When in Drought! Utility Rate Making
Part 2 - Rate Structure and Design

Presenters
Chris Ekrut, MPA, CAPM
Matthew Garrett, MBA, CGFO
Agenda

1. Introduction
2. Review Rate-Setting Process
3. Wholesale Water and Wastewater Issues
4. Rate Design
5. Discussion and Wrap-up
Municipal Utilities - One More Plate to Keep Spinning
The “business side of government”

• Self sufficiency – In a “perfect” world
  – Revenues must match or exceed expenses

• City Council serves as the Board of Directors
  – Policy-setting body

• Important to Understand the Board’s Goals and Objectives
Financial Planning Policies

Reserve Requirements
- Types of Reserves
- Amount of Reserves
- How reserves are funded

Capital Structure
- Use of long-term debt
- Accumulation and use of cash reserves

Intergenerational Equity
- Impact fees/Developer credits
- Long-term debt
Rate Policies

Rate Setting

- Cost-based?
- Frequency of rate changes?
- Affordability and/or Subsidies?
- Growth pays for growth?
- Smoothing to avoid rate shock?
- Conservation price signaling?
Rate Setting Process

1. Revenue Requirements
   - How much revenue do I need?

2. Allocation of Costs
   - Who should be responsible for providing that revenue?

3. Rate Design
   - How am I going to recover that revenue?
Rate Setting Process

Revenue Requirement
- Compares the revenues of the utility to its expenses to determine the overall level of rate adjustment

Cost of Service
- Equitably allocates the revenue requirements between the various customer classes of service

Rate Design
- Design rates for each class of service to meet the revenue needs of the utility, along with any other rate design goals and objectives
### Allocation of Costs – Peaking Example

<table>
<thead>
<tr>
<th></th>
<th>Average Use (MG)</th>
<th>Peak Use (MG)</th>
<th>Peaking Factor</th>
<th>Load Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>January (Jan)</td>
<td>1.04</td>
<td>1.75</td>
<td>1.68</td>
<td>60%</td>
</tr>
</tbody>
</table>

**Graphs:**
- **Peak Day Costs**
- **Average Day Costs**

**Legend:**
- Blue: Customer Profile
- Red: Peak Use
- Green: Average Use
# Customer Class Cost Allocation Example

<table>
<thead>
<tr>
<th>Customer</th>
<th>Average Use (MG)</th>
<th>Peak Use (MG)</th>
<th>Excess Capacity (Peak – Average) (MG)</th>
<th>Peaking Factor</th>
<th>Load Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.11 (28%)</td>
<td>1.46</td>
<td>0.36 (16%)</td>
<td>1.32</td>
<td>76%</td>
</tr>
<tr>
<td>B</td>
<td>1.21 (31%)</td>
<td>1.61</td>
<td>0.40 (18%)</td>
<td>1.33</td>
<td>75%</td>
</tr>
<tr>
<td>C</td>
<td>1.23 (31%)</td>
<td>2.38</td>
<td>1.15 (52%)</td>
<td>1.93</td>
<td>52%</td>
</tr>
<tr>
<td>D</td>
<td>0.40 (10%)</td>
<td>0.70</td>
<td>0.30 (14%)</td>
<td>1.75</td>
<td>57%</td>
</tr>
</tbody>
</table>
Wholesale Water and Wastewater

• Wholesale Service
  – Selling of water to a customer for resale by that customer
  – Receipt of retail generated wastewater collected by a customer for ultimate treatment

• Retail customers are, and will continue to see, significant price increases from wholesale providers
Key Policy Issues –
Service Receiver Perspective

• Wholesale Charges can comprise a significant portion of your total departmental expenditures

• Wholesale Rates may change annually

• Failure to pass along wholesale rate increases can be detrimental to your utility’s financial position
  – Implementation of Pass-Through Clauses can be beneficial
  – Level of Council oversight may need to be carefully defined
Key Policy Issues –
Service Receiver Perspective

• How you use your provider’s system matters!
  – Lost and Unaccounted for Water
    • Paying for water that is never provided to customers
    • Long-term impact under a true-up / demand ratchet system
  – Infiltration and Inflow
    • Paying to treat stormwater
    • Long-term impact under a true-up / demand ratchet system
  – Peaking factor and demand
    • Owned supplies (if any)
Key Policy Issues – Service Provider Perspective

• How do you establish / change rates?
  – Do you have a specific methodology
  – Is the revenue stream stable?

• Are you encouraging efficient use?

• Protection of supply / system capacity for existing customers

• Dispute resolution

• Water Conservation / Drought Contingency Measures
  – Can you curtail / interrupt supply?

• Non-Rate Fees and Charges
  – Impact Fees, Line Extension Fees, Tap Fees, etc?
  – Equity buy-in
Questions
Key Policy Questions

• What are our objectives?
  – Meeting revenue needs
  – Revenue stability
  – Affordability
  – Equity
  – Administration
  – Conservation
  – Economic Development
  – Transparency
  – Others?

• Do our rates address our objectives?
## Rate Attributes and Criteria

<table>
<thead>
<tr>
<th>Implementation</th>
<th>Equity</th>
<th>Customer</th>
<th>Conservation</th>
<th>Financial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative Burden</td>
<td>Interclass</td>
<td>Affordability</td>
<td>Average-Day Savings</td>
<td>Revenue Sufficiency</td>
</tr>
<tr>
<td>Public Understanding</td>
<td>Intraclass</td>
<td>Economic Development</td>
<td>Peak-Season Savings</td>
<td>Revenue Stability</td>
</tr>
<tr>
<td>Political Acceptance</td>
<td>Intergenerational</td>
<td>Rate Shock / Volatility</td>
<td>Peak-Day Savings</td>
<td>Rate Stability</td>
</tr>
<tr>
<td>Implementation Risk</td>
<td>Inside/Outside</td>
<td>Understandability of Rates/Bill</td>
<td>Sustainability</td>
<td>Rate Predictability</td>
</tr>
<tr>
<td>Legal Defensibility</td>
<td>Industry Standards</td>
<td>Perception of Equity</td>
<td>Compliance</td>
<td>Financial Risk</td>
</tr>
</tbody>
</table>
Legal Defensibility and Rate Criteria

• Legally Necessary Criteria
  – Texas Water Code 13.043(j)
  “... the commission shall ensure that every rate made, demanded, or received by any retail public utility or by any two or more retail public utilities jointly shall be just and reasonable. Rates shall not be unreasonably preferential, prejudicial, or discriminatory but shall be sufficient, equitable, and consistent in application to each class of customers.”
Legal Defensibility and Rate Criteria

• Original Jurisdiction – A City has original jurisdiction over rates charged to individuals who vote for the City Council (inside City customers). These rates cannot be appealed to a higher body – customer recourse is to elect new representation.

• Appellate Jurisdiction – Outside City customers can appeal municipal rate making action if 10% of more protest the increase. TCEQ also has appellate jurisdiction over wholesale rates.

• Texas Water Code 13.043 (i)
  – The governing body of a municipally owned utility or a political subdivision, within 60 days after the date of a final decision on a rate change, shall provide individual written notice to each ratepayer eligible to appeal who resides outside the boundaries of the municipality or the political subdivision. The notice must include, at a minimum, the effective date of the new rates, the new rates, and the location where additional information on rates can be obtained. The governing body of a municipally owned utility or a political subdivision may provide the notice electronically if the utility or political subdivision has access to a ratepayer’s e-mail address.
Rate Structure Components

- **Fixed Charge**
- **Variable or Consumption-Based**

**Fixed Costs**
- Does not vary with sales
- Salaries, Debt Service, etc.
- Typically a majority of costs for a utility

**Variable Costs**
- Varies with water sales
- Power, chemical, etc.
- Typically a limited portion of costs for a utility

**Stability of Revenue Stream Should Always be Considered**
Common Water Rate Structures

- **Fixed Charge**
  - Minimum Charge
  - Meter Charge

- **Variable Charges**
  - Uniform
  - Declining Block
  - Inclining Block
  - Seasonal

• Should this include a water allocation?
Declining Block Rate Structure
Declining Block Rates

- Fairly simple for customers to understand and for utility to administer
- Equitable
  - Assuming more water means more efficient use
- Stable revenue stream
- Does not promote conservation

<table>
<thead>
<tr>
<th>Gallons</th>
<th>Inside</th>
<th>Outside</th>
</tr>
</thead>
<tbody>
<tr>
<td>first 2k</td>
<td>2.94</td>
<td>4.43</td>
</tr>
<tr>
<td>next 23k</td>
<td>1.92</td>
<td>2.88</td>
</tr>
<tr>
<td>next 975k</td>
<td>1.59</td>
<td>2.40</td>
</tr>
<tr>
<td>next 4 mil</td>
<td>1.53</td>
<td>2.30</td>
</tr>
<tr>
<td>over 5 mil</td>
<td>1.53</td>
<td>2.30</td>
</tr>
</tbody>
</table>
Inclining Block Rate Structure

$/k gal

Quantity
Inclining Block Rates

• More difficult to design / implement in terms of revenue stability
• Can be more difficult to understand
• Equitable / Inequitable depending on system use
• Can destabilize revenue stream
• Encourages conservation

<table>
<thead>
<tr>
<th>Residential Volumetric Rates</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,501 to 15,000 gallons</td>
<td>$3.18 per 1,000 gallons</td>
</tr>
<tr>
<td>15,001 to 25,000 gallons</td>
<td>$3.98 per 1,000 gallons</td>
</tr>
<tr>
<td>25,001 to 50,000 gallons</td>
<td>$4.97 per 1,000 gallons</td>
</tr>
<tr>
<td>50,001 to 75,000 gallons</td>
<td>$7.47 per 1,000 gallons</td>
</tr>
<tr>
<td>More than 75,000 gallons</td>
<td>$11.20 per 1,000 gallons</td>
</tr>
</tbody>
</table>
Uniform Rate Structure (as Illustrated by Class)

- Class 1
- Class 2
- Class 3

$/kgal vs Quantity
Uniform Rates

- Least administrative burden
- Low risk of implementation in revenue sufficiency
- Common rate structure for wholesale customers
  - Does not recognize peaking impact
- Less revenue volatility
Seasonal Rate Structure

- **$/k gal**
- **Months**
  - **Summer**
Seasonal Rates

- Low administrative burden
- Moderate revenue implementation risk
- Increased incentive for conservation
- Increased revenue volatility
- Increased potential for rate shock

<table>
<thead>
<tr>
<th>Step in gallons</th>
<th>Inside City Limits</th>
<th>Outside City Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standard</td>
<td>Seasonal</td>
</tr>
<tr>
<td>First 5,985</td>
<td>$0.0971</td>
<td>$0.0971</td>
</tr>
<tr>
<td>Next 6,732</td>
<td>0.1406</td>
<td>0.1529</td>
</tr>
<tr>
<td>Next 4,488</td>
<td>0.1982</td>
<td>0.2273</td>
</tr>
<tr>
<td>Over 17,205</td>
<td>0.3471</td>
<td>0.4710</td>
</tr>
</tbody>
</table>

The Volume Charge “Seasonal” Rate Per 100 Gallons shall be applied to all billings beginning on or about May 1 and ending after five complete billing months on or about September 30 of each year. At all other times, the Volume Charge “Standard” Rate Per 100 Gallons shall be utilized.
Water Budget Billing

- Inclining Block Structure with blocks based on a determination of estimated, efficient use of individual customer
- Goal is to send appropriate price signals on a per customer basis to encourage the most efficient use
- Equitable, but can be difficult to administer
  - How do you define / determine the appropriate budget?
Water Budget Billing

<table>
<thead>
<tr>
<th>Block</th>
<th>Block Rate (per Kgal)</th>
<th>Rate (per Kgal)</th>
<th>Block Size (% of water budget)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>Each Block Rate will be as reflected in</td>
<td>¾ Base Rate</td>
<td>0 – 60%</td>
</tr>
<tr>
<td>Block 2</td>
<td>Section 4-20-25 (b)(1), B.R.C. 1981</td>
<td>Base Rate</td>
<td>61 – 100%</td>
</tr>
<tr>
<td>Block 3</td>
<td></td>
<td>2 x Base Rate</td>
<td>101 – 150%</td>
</tr>
<tr>
<td>Block 4</td>
<td></td>
<td>3 x Base Rate</td>
<td>151 – 200%</td>
</tr>
<tr>
<td>Block 5</td>
<td></td>
<td>5 x Base Rate</td>
<td>Greater than 200%</td>
</tr>
</tbody>
</table>

The single-family residential customer’s budget shall consist of indoor and outdoor allocations for water. The indoor allocation for each customer with a household size of up to four people shall be set at 7,000 gallons per month. The outdoor allocation shall be based on customer-specific irrigable area as determined by the city’s GIS system. This system maps and calculates areas within defined property boundaries and hard surface boundaries. The total annual outdoor allocation shall be based on the following application rates:

- For the first 5,000 square feet of irrigable area: 15 gpf
- For the next 9,000 square feet of irrigable area: 12 gpf
- For irrigable area in excess of 14,000 square feet: 10 gpf.
Drought and Surcharge Rates

• Added to existing rates to collect needed revenues and/or influence behavior
  – Response to Disaster
  – Rate Stabilization
  – Elevation Surcharges
  – Capital Financing
Indexed Rates

• Alternative to traditional rate study

• Rates are adjusted periodically based on accepted cost or price index

• Periodic review still needed to address changes in customer demand / equity in charges

• May lead to insufficient revenue unless coupled with pass-through for wholesale / capital cost needs
Affordability

• Programs vs Rate Structure
  – Discounted Total Bill
  – Reduced Rate Structure
  – Fixed Credit

• Administrative Issues
  – Eligibility Verification
  – Remaining customers have no choice in subsidizing service – Service could be perceived as a social program
Affordability

• **EPA Affordability**
  – 2.5% of Median household income for annual water service
  OR
  – 4.5% for annual water and wastewater service combined.

• **TCEQ Affordability** - considered “Disadvantaged” if household cost factor
  – is greater than 1% for water
  OR
  – is greater than 2% for water and sewer combined

• Household Cost Factor

\[
\frac{(Average\ Annual\ Water\ Bill + Average\ Annual\ Sewer\ Bill)}{Annual\ Median\ Household\ Income}
\]
Affordability

- **Safe Drinking Water Act**
  - Water bill exceeds 2% of median household income

- **USDA**
  - Loans for projects where Residential water bills are 1.5% of community’s median household income

- **Water Research Foundation**
  - Water bill exceeds 2% of income for impoverished households
Common Wastewater Rate Structures

• Quantity
  – Uniform rate across all customer classes for volumes
  – How is quantity determined?
    • Winter average
    • Cap/Max amount

• Quality
  – Extra-strength surcharges
Stormwater

• Allocation Based on Cost Causation
  – Cost primarily based on quantity

• Defined in LGC 552 Subchapter C
  – Rates can be based on size in area, number of water meters or topography.
  – Cannot charge customers with private drainage systems.
  – Some mandatory exemptions.
Billing, Customer Service and Best Practices
Strategies Beyond Setting Rates

- Customer Service Standards
- Deposits and Account Service Agreements
- Metering and Billing
- Receivables and Collections
- Penalties and Disconnect Notices
- Internal Controls
  - Credit authorization
  - Adjusting consumption and bill
- Assigned accountability
  - Periodic mini self audits
GFOA Best Practices

- Government Finance Officers Association
  - [http://www.gfoa.org/](http://www.gfoa.org/)

- Best Practices and Advisories By Category
  - Accounting, Auditing, and Financial Reporting
  - Budgeting and Fiscal Policy
  - Debt Management
  - Economic Development and Capital Planning
  - Retirement and Benefits Administration
  - Treasury and Investment Management

For example, Appropriate Levels of Working Capital
Questions
Thank you for your time.

Feel free to contact us at 972-680-2000 or via email

Chris Ekrut at cekrut@newgenstrategies.net

Matthew Garrett at mgarrett@newgenstrategies.net
Helpful Resources

• TWC Implementation Task Force Water Conservation Best Management Practices Guide

• 2012 State Water Plan

• GFOAT Forum
  – [http://www.gfoat.org/ListServ.html](http://www.gfoat.org/ListServ.html)
  – Accessible by GFOAT member in your organization
More great resources

- **Water EUM (Effective Utility Management)**

- **Texas Water Conservation Association**
  - [http://www.twca.org/](http://www.twca.org/)

- **Texas Rural Water Association**
Useful Texts

• American Water Works Association, M-1 Manual, *Principles of Water Rates, Fees, and Charges*

• Water Environment Federation, Manual of Practice No. 27, *Financing and Charges for Wastewater Systems*

• American Water Works Association, *Water Rates, Fees, and the Legal Environment*

• American Water Works Association, *Financial Management for Water Utilities – Principles of Finance, Accounting, and Management Controls*

• Water Environment Federation, *Managing the Water and Wastewater Utility*