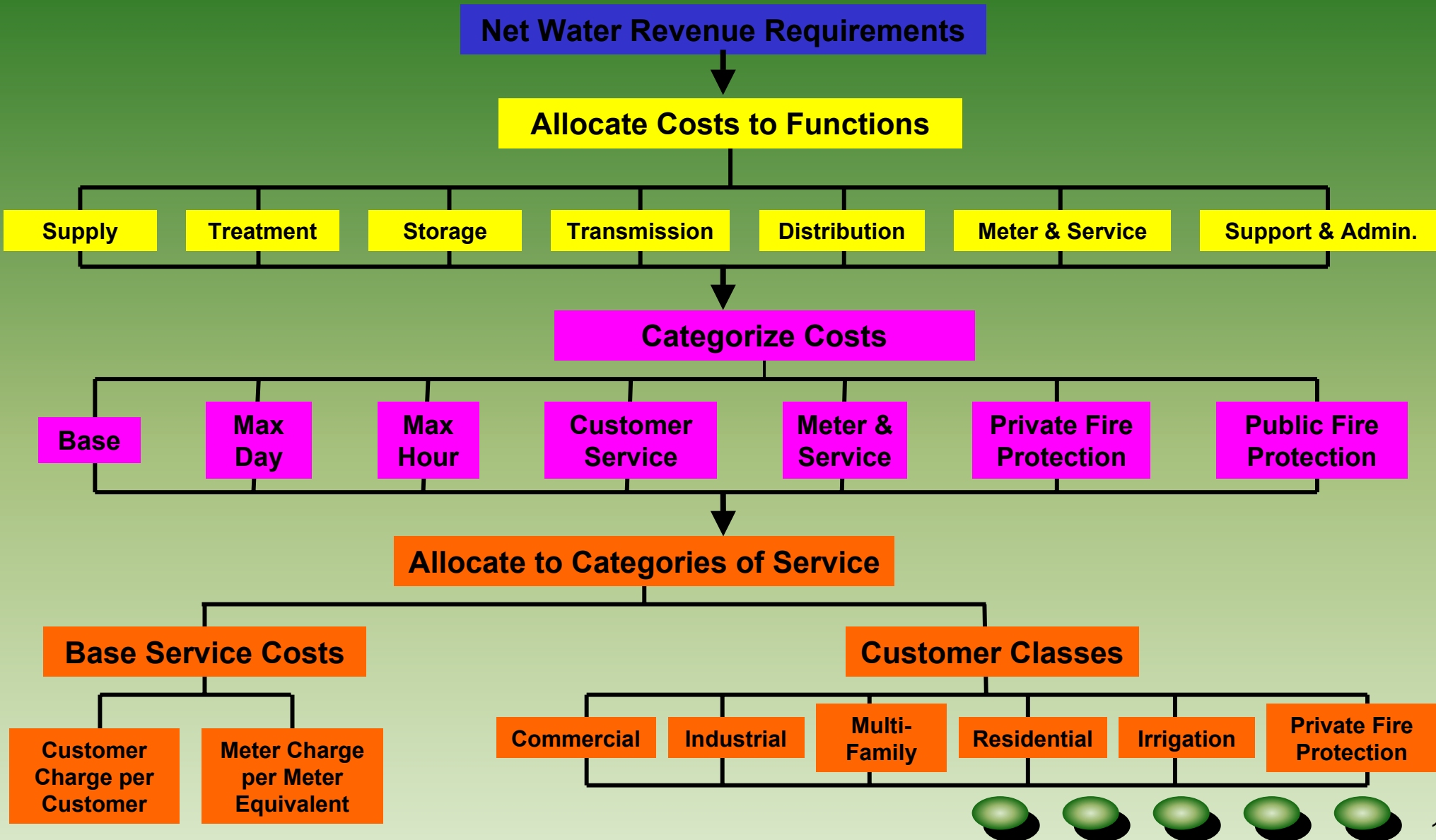


# Why Are Rates So Difficult?

- ❑ Complex Concepts
- ❑ Conflicting Priorities



# Sample Allocation of Water Costs



# Conflicting Priorities

<b>Residential</b>	<b>Citizens' Groups</b>	<b>Media</b>
Customer Impacts Affordability Conservation	Customer Impacts Conservation Legality	Customer Impacts Simplicity Economic Development

<b>Business</b>	<b>Regulators</b>	<b>Elected Officials</b>	<b>Employees</b>
Customer Impacts Economic Development Rate Stability	Legality Cost of Service Financial Sufficiency	Customer Impacts Financial Sufficiency Simplicity	Financial Sufficiency Ease of Implementation Revenue Stability



# Tools for Fostering Understanding

## Informational

- Press releases
- Bill stuffers
- Messages on bills
- TV and radio PSAs
- Annual reports
- Website
- Newsletters
- Posters
- Billboards

## Participatory

- Focus groups
- Advisory committees
- Workshops

## Official

- Board and Council meetings
- Rate study reports



# SAWS Website

**San Antonio Water System: Rates - Water Supply Fee - Microsoft Internet Explorer**

Address: [http://www.saws.org/service/rates/watersupply\\_fee.shtml](http://www.saws.org/service/rates/watersupply_fee.shtml)

HOME : SERVICE : WATER & SEWER RATES : WATER SUPPLY FEE

**Rate Structure**

**Water Supply Fee**  
Effective December 6, 2002

The new component of the rate structure that will be added to all customer bills is the Water Supply Fee. This new fee will directly fund the acquisition of new water supplies to reduce San Antonio's dependence on the Edwards Aquifer. The Water Supply Fee in 2003 is \$0.0844 per hundred gallons of consumption. The rate is the same for all customers and all types of usage.

The Water Supply Fee assessed on all potable water service for water usage in every instance of service for each month or fraction thereof shall be as follows:

Year	Maximum Fee To Be Assessed <i>(per 100 gallons)</i>	Actual Fee Assessed
2001	\$ 0.0358	\$0.0358
2002	0.0708	0.0708
2003	0.0938	0.0844
2004	0.1128	TBD
2005	0.1378	TBD

**Sewer Rates**

no changes to the existing water service rate structure, as the changes in the total bill amount will result from the application of a rate increase of about 10%.

CITY LIMITS	OUTSIDE CITY LIMITS
NET METER CHARGE	NET METER CHARGE
\$ 5.61	\$ 7.28
6.85	8.92
8.22	10.68

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# Rates Advisory Committee

- ❑ **ROLE:** Advise the SAWS Board of Trustees.
- ❑ **COMPOSITION:** Area citizens who represent the range and diversity of SAWS customers.
- ❑ **FOCUS:** SAWS Rates and Rate Structure.
- ❑ **OUTCOME:** To provide SAWS with information to be used to make decisions, by the Board of Trustees, about rates and rate structure.



# Rates Advisory Committee

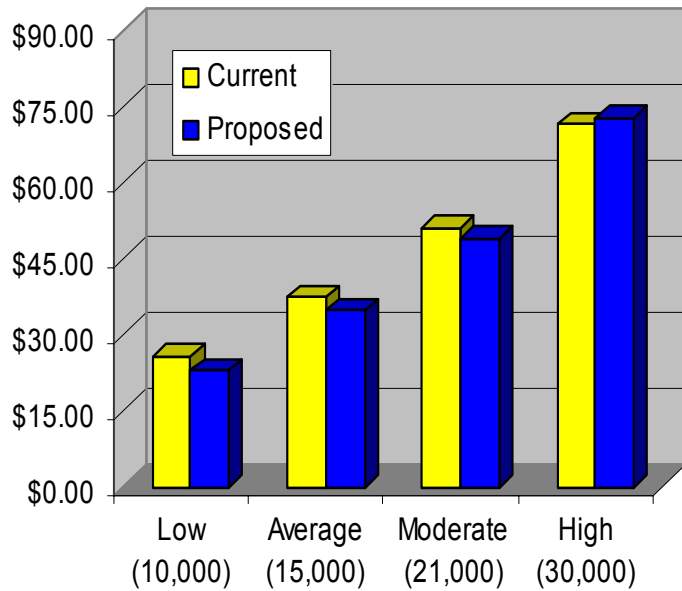
## Basic Tasks:

- Review design of structure of rates and charges within the framework of SAWS policies.
- Help maintain fair and equitable rates with consideration of service area demographics.
- Evaluate cost allocations.
- Review pricing objectives outlines by previous Rates Advisory Committee.



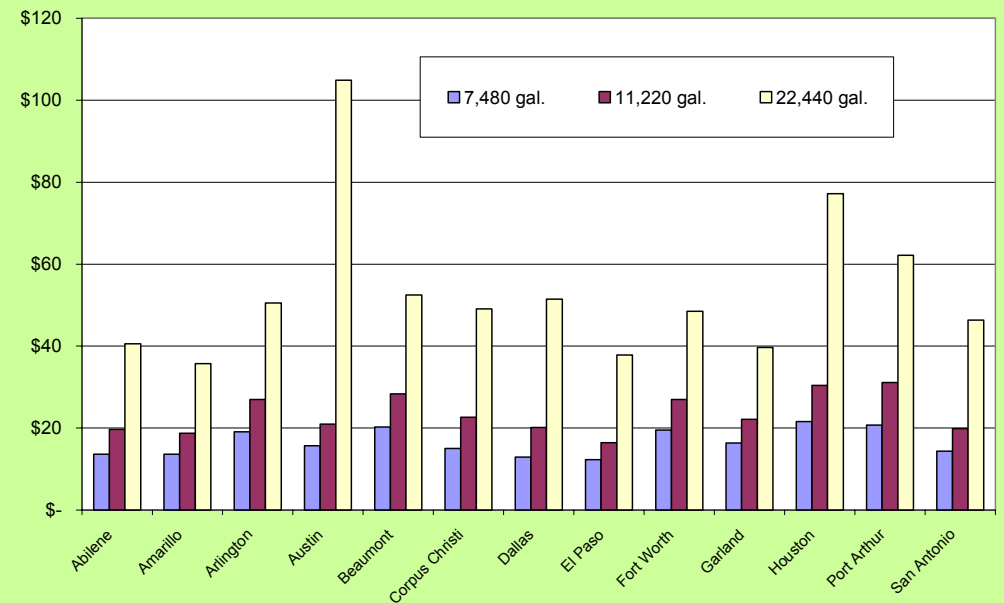
# Rate Study Report

## Rate Impact Analysis



## Rate Comparisons

**Water Charges for Texas Cities**  
(Data presented is as of the 2002 Water survey, rates may have changed)





# Ten Steps For Successful Public Involvement

- ★ Frame the problem
- ★ Identify the constraints
- ★ Identify & describe decision steps and project milestones
- ★ Identify & understand potentially affected stakeholders
- ⊠ Determine vulnerabilities and must resolve issues



# Ten Steps For Successful Public Involvement (continued)

- ⊕ Determine appropriate level of public involvement.
- ✧ Select processes and techniques.
- ⊠ Develop a work plan.
- ◇ Implement and monitor the work plan.
- ★ Manage change.

