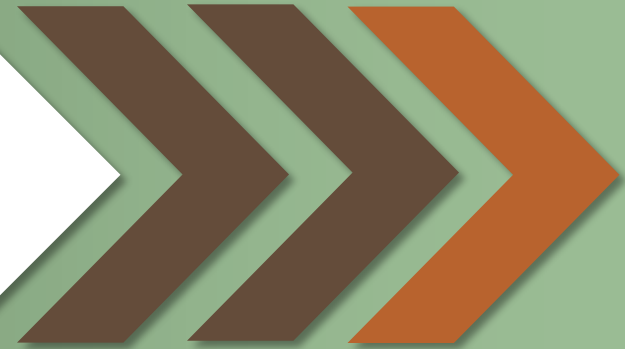


AMERICAN WATER WORKS ASSOCIATION PACIFIC NORTHWEST SECTION 2015 SECTION CONFERENCE



Using Objectives Prioritization to Drive Alternative Rate Structures

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Introduction

- ◆ **Approaches to setting rates has changed over time:**

Unmetered (Flat) Rates → Metered Rates → Conservation-Based Rates → Revenue Stability?

- ◆ **Many utilities' current rate-design goals and objectives have focused on:**
 - Conservation (reducing overall consumption)
 - Efficient use (reducing peak demands)
 - Delaying future capital improvements
 - Preserving revenue stability as water usage declines (*most costs are fixed*)
- ◆ **It is prudent to review your utility's priorities periodically**
 - Key: Maintaining cost-based rates in the context of other priorities
 - A utility's priorities can evolve over time



Rate Structure Evaluation Process

- ◆ **Key Question:** How well does your rate structure align with your priorities?
- ◆ **Step #1: Determine priorities**
 - Define rate structure objectives
 - Prioritize objectives
- ◆ **Step #2: Evaluate rate structures**
 - Assign “scores” to alternatives based on ability to meet objectives
 - Overlay prioritization to determine which structures / features are best aligned with the stated priorities
 - Consider rate structure adjustments to improve alignment with objectives





Overview of Rate Structure Objectives

A sound rate structure balances a variety of objectives*:

Revenue/Rate-Related

- Revenue Sufficiency
- Revenue Stability
- Philosophical Continuity

Cost-Related

- Consistency with Costs
- Conservation & Efficiency
- Fairness & Equity

Practical-Related

- Legal Defensibility
- Simplicity
- Feasibility
- Affordability

Utilities that review their rates regularly generally impose rates that:

- ◆ Are cost-based and legally defensible
- ◆ Generate sufficient revenue
- ◆ Equitably recover costs from customer classes

***We assume that these
are a “given” for this
discussion***

* Per Bonbright, Danielsen, and Kamerschen in *Principles of Public Utility Rates*



Overview of Objectives (For This Discussion)

| Objective | Definition |
|--------------------------------------|---|
| Revenue Stability | Control and predict revenue, regardless of external factors (e.g. weather, economic conditions) |
| Conservation & Efficiency | Encourage efficient water use |
| Affordability | Provide affordable water to “lifeline” users |
| Understandability | Keep structure simple to administer and explain to customers |

- ◆ The process of defining objectives can be customized for your utility. It is important to define distinct objectives, minimizing overlap with other objectives.
- ◆ Most rate structures represent a balance of these objectives, some of which conflict with each other.



How Would You Weigh The Objectives?

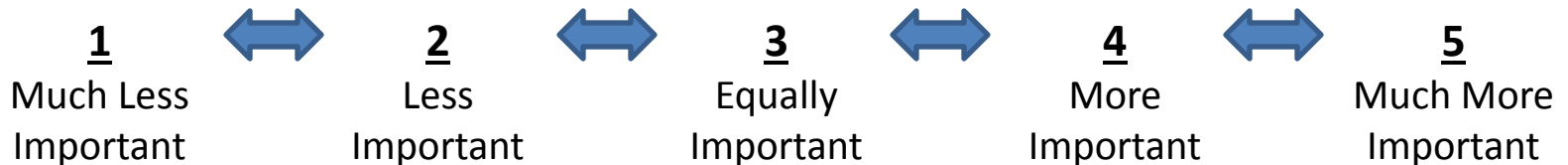
◆ Pairwise Comparison:

- Compare two objectives at a time
- Assign subjective weighting “points” to each objective
- Evaluate relative priority of objectives



◆ Our Version:

- For each comparison, assign 1 – 5 points to each objective



- The number of points assigned to both objectives should add up to 6
- Relative ranking of alternatives is determined by adding up all points



Sample Pairwise Comparison

| | | | | |
|----------|---------------------------|-----|---------------------------|----------|
| 2 | Revenue Stability | vs. | Conservation & Efficiency | 4 |
| 4 | Revenue Stability | vs. | Affordability | 2 |
| 4 | Revenue Stability | vs. | Understandability | 2 |
| 3 | Conservation & Efficiency | vs. | Affordability | 3 |
| 4 | Conservation & Efficiency | vs. | Understandability | 2 |
| 3 | Affordability | vs. | Understandability | 3 |

| Objective | Total Score | Ranking |
|---------------------------------|-----------------------|----------|
| Revenue Stability & Reliability | 2 + 4 + 4 = 10 | 2 |
| Conservation & Efficiency | 4 + 3 + 4 = 11 | 1 |
| Affordability | 2 + 3 + 3 = 8 | 3 |
| Understandability | 2 + 2 + 3 = 7 | 4 |

◆ **The following factors can impact the results:**

- Participant role / objectives (e.g. elected officials, management, staff)
- Participant personality traits (e.g. level of risk aversion)
- When the comparison is performed



How Can We Impact Achievement of the Objectives?

| Impact of Adding or Increasing... | Revenue Stability | Conservation & Efficiency | Affordability | Understandability |
|-----------------------------------|-------------------|---------------------------|---------------|-------------------|
| Fixed Charges | ++ | - | - | <i>Unaffected</i> |
| Volume Charges | - | + | + | <i>Unaffected</i> |
| Higher-Block Volume Charges | -- | ++ | + | <i>Unaffected</i> |
| Seasonal Volume Rate Differential | - | + | - | - |
| Usage Blocks | - | + | + | - |
| Volume Allowance | + | - | - | - |

+: Improves achievement of objective

-: Hinders achievement of objective

Note: Assumes revenue neutrality

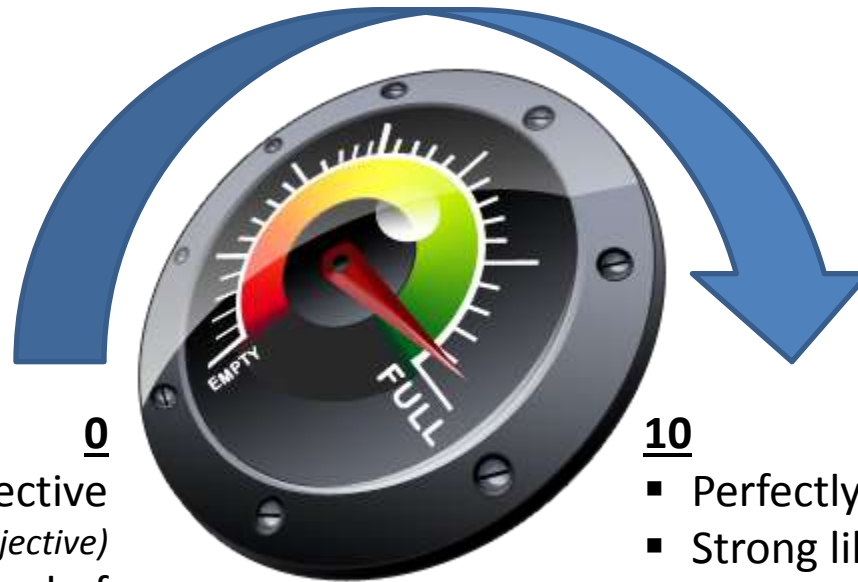


Rate Structure Evaluation

- ◆ **Focus is on residential rates (*same logic applies to other classes*)**
- ◆ **Alternatives generally produce the same revenue in aggregate**
 - A. Uniform Volume Rate
 - B. Seasonal Volume Rate
 - C. Declining Block Volume Rate
 - D. Inclining Block Volume Rate
 - E. Tailored Volume Rate



Grading Scale (Based on FCS GROUP's experience)



0

- Not aligned with objective
(may even contradict objective)
 - Little or no likelihood of achieving objective

10

- Perfectly aligned with objective
- Strong likelihood of achieving objective

Note: Even within a single structure, there is room for variation in the scoring for each objective.



Rate Structure A: Uniform Volume Rate

Key elements:

- ◆ Monthly fixed charge based on meter size
- ◆ Single volume rate applies to all usage

| | |
|--|---------|
| Monthly Fixed Charge (3/4" Meter) | \$20.00 |
| Volume Rate per Hundred Cubic Feet (ccf) | \$2.50 |

| Objective | Score | Notes |
|---------------------------|-------|--|
| Revenue Stability | | <ul style="list-style-type: none"> ▪ Relatively stable revenue stream ▪ Price signals target all users equally |
| Conservation & Efficiency | | <ul style="list-style-type: none"> ▪ Volume rate provides moderate incentive to use water efficiently |
| Affordability | | <ul style="list-style-type: none"> ▪ Relatively consistent and moderate bill for low-end users |
| Understandability | | <ul style="list-style-type: none"> ▪ Simple to understand and administer |



Rate Structure B: Seasonal Volume Rate

Key elements:

- ◆ Monthly fixed charge based on meter size
- ◆ Single volume rate applies to all usage
 - Lower during the winter months
 - Higher during the summer months

| | |
|---|---------|
| Monthly Fixed Charge (3/4" Meter) | \$20.00 |
| Volume Rate per Hundred Cubic Feet (ccf): | |
| Winter (October – May) | \$1.95 |
| Summer (June – September) | \$3.20 |

| Objective | Score | Notes |
|---------------------------|------------|--|
| Revenue Stability | <p>4.5</p> | <ul style="list-style-type: none"> ▪ Shifts cost recovery to more volatile summer usage |
| Conservation & Efficiency | <p>6.0</p> | <ul style="list-style-type: none"> ▪ Enhanced price signals to encourage conservation during summer period |
| Affordability | <p>5.0</p> | <ul style="list-style-type: none"> ▪ Does not differentiate between peak usage and use during peak periods |
| Understandability | <p>6.0</p> | <ul style="list-style-type: none"> ▪ Requires staff to change rates seasonally ▪ Delay between when water is used/billed |



Rate Structure C: Declining Block Volume Rate

Key elements:

- ◆ Monthly fixed charge based on meter size
- ◆ Three-block volume rate structure, where the volume rate decreases as usage increases

| | |
|--|----------------|
| Monthly Fixed Charge (3/4" Meter) | \$20.00 |
| Volume Rate per Hundred Cubic Feet (ccf): | |
| Block One (0 – 10 ccf per Month) | \$2.95 |
| Block Two (11 – 20 ccf per Month) | \$1.95 |
| Block Three (> 20 ccf per Month) | \$1.00 |

| Objective | Score | Notes |
|---------------------------|------------|---|
| Revenue Stability | <p>6.5</p> | <ul style="list-style-type: none"> ▪ Shifts cost recovery away from more discretionary high-end usage |
| Conservation & Efficiency | <p>4.0</p> | <ul style="list-style-type: none"> ▪ Weaker price signals for discretionary high-end usage |
| Affordability | <p>4.0</p> | <ul style="list-style-type: none"> ▪ Shifts cost recovery to low-end usage; disproportionately impacts low users |
| Understandability | <p>5.5</p> | <ul style="list-style-type: none"> ▪ Block structure is more complex to explain / administer |



Rate Structure D: Inclining Block Volume Rate

Key elements:

- ◆ Monthly fixed charge based on meter size
- ◆ Three-block volume rate structure, where the volume rate increases as usage increases

| | |
|--|----------------|
| Monthly Fixed Charge (3/4" Meter) | \$20.00 |
| Volume Rate per Hundred Cubic Feet (ccf): | |
| Block One (0 – 10 ccf per Month) | \$1.70 |
| Block Two (11 – 20 ccf per Month) | \$3.45 |
| Block Three (> 20 ccf per Month) | \$5.15 |

| Objective | Score | Notes |
|---------------------------|------------|---|
| Revenue Stability | <p>4.5</p> | <ul style="list-style-type: none"> ▪ Shifts cost recovery to more volatile usage |
| Conservation & Efficiency | <p>6.0</p> | <ul style="list-style-type: none"> ▪ Provides stronger incentive to use water efficiently |
| Affordability | <p>5.5</p> | <ul style="list-style-type: none"> ▪ Moves cost recovery away from low-end usage, reducing costs for low users |
| Understandability | <p>5.5</p> | <ul style="list-style-type: none"> ▪ Block structure is more complex to explain / administer |



Rate Structure E: Tailored Volume Rate

Key elements:

- ◆ Monthly fixed charge based on meter size
- ◆ Two-block volume rate structure; blocks are defined by individual customer usage patterns

| | |
|---|---------|
| Monthly Fixed Charge (3/4" Meter) | \$20.00 |
| Volume Rate per Hundred Cubic Feet (ccf): | |
| Block One ($\leq 110\%$ of Winter-Average Use) | \$2.15 |
| Block Two ($> 110\%$ of Winter-Average Use) | \$4.30 |

| Objective | Score | Notes |
|---------------------------|------------|--|
| Revenue Stability | <p>4.5</p> | <ul style="list-style-type: none"> ▪ Shifts cost recovery to Block Two usage |
| Conservation & Efficiency | <p>7.5</p> | <ul style="list-style-type: none"> ▪ Most efficiently targets peak demand for individual customers |
| Affordability | <p>5.5</p> | <ul style="list-style-type: none"> ▪ May result in a lower bill for customers with low peaking |
| Understandability | <p>3.0</p> | <ul style="list-style-type: none"> ▪ Significantly increases complexity of bill calculations and related data needs |



Case Study #1: Water District A

Original Water Rate Structure (Before Analysis)

| | |
|---|---------|
| Bimonthly Fixed Charge (3/4" Meter) | \$29.00 |
| Volume Rate per Hundred Cubic Feet (ccf): | |
| Block One (0 – 10 ccf Bimonthly) | \$3.33 |
| Block Two (11 – 20 ccf Bimonthly) | \$4.85 |
| Block Three (21 – 40 ccf Bimonthly) | \$6.32 |
| Block Four (> 40 ccf Bimonthly) | \$7.39 |

Relative Ranking of Rate Structure Alternatives (Based on Prioritization of Objectives)

1. Inclining Block Volume Rates
2. Uniform Volume Rates
3. Tailored Volume Rates
4. Seasonal Volume Rates
5. Declining Block Volume Rates

Prioritization of Objectives



Water District A's course of action:

- ◆ Included 2 ccf bimonthly in the base rate
- ◆ Moved from block volume rate structure to a seasonal volume rate structure
- ◆ Added capacity charge that applies to usage > 25 ccf bimonthly



Case Study #2: Water District B

Original Water Rate Structure (Before Analysis)

| | | |
|---|---------------|---------------|
| Bimonthly Fixed Charge (5/8" Meter) | \$37.00 | |
| Volume Rate per Hundred Cubic Feet (ccf): | <u>Winter</u> | <u>Summer</u> |
| Block One (0 – 8 ccf Bimonthly) | \$2.70 | \$2.70 |
| Block Two (9 – 14 ccf Bimonthly) | \$3.95 | \$3.95 |
| Block Three (15 – 20 ccf Bimonthly) | \$5.10 | \$6.70 |
| Block Four (21 – 34 ccf Bimonthly) | \$5.90 | \$8.50 |
| Block Five (> 34 ccf Bimonthly) | \$6.90 | \$9.90 |

Relative Ranking of Rate Structure Alternatives (Based on Prioritization of Objectives)

1. Uniform Volume Rates
2. Inclining Block Volume Rates
3. Seasonal Volume Rates
4. Declining Block Volume Rates
5. Tailored Volume Rates

Prioritization of Objectives



Water District B's course of action:

- ◆ Focused increase on base / Block One rates
 - No change to other volume rates

Case Study #3: City

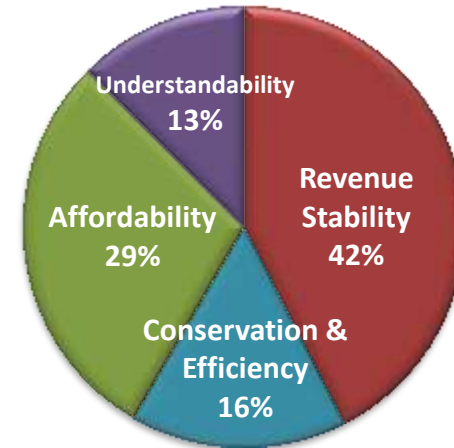
Original Water Rate Structure (Before Analysis)

| | |
|---|---------|
| Bimonthly Fixed Charge (3/4" Meter) | \$35.74 |
| Volume Rate per Hundred Cubic Feet (ccf): | |
| Block One (0 – 20 ccf Bimonthly) | \$3.57 |
| Block Two (21 – 30 ccf Bimonthly) | \$4.93 |
| Block Three (31 – 100 ccf Bimonthly) | \$6.31 |
| Block Four (> 100 ccf Bimonthly) | \$9.40 |

Relative Ranking of Rate Structure Alternatives (Based on Prioritization of Objectives)

- 1 (Tie). Uniform Volume Rates
- 1 (Tie). Declining Block Volume Rates
3. Inclining Block Volume Rates
4. Tailored Volume Rates
5. Seasonal Volume Rates

Prioritization of Objectives



City's course of action:

- ◆ Focusing increase on base rates
- ◆ Reducing Block One rate to offset increase in base rates for low users
- ◆ Recalibrating volume blocks to reflect current customer usage patterns



Next Steps

- ◆ **Determine which objectives are most important to your utility**
 - Survey elected officials and / or staff
 - Can add or remove objectives (*minimize overlap between objectives*)
- ◆ **Consider refinements to your rate structure**
 - Do you want to remain close to the existing structure, or change it substantially?
 - Are there any other structures / features not considered that would better attain your key objectives?
 - What are the costs / benefits of implementing the new structure?



Questions / Discussion

