AGENDA

1. ROLL CALL

2. ACCEPTANCE OF AGENDA

3. NEW BUSINESS
   a. Rate Study Approach
   b. Financial Plan
      i. Financial policies – Debt and Reserves
   c. Cost of Service Analysis
   d. Rate Structure Alternatives
      i. Current Customer Characteristics
   e. Pricing Objectives Exercise (if time permits)

4. ADJOURNMENT
OUTLINE

» Overview of a Rate Study
  › Objectives of a Rate Study
  › Rate Study Approach
  › Rate Setting Principles: Financial Goals and Pricing Objectives

» Financial Plan Development

» Cost of Service Allocation

» Rate Design

» Q&A
OBJECTIVES OF A RATE STUDY

Main Objective:
» Recovery of full revenue requirement in a fair and equitable manner

Other Underlying Objectives:
» Effectiveness in yielding full cost recovery
» Stability of rates to deal with unexpected and adverse changes
» Defensibility and compliance with legal regulations
» Fairness of rates amongst different ratepayers
» Avoidance of undue discrimination (subsidies) within the rates
» Simple and easy to understand and administer
» Promotion of efficient water use
RATE STUDY APPROACH

PHASE 1 | POLICY REVIEW
Project Initiation
Review Pricing Objectives
Policy Review
Usage Analysis

PHASE 2 | MODEL DEVELOPMENT
Policy Review
Financial Plan
Cost of Service Analysis
Rate Calculations
Impact Analysis

PHASE 3 | IMPLEMENTATION
Comprehensive Report
Community Participation
Easy to Understand Presentation
Public Hearing
Some Pricing Objectives conflict with others and there needs to be a balance

FINANCIAL GOALS

» To ensure financial sufficiency
» To manage and mitigate risks
» To minimize rate fluctuations
» To achieve/maintain a certain credit rating
FINANCIAL CHALLENGES OF MANAGING A WATER SYSTEM

A FINANCIAL MODEL CAN BE A TOOL TO NAVIGATE THROUGH THESE CHALLENGES

Properties of Utility System
- Capital intensive
- Highly fluctuating capital cost
- Unknown liability
- Increasing regulations

Political Acceptance on Rates
- Rate stability
- Affordability
- Equity
- Environmental stewardship
FINANCIAL PLAN DEVELOPMENT
Financial Sufficiency for the Short- and Long-Term
» Operating expenses
» Anticipated capital expenditures

Preparation for the Future
» Identify known facts and variables
» Anticipate unknown variables and evaluate associated risks

Tool for Agencies
» Minimize rate fluctuations from year to year
» Develop and assess financial policies, budget goals and objectives
Reserve Requirements
» Cash flow – results from O&M
» Rate Stabilization – funds used during periods of revenue shortages
  › Probability analysis required to determine the appropriate reserve levels
» CIP Reserves – Funding requirements to award contract and variances from estimated costs
» Emergency – funds available in case of asset failure
  › Critical asset replacement analysis is required to determine the appropriate reserve level

Coverage Ratio Requirements
» Exceed Official Statement requirements
» Achieve / Maintain good credit ratings
» If there is no debt, what is your debt capacity?
  › How much debt are you able to issue with your current rates?
OVERVIEW OF FINANCIAL POLICIES

Goals of Financial Policies

» To mitigate risk due to
  – Rate / revenue instability
  – Emergency with asset failure
  – Volatility in working capital

» To achieve/maintain a certain credit rating

» To determine when to issue debt
Importance of Financial Policies

» To maintain financial solvency
  – Provide a basis for coping with fiscal emergencies (revenue short-falls, asset failure, emergency, etc. ...)

» To provide guidelines for sound financial management with an overall long-range perspective

» To enhance financial management transparency
  – Improve public’s confidence and elected officials’ credibility
Unrestricted cash balances available to meet working capital needs

- Unrestricted cash balances include all cash and investments dedicated for working capital, rate stabilization or R&R needs

Criteria – measures in Days Cash

- Days Cash = Unrestricted balances / average daily O&M expenses for the year

<table>
<thead>
<tr>
<th>Median Ratings</th>
<th>Days Cash on Hand</th>
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</thead>
<tbody>
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<td>BBB</td>
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<td>AA</td>
<td>354</td>
</tr>
<tr>
<td>AAA</td>
<td>415</td>
</tr>
</tbody>
</table>
DEBT COVERAGE REQUIREMENTS

- Debt Coverage = Net Revenues * / Debt Service

- Criteria used by Standards & Poor’s (S&P) for credit ratings:
  - Insufficient <1.00x
  - Marginal 1.01x to 1.20x
  - Good 1.21x to 1.60x
  - Strong >1.60x

* Net Revenues = operating revenues – operating expenses
VALUE OF HIGH CREDIT RATING
MARKET VOLATILITY AFFECTS THE PREMIUM
CURRENT POLICIES

» Emergency Reserve Fund (ERF)
  › Purpose: to be used during emergencies or disasters, not for normal business purposes
  › Set to 25% of Total Operating Expenses Budget, excluding interest and non-cash expenses

» Debt Service Reserve Fund (DSRF)
  › Purpose: to service outstanding debt
  › Set to 50% of the upcoming fiscal year’s debt service requirement
INDUSTRY POLICIES

» Operating Reserve
  › Typically 30 to 90 days of operating expenses

» Rate Stabilization Reserve
  › Typically 10 to 20 percent of rate revenue

» Capital Reserve
  › Typically 100% of replacement CIP

» Emergency Reserve
  › Based on mitigating failure of critical asset cost
PROJECTING REVENUES

» Historical data as a basis for projecting future revenues

» Projection considerations:
  › Growth
  › Price elasticity
  › Weather / conservation normalization
  › Nonrecurring sales / revenues: grants, rebates
WATER SYSTEM COST STRUCTURE

**FIXED**
- Does not vary with production
- Salaries, maintenance, debt service, etc.

**VARIABLE**
- Varies with water production
- Supply, power, chemicals, etc.
WATER SYSTEM COST STRUCTURE

Fixed Costs are High

75 TO 90% of total annual costs

Variable Costs are Low

10 TO 25% of total annual costs
WATER SYSTEM COST AND REVENUE CONUNDRUM

FY 2015 Operating Budget

- Fixed: 73%
- Variable: 27%

Total operating budget = $17,059,117*
*excludes debt service payments

FY 2015 Revenues

- Consumption Charge: 79%
- Service Charge: 21%

Total rate revenue = $26,075,123*
*excludes public fire revenue
WATER SYSTEM COST AND REVENUE CONUNDRUM

SALES REDUCE BY 25%

REVENUES REDUCE BY 25%

REVENUE NEEDED TO MAKE UP LOSS

FIXED

REVENUES

EXPENSES

VARIABLE
OPTIONS TO INCREASE FINANCIAL STABILITY

Cut costs
- Reduce unnecessary expenditures

Increase revenue
- Increase rates

Improve financial stability
- Redesign rates

Access external capital
- Borrow money
- Use others’ credit
### Debt Funded CIP

<table>
<thead>
<tr>
<th><strong>ADVANTAGES</strong></th>
<th><strong>DISADVANTAGES</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>» Cheaper short-term option relative to rate-funded financing</td>
<td>» More costly (in absolute dollars) in the long term, relative to rate-funded financing</td>
</tr>
<tr>
<td>» Provides intergenerational equity</td>
<td>» Obliges the agency to maintain minimum revenue/liquidity levels for debt coverage requirements</td>
</tr>
<tr>
<td>» Far less impactful on current ratepayers</td>
<td></td>
</tr>
<tr>
<td>» Historically low interest rate environment</td>
<td></td>
</tr>
</tbody>
</table>
FINANCIAL PLAN APPROACH

Revenue Adjustment Schedule
Multi-Year Long-Term Financial Plan
PROJECTING O&M EXPENSES

» Historical data as basis for projections
  › Actual (CAFR), Estimated or Budget

Projection Considerations:
» Inflations: salary, benefits, energy, general, etc.
» Water supply portfolio changes
» Growth
» Non-recurring O&M expenses
» Interdepartmental O&M expenses
FINANCIAL PLAN MODEL OVERVIEW

**INPUTS**
- Current Rates
- Acct & Usage Info
- Key Assumptions
- Operating Budget
- Master CIP
  - Asset R&R
- Current Debt Service

**MODEL ENGINE**
- Revenues from Current Rates
- Other Revenues
- O&M Expenses
- CIP
  - Asset R&R
- Debt
  - Current Debt Service

**KEY VARIABLES ON DASHBOARD**
- Revenue Adjustments
- Demand Factors
- CIP Scenarios
- New Debt
- Financial Policies

**OUTPUTS**
- CASH FLOWS
- GRAPHICAL RESULTS ON DASHBOARD
- NUMERICAL RESULTS IN PRO-FORMA
FINANCIAL PLANNING DASHBOARD
COST OF SERVICE
ALLOCATION
WHAT IS COST OF SERVICE?

» The method to recover costs from users in proportion to their use of the system, recognizing the impact of each class on system facilities and operations
  › A cost-based process of converting revenue requirements into unit costs
  › Allocation of cost of service to customer classes is based on customer usage characteristics

» Cost of service is the fundamental benchmark used to establish utility rates in the United States
COST OF SERVICE ALLOCATION PROCESS
AWWA MANUAL M1 6TH EDITION

Revenue Requirement

Functionalize

Functionalized Revenue Requirement
Supply, Treatment, Distribution, Storage

Allocate

Cost of Service by Customer Class

Distribute to Customer Classes

Cost Components
Base, Extra Capacity, Customer, Conservation, Fire
WHAT IS COST OF SERVICE?

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 with the costs of serving them

» Each group will “pay its own way”; no subsidies
» Identify annual revenue requirements by function or activity
» Allocate these functionalized costs to appropriate cost causation components
» Determine customer class characteristics
» Develop unit costs for each cost component
» Distribute costs to customer classes
Cost Causation Components

» **Base Water Supply**: Variable costs that vary with total quantity of water used

» **Base Delivery**: O&M expenses and capital costs associated with service to customers under average load conditions (base use)

» **Peaking (or Extra Capacity) Costs**: costs associated with meeting peak demand rate of use in excess of base use
  - Max day extra demand
  - Max hour extra demand

» **Meter Maintenance**: maintenance and capital costs related to meters

» **Customer Service**: costs associated with serving customers, irrespective of the amount or rate of use
  - Meter reading, billing, customer accounting, customer service, collecting expense

» **Fire**: costs that apply solely to the fire protection function
  - Public hydrants
  - Related branch mains and valves
STEP 1: ALLOCATION OF REVENUE REQUIREMENT BY FUNCTION / ACTIVITY

OPERATING REVENUE REQUIREMENTS
- Water Supply
- Storage
- Treatment
- Pumping
- Transmission
- Distribution
- Hydrants / Fire Protection
- Meters
- Customer Service/Billing & Collections
- General & Administration

CAPITAL REVENUE REQUIREMENTS
- Water Supply
- Storage
- Treatment
- Pumping
- Transmission
- Distribution
- Hydrants / Fire Protection
- Meters
- Customer Service/Billing & Collection
- General & Administration
STEP 2: ALLOCATING FUNCTIONALIZED COSTS TO COST CAUSATION COMPONENTS

FUNCTIONAL COSTS

- Base Water Supply
- Base Delivery
- Peak Demand
- Meter Maintenance
- Fire Protection
- Customer: Billing & Customer Service
» Peaking factors:
  › Indoor Use: lower peaking factors
  › Outdoor Use: higher peaking factors
  › Commercial / Industrial: lower peaking factor

» Peaking factors by customer class are used to distribute peaking costs to each class
EQUIVALENT METER RATIOS

- Meter service costs can be distributed to customers in proportion to the investment in meters and services installed (i.e. meter costs)

- Capacity (Peaking) related costs can be distributed to customers in proportion to the hydraulic capacity of installed meters

<table>
<thead>
<tr>
<th>Diameter (in)</th>
<th>Based on Meter Costs</th>
<th>Based on * Hydraulic Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
<td>3/4</td>
<td>1.1</td>
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<tr>
<td>8</td>
<td>29.0</td>
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</table>

* From AWWA Manual M22 Sizing Water Lines and Meters
**STEP 3: DEVELOP UNITS OF SERVICE BY CUSTOMER CLASS FOR EACH COST COMPONENT**

For Each Customer Class:

- Annual Usage or Base Units
- Max Day Units
  - Extra Capacity Max Day Units
- Max Hour Units
  - Extra Capacity Max Hour Units
- Customer Units:
  - Number of bills
  - Equivalent meters
## STEP 4: DEVELOP UNIT COSTS OF SERVICE FOR EACH COST COMPONENT

<table>
<thead>
<tr>
<th>Cost Component</th>
<th>Calculation</th>
<th>Result</th>
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<tbody>
<tr>
<td>Base Supply Costs</td>
<td>Unit Supply Cost</td>
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</tr>
<tr>
<td>Base Delivery Costs</td>
<td>Unit Base Delivery Cost</td>
<td></td>
</tr>
<tr>
<td>Max Day Costs</td>
<td>Unit Max Day Cost</td>
<td></td>
</tr>
<tr>
<td>Max Hour Costs</td>
<td>Unit Max Hour Cost</td>
<td></td>
</tr>
<tr>
<td>Customer Service Costs</td>
<td>Unit Customer Service Cost</td>
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</tr>
<tr>
<td>Meter Service Costs</td>
<td>Unit Meter Service Cost</td>
<td></td>
</tr>
</tbody>
</table>

**Base Supply Costs**

\[
\text{Base Supply Costs} / \text{Annual Demand} = \text{Unit Supply Cost}
\]

**Base Delivery Costs**

\[
\text{Base Delivery Costs} / \text{Annual Demand} = \text{Unit Base Delivery Cost}
\]

**Max Day Costs**

\[
\text{Max Day Costs} / \text{Extra Capacity MD Demand} = \text{Unit Max Day Cost}
\]

**Max Hour Costs**

\[
\text{Max Hour Costs} / \text{Extra Capacity MH Demand} = \text{Unit Max Hour Cost}
\]

**Customer Service Costs**

\[
\text{Customer Service Costs} / \text{# of Bills} = \text{Unit Customer Service Cost}
\]

**Meter Service Costs**

\[
\text{Meter Service Costs} / \text{Equivalent Meters} = \text{Unit Meter Service Cost}
\]
STEP 5: DISTRIBUTE COST COMPONENTS TO CUSTOMER CLASSES

CUSTOMER CLASSES (Cost to Serve Each Class)
(Single Family, Multi-family, Commercial etc.)
RATE DESIGN
RATE DESIGN

» Common Pricing Objectives
» Existing Water Rates
  › Customer Data Analysis
» Alternative Water Rate Structures
  › Simple to understand and administer
  › Billing system capability
» Revenue Stability Options
### COMMON PRICING OBJECTIVES

<table>
<thead>
<tr>
<th>Conservation</th>
<th>Funding Mechanism</th>
<th>Affordability</th>
<th>Equity and Allocation Methodologies</th>
<th>Administration</th>
</tr>
</thead>
</table>
| • Reducing total annual demand  
• Reducing water waste  
• Reducing peak demand  
• Reducing outdoor water usage | • Enhancing revenue stability  
• Ensuring financial sufficiency  
• Providing funding mechanisms for alternative water supply, conservation program | • Minimizing customer impacts  
• Maintaining low average customer bills  
• Crafting rates that provide affordable water for essential uses | • Allocating water supply equitably  
• Providing a drought management tool  
• Allocating capital costs equitably  
• Complying with government regulations and guidelines | • Allowing cost-effective administration  
• Allowing easy implementation  
• Enhancing customer understanding  
• Billing system capability |

BALANCING COMPETING PRICING OBJECTIVES

Revenue Stability
Financial Stability
Administrative Ease
Defensibility

Affordability
Conservation
Equity
Customer Understanding
### EXISTING WATER RATES

Monthly service charge + 4-tier consumption rate

- Tiers are based on meter size
- Agriculture customers have uniform rate of $2.20/kgal

<table>
<thead>
<tr>
<th>Monthly Tiers (kgal)</th>
<th>No. of Meters</th>
<th>Tier 0 Min</th>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
<th>Tier 4</th>
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<td>7</td>
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<td>18</td>
<td>18 +</td>
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<td>29</td>
<td>57</td>
<td>65</td>
<td>65 +</td>
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<tr>
<td>1 1/2&quot;</td>
<td>209</td>
<td>3</td>
<td>68</td>
<td>137</td>
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<td>387 +</td>
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<td>2,750 +</td>
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<td>56</td>
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<td>7,500</td>
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<td>10,000 +</td>
</tr>
<tr>
<td>Meter Size</td>
<td>Usage (kgal)</td>
<td>Number of Meters</td>
<td>Average Monthly Use (kgal)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
<td>-----------------</td>
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<td>109</td>
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<td>539</td>
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</tr>
</tbody>
</table>
FY 2015 CUSTOMER DATA

FY 2015 Consumption by Tier

- Tier 0: 10%
- Tier 1: 54%
- Tier 2: 22%
- Tier 3: 6%
- Tier 4: 6%
FY 2015 CUSTOMER DATA

FY 2015 Account v. Use

- 5/8 inch: 95.7%
- 3/4 inch: 54%
- 1 inch: 10%
- 1-1/2 inch: 1%
- 2 inch: 0.5%
- 3 inch: 1%
- 4 inch: 3%
- 6 inch: 7%
- 8 inch: 9%
- 1 inch or larger: 0.9%

Account vs. Use comparison:
- Account
- Use
FY 2015 CUSTOMER DATA

FY 2015 WATER ACCOUNT BY CLASS

- Single Family: 92%
- Low Rise Residential: 1%
- Agriculture: 2%
- Government: 1%
- Hotel/Resort: 0%
- Other Non-Residential: 4%

FY 2015 WATER CONSUMPTION BY CLASS

- Single Family: 52%
- Low Rise Residential: 12%
- Agriculture: 3%
- Government: 8%
- Hotel/Resort: 15%
- Other Non-Residential: 10%

CURRENT STRUCTURE

- Tiers by meter size
- Uniform rate by customer class
  - Residential
  - Non-Residential
  - Agriculture
- Tiered rate by customer class
  - Residential only
OTHER CRITERIA TO CONSIDER

» Should rate structures be simple to understand and administer?
  › If so, rate structures such as uniform rate and tiers by customer class may be more desirable

» What is the current billing system capability?
  › If it’s not capable of change, then alternative rate structures are not possible
REVENUE STABILITY OPTIONS

1. Increase the fixed service charge to cover all fixed costs

2. Recover fixed costs from core water sales
   › Determine the appropriate water usage level
     – Using either efficiency standards, sustainable use or conservation goals
   › Develop the commodity rate structure based on this level of water sales

3. Recover peaking costs as a separate component in the fixed service charges
   › Capital peaking costs are allocated based on historical peaking factors for each customer
   › Individualized peaking charge for each customer
LAST STEPS OF WATER RATE STUDY

Report Development
» Document the support / justifications for the rates
» Convey the “story” behind the rates to customers in layman’s terms
» Connects the budget with the rates and shows the math on how the rates are developed

Public Outreach
» Proactive outreach and messaging to educate key stakeholders about the new rates

Implementation
» Develop phase-in implementation strategy
» Test billing system
» Train customer support staff about new rates
RECAP OF KEY STEPS

» Understand what are the goals of the rate study
  › What are the critical items that needs to be accomplished
    – What can be delayed?

» Develop a sound financial plan
  › Understand the relationship between water sales and cost structure

» Develop a rate structure that achieves the utility’s goals

» Have internal dialogue on the short and long term cost structure of the utility
  › How can we develop a rate structure that mirrors this?

» Develop extensive administrative record that clearly shows the steps taken to develop the rate structure
  › Connect the budget to the rates