Central Texas Water Efficiency Network
Water Rates and Revenue Workshop

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November 13, 2013
Acknowledgements

- Sierra Club, Lone Star Chapter
- Lower Colorado River Authority
- Barton Springs/Edwards Aquifer Conservation District
- Defining a Resilient Business Model for Water Utilities
  Water Research Foundation #4366
Session Objectives

• Discuss revenue and rate setting trends
• Provide forum for sharing experiences and perspectives about revenue stability and the role of pricing in promoting water efficiency
Agenda

• Introduction/Business Model
• Big Picture/Trends
• Getting to Know your Customers (Use Habits)
• Resiliency Practices: Pricing
• Other Financial Resiliency Practices
How many people are served by your water utility?

A. Less than 1,000
B. 1,001 to 5,000
C. 5,001 to 10,000
D. 10,001 to 20,000
E. Greater than 20,000
F. Not applicable

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
How concerned are you with your utility sales and revenue trends

1. Very concerned
2. A little concerned
3. Not at all -- I think the trends are positive
4. No opinion
5. Do not work for utility

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Challenge: Uncertain Revenue

Changes in water use have had:

What are your business model goals? What have you planned for? What are you seeing?
What has your utility experienced over last 5 years?

A. Exponential
B. Linear
C. Flattening
D.Decreasing

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Fixed vs. Variable Revenues and Expenses

WTP Expansion Time Line - 10 to 6 Watering
(Source Ft. Worth Utilities)
## The Variability Behind (Short term) Fixed Costs

<table>
<thead>
<tr>
<th>Project</th>
<th>Capacity Increase (MGD)</th>
<th>Projected Constr. Start Date</th>
<th>Actual with 10-6 Watering</th>
<th>Projected with 2-day Watering</th>
<th>Cost in 2011 ($)</th>
<th>Amount borrowed at time of projected installation</th>
<th>Estimated Avoided P&amp;I 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 MGD Holly</td>
<td>20</td>
<td>2006</td>
<td>2016</td>
<td>2019</td>
<td>$11,530,000</td>
<td>$11,530,000</td>
<td>$(925,197)</td>
</tr>
<tr>
<td>35 MGD Westside</td>
<td>23</td>
<td>2008</td>
<td>2018</td>
<td>2021</td>
<td>$15,686,000</td>
<td>$15,686,000</td>
<td>$(1,258,685)</td>
</tr>
<tr>
<td>250 MGD Rolling Hills</td>
<td>50</td>
<td>2010</td>
<td>2020</td>
<td>2024</td>
<td>$90,134,000</td>
<td>$90,134,000</td>
<td>$(7,232,585)</td>
</tr>
<tr>
<td>25 MGD Southwest</td>
<td>25</td>
<td>2013</td>
<td>2024</td>
<td>2034</td>
<td>$70,686,000</td>
<td>$70,686,000</td>
<td>$(5,672,028)</td>
</tr>
<tr>
<td>140 MGD Eagle Mtn.</td>
<td>35</td>
<td>2015</td>
<td>2028</td>
<td>2039</td>
<td>$68,544,000</td>
<td>$68,544,000</td>
<td>$(5,500,148)</td>
</tr>
</tbody>
</table>

$(20,588,643)
Median Prices for Texas Municipal Residential Water Bills at 5,000 GPM and 10,000 GPM, 2002-2012 (TX annual n ranges from 501 to 685)

Data Source: Texas Municipal League
National Perspective

Not shown on map: fewer than 25 utilities in Alaska and Hawaii. Data on rates, revenues and financial performance of subsamples of 7,316 water and wastewater utilities across the United States and Canada were obtained from several national and regional data sets and merged by the Environmental Finance Center at the University of North Carolina, Chapel Hill and Raftelis Financial Consultants, Inc. Data for some utilities were not analyzed depending on time period and focus of the analyses. Partner utilities are utilities that provided additional data, guidance, and feedback to the researchers throughout the project.
Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill and Raftelis Financial Consultants, Inc. Data Source: Moody's Water and Sewer Municipal Financial Ratio Analysis. The cohort of 485 utilities is consistent across all years.
Changing Revenues of 2,838 Utilities in 6 States

Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill and Raftelis Financial Consultants, Inc. Revenues are: total operating revenues in CA, GA, NC, WI; gross revenues in OH; revenues that can pay for debt service in TX. The sample of utilities in each state is consistent across all Years (e.g.: the same 946 utilities in CA are analyzed every year). Data sources: California State Controller’s Office, Georgia Department of Community Affairs, North Carolina Local Government Commission, Ohio Water Development Agency, Texas Water Development Board, Wisconsin Public Service Commission.
City of Raleigh Sales Trends
Source: City of Raleigh (in gallons)

* Actuals through July 2013, projected to year end using 2012 numbers
And Another’s

Newport News Waterworks’ Drop in Demand
And others..

Average Household Water Use for the State of Texas and Selected Municipal Utilities, 2002-2012 (Gallons per Month) (TX annual n from 365 to 661)

- Houston (-5%)
- Corpus Christi (-5%)
- Odem (-14%) (pop. 2,611)
- Texas Statewide Average (-8%)
Shifting Water Demand Forecasts
What type of washing machine do you have?

1. Water efficient front loader
2. Water efficient top loader
3. Top loader
4. I don’t know

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Correlation between 2012 Average Monthly Household Water Use and Average Price/1,000 Gallons for a 5,000 GPM Water Bill (661 TX Municipalities)

Data Source: Analysis by UNC Environmental Finance Center using Data from Texas Municipal League
Birmingham Water Works Board

Source: Birmingham Water Works and Raftelis Financial Consultants
Raleigh Bill Comparison for 6 CCF
(Slide Source: City of Raleigh)

January 2010

- 6 CCF Residential Water & Sewer Bill
  - $36.53 ($1.21/day)

July 2013

- 6 CCF Residential Water & Sewer Bill
  - $52.63 ($1.75/day)

FY 11 Revenue - $153,061,920
FY 13 Revenue – $187,332,838

A 44% rate increase over time period

A 22% revenue increase over time period
Driving Revenue Through Rate Increases

Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill.
Data sources: Texas Municipal League annual TX water and sewer rate surveys (self-reported),
Texas Water Development Board data from audited financial statements of utilities with outstanding loans.
CUSTOMER SALES ANALYSES
Estimated percentage of water and sewer sales volume due residential accounts?

A. 0 to 25%
B. 26% to 50%
C. 51% to 75%
D. Greater than 75%
E. Do not know

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Estimated percentage of water and sewer sales revenue due residential accounts?

A. 0 to 25%
B. 26% to 50%
C. 51% to 75%
D. Greater than 75%
E. Do not know

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Estimated percentage of water and sewer sales revenue from 10 largest accounts

A. 0 to 25%
B. 26% to 50%
C. 51% to 75%
D. Greater than 75%
E. Do not know

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Monthly water use averages have declined since the end of the drought.

Average Residential Water Use

- Durham
- Winston-Salem (≥ 6ccf only)
- Raleigh

DROUGHT PERIOD

Liters/Day

Gallons / Month

2002 Jul-06 Oct-06 Jan-07 Apr-07 Jul-07 Oct-07 Jan-08 Apr-08 Jul-08 Oct-08 Jan-09 Apr-09 Jul-09 Oct-09 Jan-10 Apr-10 Jul-10 Oct-10

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 10,000 11,000 12,000

0 100 200 300 400 500 600 700 800 900 1,000 1,100 1,200

Durham
Winston-Salem (only)
Raleigh
Households that REDUCED their average use in FY10 from FY07

Reduced average use by at least...

Cumulative % of Households

- Durham
- Raleigh
Usage and billed amounts of households that use high volumes on average (avg. >8 kgal/month)

- % of Households
- % of Total Volume
- % of Total Billed Amounts

<table>
<thead>
<tr>
<th>Year</th>
<th>% of Households</th>
<th>% of Total Volume</th>
<th>% of Total Billed Amounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY07</td>
<td>17%</td>
<td>35%</td>
<td>32%</td>
</tr>
<tr>
<td>FY10</td>
<td>13%</td>
<td>30%</td>
<td>26%</td>
</tr>
</tbody>
</table>
Percentage of households that exceeded use point X gallons in at least one month of the year

% of households that exceeded the use level at least once in the year

Maximum use point (1,000 gallons monthly)
PRICING
Which of the following aspects of your utility pricing do you think needs the most attention?

A. Water conservation pricing signal
B. Revenue stability
C. Increased revenue generation
D. Impact on low income
E. Other?

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
If you could control your conservation program what role would pricing play relative to non-pricing measures?

A. Would rely on pricing for most conservation goals
B. Would rely on non-pricing for most conservation goals
C. Would rely equally on both

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
How much was your household water and sewer bill last month?

1. Less than $25
2. $26 to $50
3. $50 to $100
4. Greater than $100
5. I don’t know

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Rising Rates......

Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill. Rates data for all utilities in this analysis were known for all consecutive years. Data sources: Rates surveys conducted by Texas Municipal League.
Annual Increases  
(Source: Texas Municipal League)

Data analyzed by the Environmental Finance Center at the University of North Carolina, Chapel Hill. Rates data for all utilities in this analysis were known for all consecutive years. Data sources: Rates surveys conducted by Texas Municipal League.
http://efc.sog.unc.edu
The Affordability of Water and Sewer Service is a Major Issue for my Utility

A. True
B. False

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
How does the unit price ($/ccf or $/kgal) you charge residential customers change as customers use more water?

A. No change – uniform rate
B. Increases slightly (highest price per volume no more than twice lowest price)
C. Increases a lot (highest price more than two times lowest price)
D. Decreases

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Beyond Block Structure..
(Increasing, Decreasing, Uniform)

- Size of base charge
- Size of base charge relative to variable charges
- Service included in base charge
- How people actually pay their bill
- Wastewater rate structure
- Irrigation rate structure
- Incremental price at different consumption points
## Base versus variable

<table>
<thead>
<tr>
<th></th>
<th>CARY</th>
<th>DURHAM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% of household revenue collected from base charges</td>
<td>% of household revenue collected from base charges</td>
</tr>
<tr>
<td>FY07</td>
<td>8.6%</td>
<td>FY07: 18%</td>
</tr>
<tr>
<td>FY08</td>
<td>9.2%</td>
<td>FY08: 18%</td>
</tr>
<tr>
<td>FY09</td>
<td>9.6%</td>
<td>FY09: 29%</td>
</tr>
<tr>
<td>FY10</td>
<td>8.9%</td>
<td>FY10: 27%</td>
</tr>
<tr>
<td>FY11</td>
<td>7.7%</td>
<td>FY11: 28%</td>
</tr>
</tbody>
</table>
Charlotte-Mecklenburg Utilities

Water and Sewer Revenues Fixed versus variable

Data sources: Mickey Hicks, CFO, Charlotte-Mecklenburg Utilities
Data analyzed by the Environmental Finance Center at the University of North Carolina.
Percentage of households that exceeded use point X gallons in at least one month of the year

- FY10
- FY07

Shading indicates approximate beginning and end of tiered rate structure.
CO, NC, and TX Reductions in 2012 Water & Sewer Bill for Decrease in Consumption from 10,000 to 5,000 gal/month

Data analyzed by the University of North Carolina Environmental Finance Center
Price as a Drought Response Tool

OWASA’s current block water rates are:

<table>
<thead>
<tr>
<th>Block</th>
<th>Gallons per month</th>
<th>Rate per 1,000 gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>1 – 2,999</td>
<td>$1.98</td>
</tr>
<tr>
<td>Block 2</td>
<td>3,000 – 5,999</td>
<td>$4.70</td>
</tr>
<tr>
<td>Block 3</td>
<td>6,000 – 10,999</td>
<td>$5.53</td>
</tr>
<tr>
<td>Block 4</td>
<td>11,000 – 15,999</td>
<td>$7.46</td>
</tr>
<tr>
<td>Block 5</td>
<td>16,000 or more</td>
<td>$13.05</td>
</tr>
</tbody>
</table>

The typical residential OWASA customer uses about 5,500 gallons per month.

On November 1st:

- the block 3 water rate will increase to $8.295 per 1,000 gallons.
- the block 4 water rate will increase to $14.92 per 1,000 gallons.
- the block 5 water rate will increase to $39.15 per 1,000 gallons.

The surcharges are intended to strongly discourage high water use.
Drought Surcharges?

A. We’ve considered it in the past but did not implement it
B. We have one but it has not been triggered
C. We have one and it has been activated
D. We likely will consider it in the future
E. No way, I have a mortgage to pay

Responses from poll of approximately 70 Central Texas Water Utility Professionals 11/13/2013
Evolving Pricing: Water Utility 2.0?

Verizon Wireless to overhaul its phone and data pricing plans

By: Kelly Hodgkins | Jan 14th, 2010 at 12:02PM

Filed Under: Breaking, Exclusive, Favorites, Featured, Rumor
Conservative Pricing Paired with Rebates or Dividends

- Dividends linked to sales, cost of service, and/or policy goals

DC Water Refunds Customers

DC Water will issue a one-time credit to customer bills in early 2013. Depending upon bill cycle and account status, customers may receive the credit as early as January or late as April.

DC Water relies on customer bill payments to fund its operations and capital projects. Each year, management takes a long-term look in developing a proposed budget and a rate structure to support that budget. Through exceptional management and sound financial planning, DC Water expects it finished Fiscal Year 2012 (which ended September 30, 2012) with a surplus.

ACE 2012: Skepticism Among the Judges...
Can Annual Revenue be More Predictable Without Losing Price Signal?
One Possible Option: Peak-set Base Rates

- Inspiration: electricity peak charge
- Example: A customer’s base charge for fiscal year set based on their three-year rolling average peak.

<table>
<thead>
<tr>
<th></th>
<th>Current residential rate structure</th>
<th>PeakSet base residential rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>% fixed annual revenue</td>
<td>18%</td>
<td>57%</td>
</tr>
<tr>
<td>Base rate</td>
<td>$6.00/meter – water + $6.00/meter - irrigation</td>
<td>$1.85/kgal applied to 3-year rolling average of peak month</td>
</tr>
<tr>
<td>Variable rate</td>
<td>$3.46/kgal of previous month’s use</td>
<td>$0.52/kgal of previous month’s use</td>
</tr>
</tbody>
</table>
Water committee recommends untested rate structure to bill ratepayers

By Tom Sakash

Going first. It just seems to be the Davis way.

The Water Advisory Committee voted 8-2 Thursday to recommend a consumption-based, fixed-rate water structure to the City Council, a revolutionary way for public agencies to bill ratepayers to recover the fixed costs of its water utility system.

It's so revolutionary, in fact, that the structure, which actually was invented this year by WAC members Frank Loge and Matt Williams, has never been tried before in California.

But while that didn't stop the committee from eventually voting for the structure, it took almost three hours of heated debate Thursday.
Peak-set Base: Example of Customer Impact (Beaufort Jasper Water and Sewer Authority Simulation)

Comparison of monthly charges for water under current rate and a Peak-set Base model

Fiscal Year 2011 (kgal consumed)

**Water Charge**

- Current Rate ($647.744)
- AR1 ($621.548)

**FY10 Peak Demand**

24,100 gallons
Feedback from Expert Panel

- 8: “This model is intriguing. I like that it relates to customer classification. I think it should target the largest customers first. I do worry about customers understanding the mixed signals.” (Beecher)
- 8: “This model provides a steady stream of revenue for the utility, which makes it very attractive to me. I like that it helps customers manage their peak demand.” (Scott)
- 7: “I like that the base rate is set based on use, rather than need – but what happens if people really conserve?” (Walker)
On a scale of 1 -5, how well would the Peakset Base Model work for your utility or the utilities you work with?

1. Very well
2. Pretty well
3. Maybe so, maybe not
4. Not well
5. Dreadfully

Poll taken by EFC of approximately 30 utility staff officials at 2012 AWWA’s ACE in Dallas
CustomerSelect Rate Model

- Individual customers choose plans that best works with their consumption and pay an overage fee if the household uses more than the plan

<table>
<thead>
<tr>
<th>Monthly water allotment</th>
<th>Cost for water under current rate structure</th>
<th>CustomerSelect Plan Cost</th>
<th>Overage Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,000 gallons</td>
<td>$8.93-$13.13</td>
<td>$8.13</td>
<td>$6.83/kgal</td>
</tr>
<tr>
<td>6,000 gallons</td>
<td>$15.23-$30.38</td>
<td>$18.70</td>
<td>$6.83/kgal</td>
</tr>
<tr>
<td>10,000 gallons</td>
<td>$35.43-$54.18</td>
<td>$32.52</td>
<td>$6.83/kgal</td>
</tr>
<tr>
<td>24,000 gallons</td>
<td>$64.75-$146.68</td>
<td>$81.30</td>
<td>$6.83/kgal</td>
</tr>
<tr>
<td>unlimited</td>
<td>&gt;$154.18</td>
<td>$162.60</td>
<td>NA</td>
</tr>
</tbody>
</table>
Rethinking Rate Models, Projections, and Cash Flow Plans

• More conservative
• Rate models with less (or no) dependence on revenues from high volume or high block sales
• “Excess” revenues transferred to reserve funds or used for increased pay as you go cash capital funding
Example Internal Financial Performance Targets

- Debt service coverage ratio min 2.00
- The City’s goal is a 40-60% mix of PAYGO to financing within next 2 years
<table>
<thead>
<tr>
<th>Utility</th>
<th>Reserve Fund Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Minneapolis¹</td>
<td>15% of revenue budget for the next year</td>
</tr>
<tr>
<td>Orange Water and Sewer Authority²</td>
<td>The greater of 33% of O&amp;M budget or 20% of the total estimated cost of the succeeding 3 years of the CIP budget</td>
</tr>
<tr>
<td>Baltimore Dept. of Public Works³</td>
<td>Minimum of 90 days cash on hand</td>
</tr>
<tr>
<td>Alameda County Water District⁴</td>
<td>Sufficient to meet operating, capital, and debt service obligations</td>
</tr>
<tr>
<td>Charlotte-Mecklenburg Utilities⁵</td>
<td>100% of operating expenses for the current budget</td>
</tr>
<tr>
<td>Water District No.1 of Johnson County⁶</td>
<td>The Board will be notified when the rate stabilization reserve reaches a minimum level of $2 million</td>
</tr>
</tbody>
</table>

¹Source: GFOA, 2013  
²Source: OWASA, 2009  
³Source: Baltimore Department of Public Works  
⁴Source: ACWD, 2009  
⁵Source: CMUD, 2011  
⁶Source: Water District No.1 of Johnson County, 2012
## Types of affordability programs

<table>
<thead>
<tr>
<th>Options facing payment-troubled customers</th>
<th>Percent</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment plan to allow customer to pay amount over time</td>
<td>76%</td>
<td>231</td>
</tr>
<tr>
<td>Customer referral to private, nonutility agency</td>
<td>54%</td>
<td>163</td>
</tr>
<tr>
<td>Customer referral to a local gov. agency for assistance</td>
<td>49%</td>
<td>149</td>
</tr>
<tr>
<td>Education</td>
<td>35%</td>
<td>105</td>
</tr>
<tr>
<td>In-home conservation assistance</td>
<td>25%</td>
<td>76</td>
</tr>
<tr>
<td>Special billing arrangements</td>
<td>21%</td>
<td>64</td>
</tr>
<tr>
<td>Change in the rate customer is charged</td>
<td>8%</td>
<td>24</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
<td>24</td>
</tr>
<tr>
<td>One-time bill credit from utility funds</td>
<td>3%</td>
<td>8</td>
</tr>
</tbody>
</table>

2010, Best Practices in Customer Payment Assistance Programs, Water Research Foundation #4404
Developing New Product Lines

- Customer line repair programs
  - Self administered
  - Third party
- Selling services to other enterprises
  - Meter reading and billing
  - Project management
For More Information

• Dashboards and Blogs:  
  http://www.efc.sog.unc.edu/

• Full Report (early 2014):  
  http://www.waterrf.org/

• Questions:  
  jhughes@unc.edu
Questions??????

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