Financing Sustainable Water

FINANCING SUSTAINABLE WATER
Rates. Revenue. Resources.

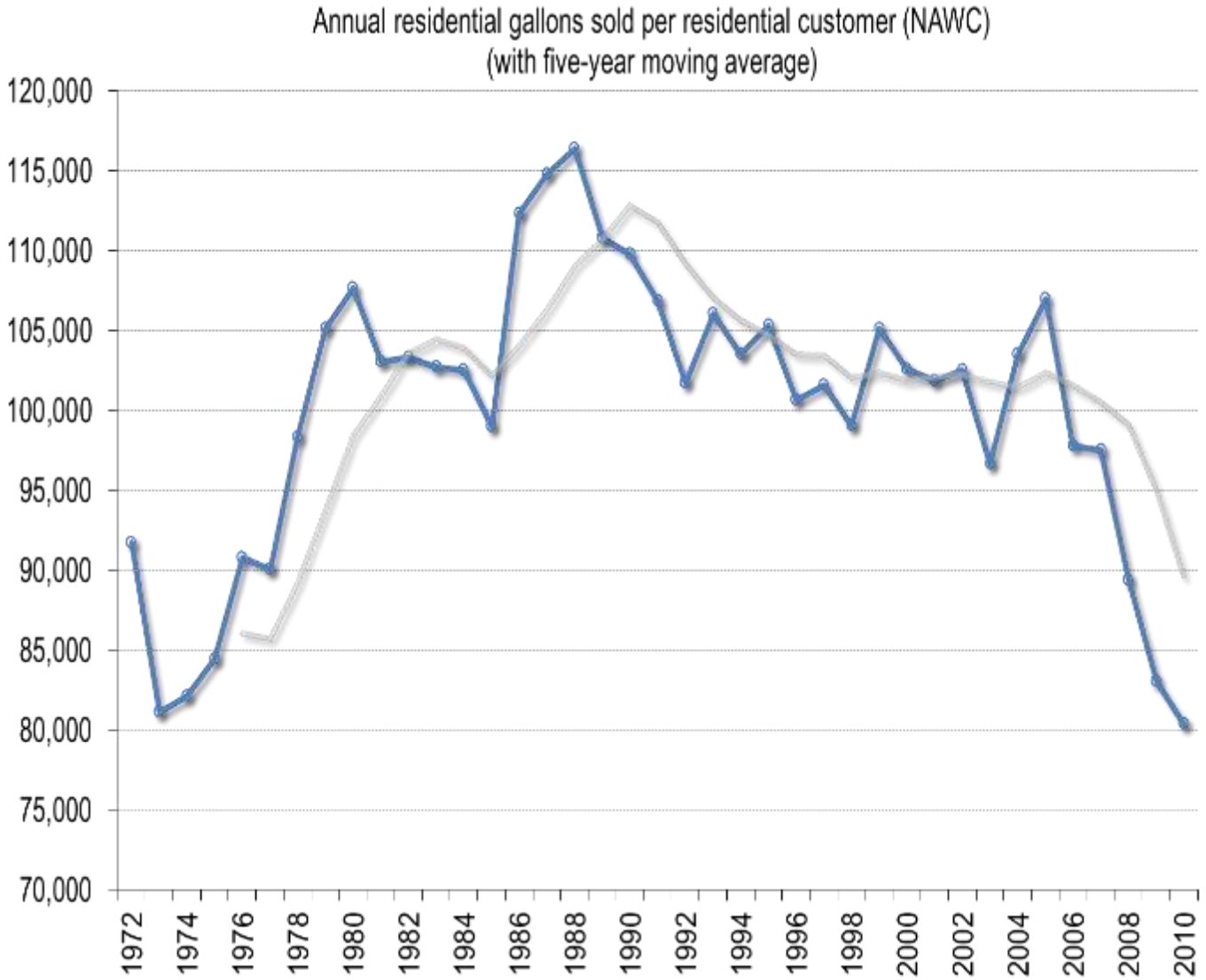
Alliance for Water Efficiency

Agenda

8:45 am – *Registration and Networking Breakfast*
9:15 am – Welcome and Opening Remarks
9:30 am – Strategies for Aligning Rates, Revenue and Resources
10:30 am – *Break*
10:45 am – More Effective Rate Modeling in an Uncertain World
11:45 pm – Complying with Proposition 218
12:15 pm – *Lunch and Networking*
1:00 pm – Marin MWD: Tiered Rates
1:45 pm – Moulton Niguel WD: Water Budget Based Rates
2:30 pm – *Break*
2:45 pm – Utility Example and Live Model Training (Optional)

Utility Financial Management: Becoming Harder Than Ever?

Residential Water Sales



Isn't this a Success Story?

- *Yes, but with side effects*
- Lowered demand means reduced sales revenue
- Reduced sales revenue can mean not fully collecting fixed costs
  - Short-run variable costs (water, pumping energy, chemicals)
  - Long-run capacity costs (supply, transmission, storage, treatment)
- Revenue stability therefore becomes an issue – *and conservation is often blamed*
- Left untreated, long-term unstable revenue collection can affect bond ratings

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U.S. | THE TEXAS TRIBUNE

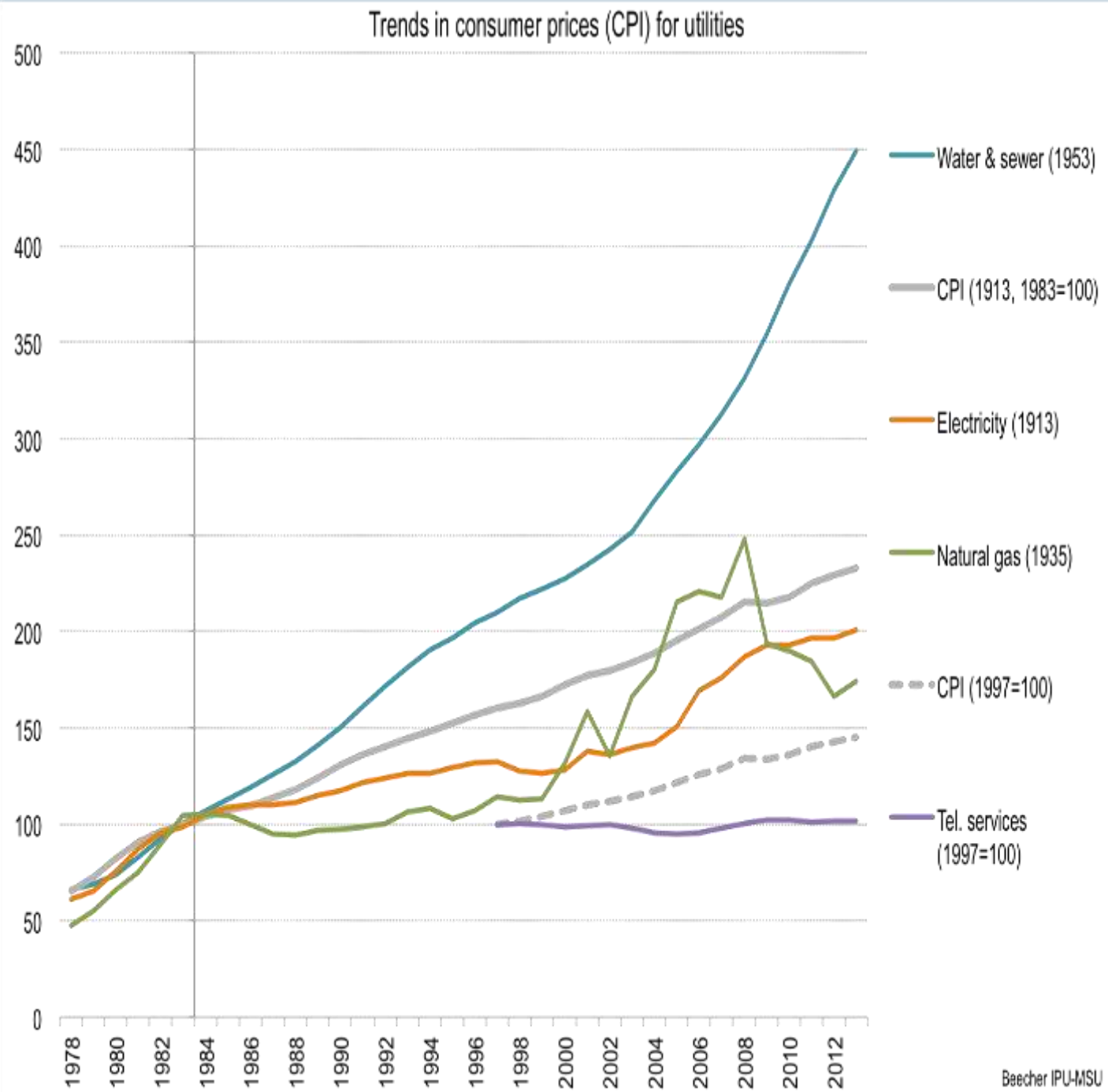
Texans Answer Call to Save Water, Only to Face Higher Rates

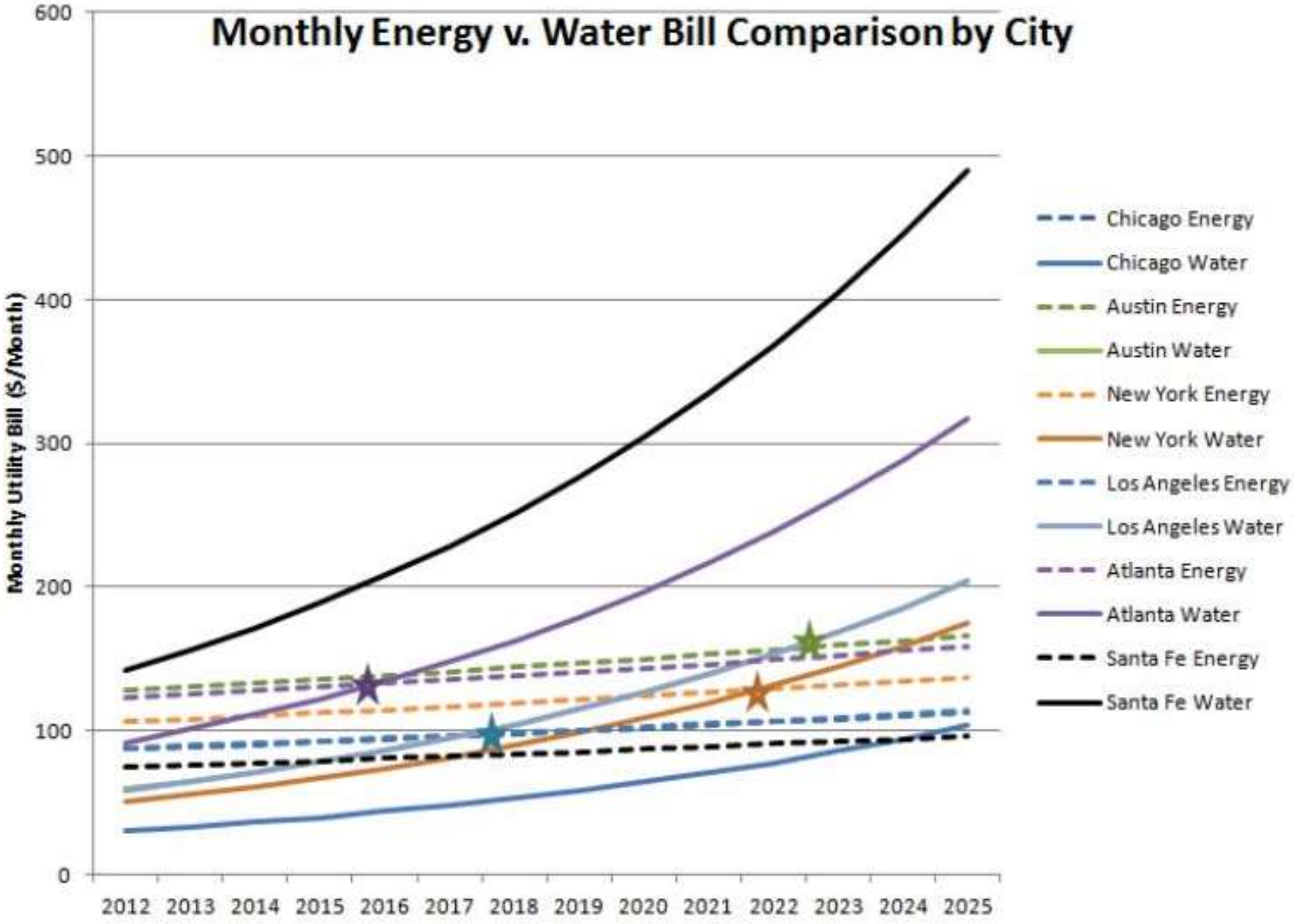
By NEENA SATIJA FEB. 8, 2014

"The losses have prompted credit ratings agencies to look closer at the finances of public utilities in Texas. One agency, Fitch, downgraded some of Fort Worth's water and sewer debt last year, and last week the firm downgraded the debt of the city's wholesale water supplier. Fort Worth lost $11 million last year because of water conservation."

What Really Affects Revenue Stability?

- Reduced demand from:
  - efficient fixture replacement under the plumbing and appliance codes
  - active conservation programs
  - the recession: industrial shift layoffs, home foreclosures
- Reduced peak demand in wet years
- Increased infrastructure costs
- Rise in other fixed costs
- Continuing Inflation


Trends in consumer prices (CPI) for utilities
500
450
400
350
300
250
200
150
100
50
0
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
Water & sewer (1953)
CPI (1913, 1983=100)
Electricity (1913)
Natural gas (1935)
CPI (1997=100)
Tel. services (1997=100)
Beecher IPU-MSU


Monthly Energy v. Water Bill Comparison by City
Monthly Utility Bill ($/Month)
600
500
400
300
200
100
0
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Chicago Energy
Chicago Water
Austin Energy
Austin Water
New York Energy
New York Water
Los Angeles Energy
Los Angeles Water
Atlanta Energy
Atlanta Water
Santa Fe Energy
Santa Fe Water


PARKER
CAGLECARTOONS.COM
AND YOU THOUGHT THE DWINDLING SUPPLY OF OIL WAS BECOMING A PROBLEM...
WATER TREATMENT PLANT
SURFACE WATER 3.25
GROUND-WATER 3.67
DESALINIZED 4.01
CITY

The Political Reality

- We don't like to revise our rates
- It is politically unpopular, so rates are changed as little as possible
- The inevitable inflationary increase is postponed until it is a crisis, much less increases in other costs
- Conservation is often blamed for financial challenges – even when there are no active conservation programs in place
- This sends the wrong message to consumers

courier-journal.com
A GANNETT COMPANY

THE GLOBE AND MAIL

Reduced water use drains Toronto's funds for infrastructure upgrades

Raleigh Public Record

Raleigh's Water Conundrum: Conservation v. Rates

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THE LATEST

Morning Report: Investigation Launched

The city's water department plans to increase rates by more than 40 percent in the next five years.

By July 2020, a unit of water that today costs $4.36 will cost $6. Customers also pay meter fees, which will also rise.

So what's driving the soaring rates? This is awkward but ... you're part of the problem. You and a bunch of other factors. Let's run through them.

You can blame yourself for saving too much water.

The price hikes are driven – ironically enough – by the cutbacks San Diegans are making because of the drought. If the city is selling less water, then the city has to charge more for each drop it sells.

The city sold about 76 million units of water in 2014. Each unit is about 750 gallons. Next year, the city only expects to sell 64 million units because of water-use restrictions mandated by the state.

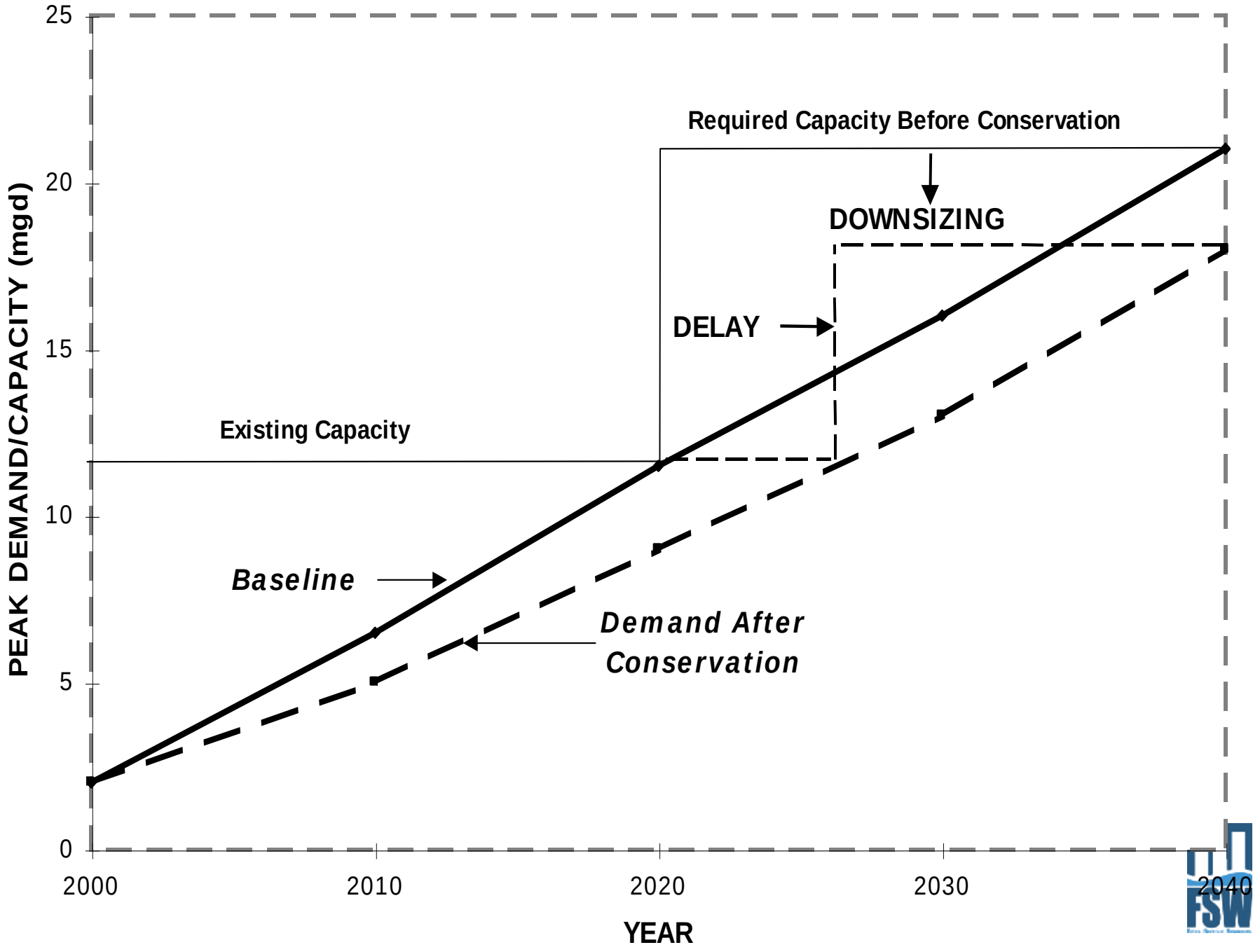
Gordon Hess, vice chairman of the Rates Oversight Committee, said he worries the city's five-year plan is based on long-term projections that could be wrong.

"In the outer years, do we still need those rate increases?" he said. "Those may or may not be needed if sales rebounded or we get a wetter year."

Cost-Effective Efficiency and the Real Impact on Rates

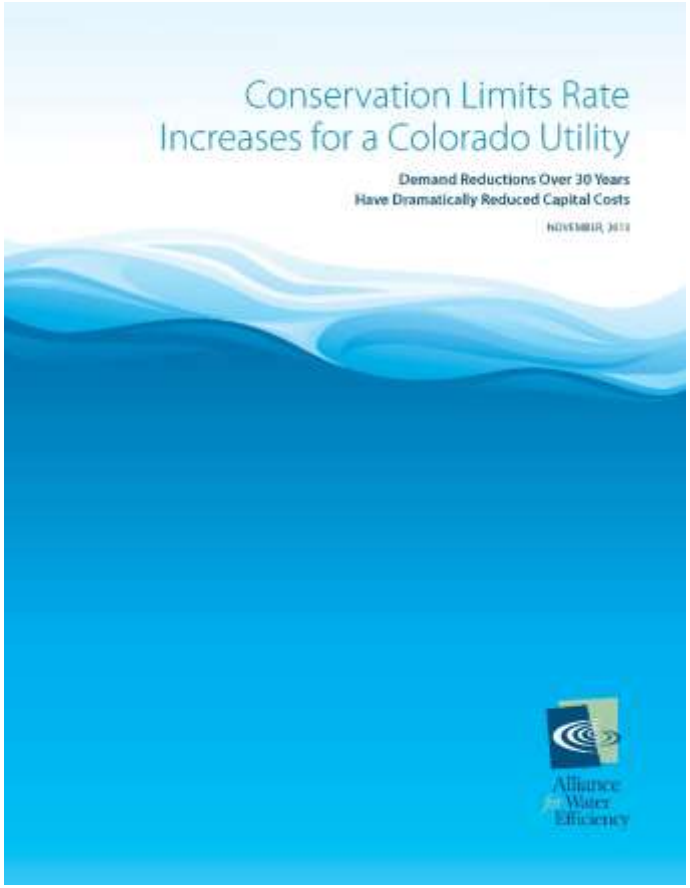
Conservation is Part of the Solution

- It is a long-term cost reducer to the utility
- Revenue loss is often due to other drivers
- Every gallon saved is water that does not have to be pumped, treated and delivered
- Conservation is an investment and short-term effects must be planned for
- Reduced utility costs generally mean reduced customer rates in the long-term due to avoided infrastructure capacity increases


PEAK DEMAND/CAPACITY (mgd)
25
20
15
10
5
0
2000
2010
2020
2030
2040
YEAR
Required Capacity Before Conservation
DOWNSIZING
DELAY
Existing Capacity
Baseline
Demand After Conservation

Westminster's Story

- Citizens complained about being asked to conserve when rates would just go up anyway
- Westminster reviewed marginal costs for future infrastructure if conservation had not been done
- Since 1980 conservation has saved residents and businesses 80% in tap fees and 91% in rates compared to what they would have been without conservation



How Did They Do It?

1. Compared 1980 per capita water use with 2010 per capita
2. Estimated current water use if there were no change in gpcd from 1980 to 2010
3. Estimated build out demand under current gpcd
4. Estimated build out demand with 1980 gpcd
5. Estimated build out Peak Capacity under 1980 and current gpcd
6. Estimated cost of water infrastructure expansion
7. Estimated cost to acquire water
8. Estimated cost of wastewater infrastructure expansion
9. Estimated impact to rates
10. Estimated impact to tap fees

What Will Your Story Be?

- Every story will be different!
- Consider key questions to determine the case for efficiency
- Where do costs come from and what are your future cost risks?
  - Wholesale water costs may be increasing
  - Costs of capital improvements
  - Short run variable costs (treatment, energy, etc.)
- What's your return on the investment in efficiency?
- How do you quantify it?
- AWE Tracking Tool provides forward-looking analysis

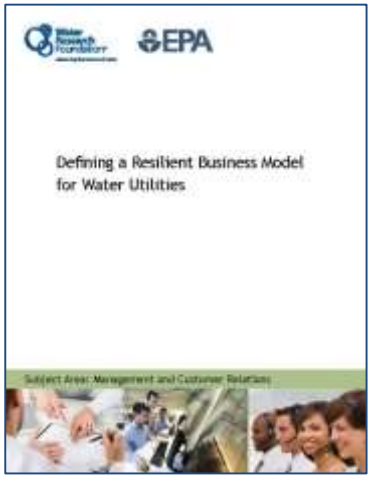
New Resources and Tools for Utility Managers

Tools for Every Step

- New guidance available from many sources, on many topics:
  - Assessing Your Revenue Model
  - Rate Design and Evaluation
  - Communicating with Stakeholders
  - Financial Planning and Management
- See Resource List in packet for links

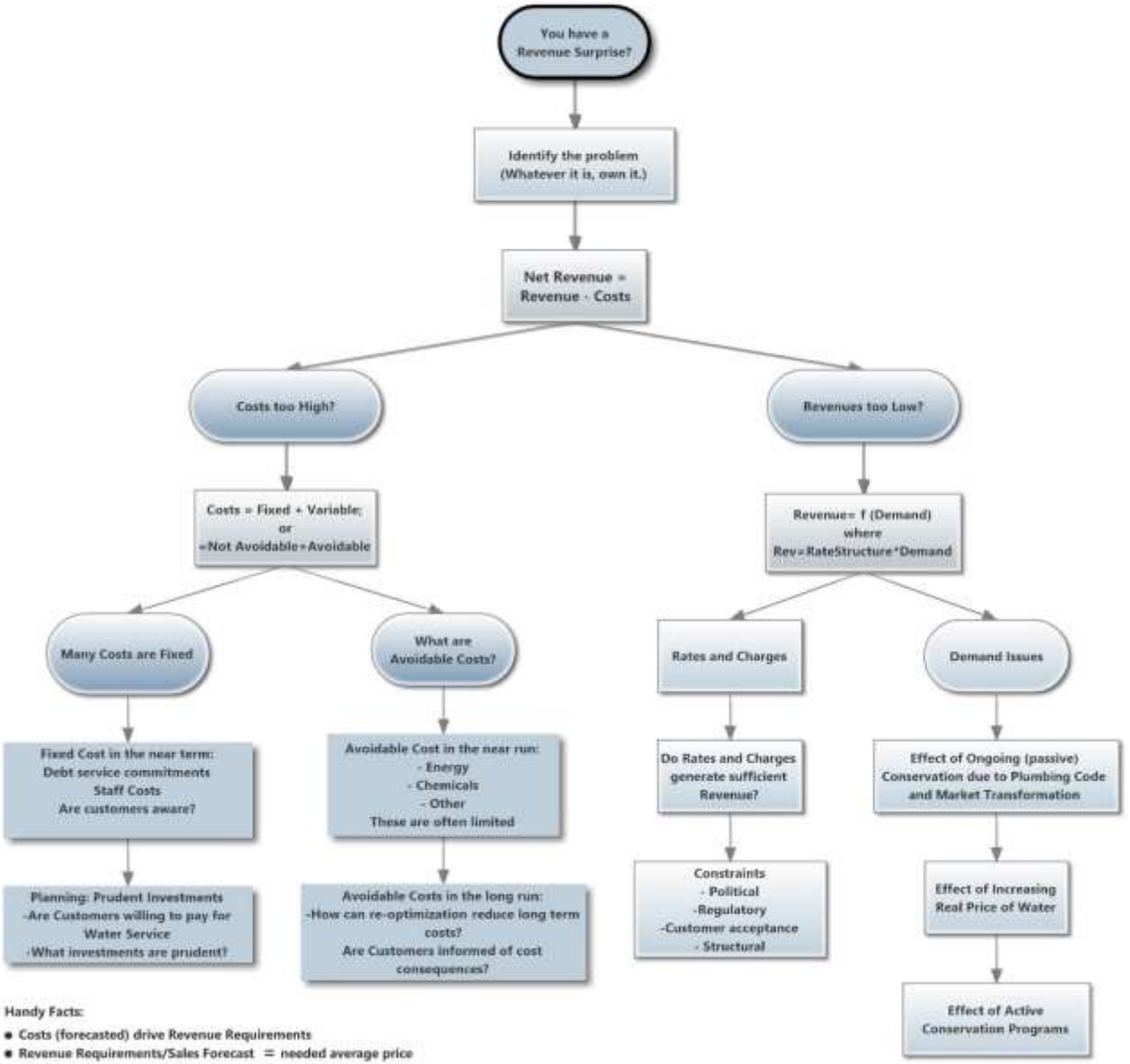
Assessing Your Revenue Model

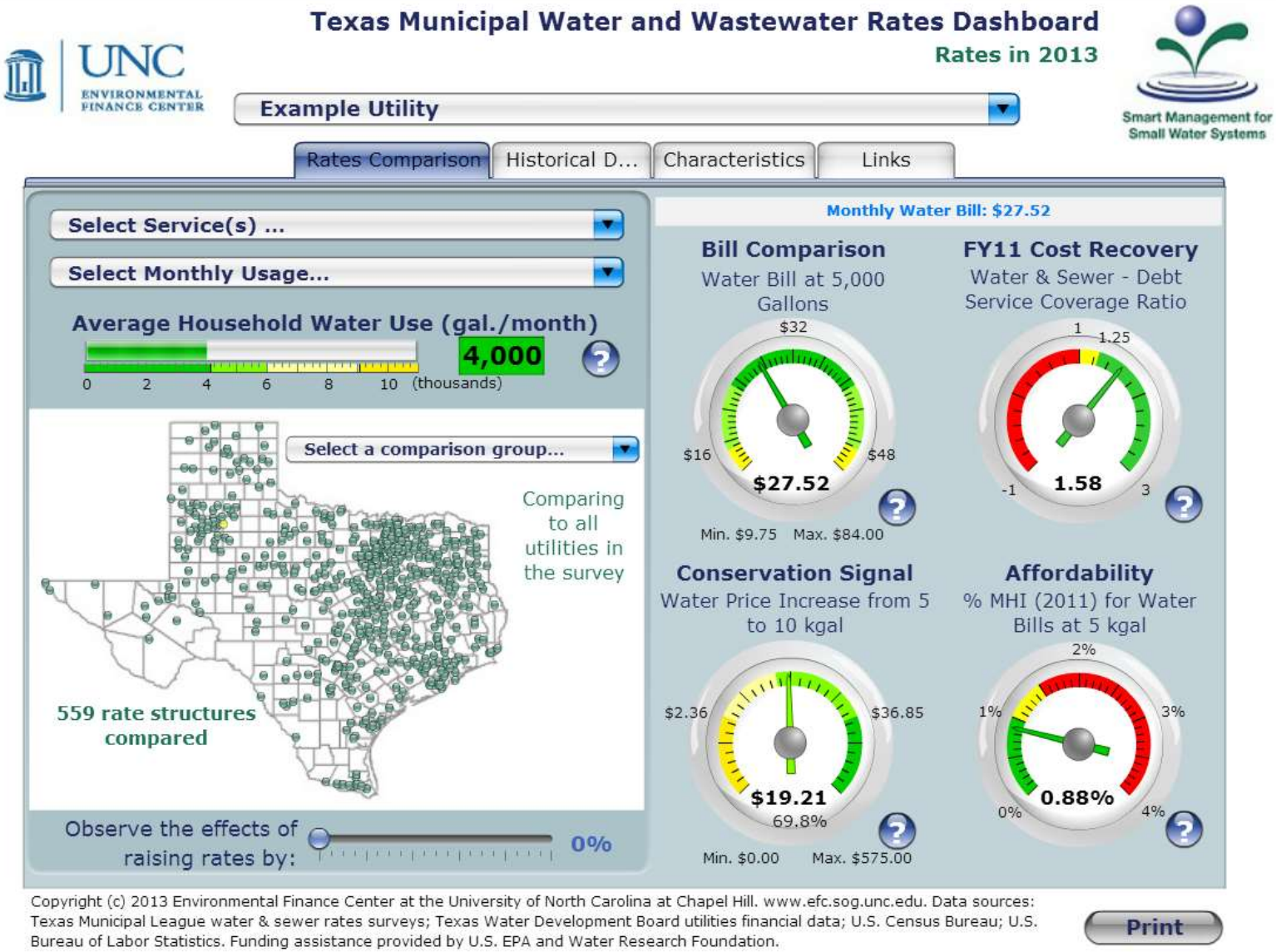
- EPA/WaterRF: 2013 Defining a Resilient Business Model for Water Utilities
- AWE Self Assessment Flowchart
- AWE Conservation Tracking Tool
- UNC Rates Dashboards



AWE Self-Assessment Flowchart

How to Avoid Revenue Surprises: Defining the Problem





LINK: http://www.efc.sog.unc.edu/node/104

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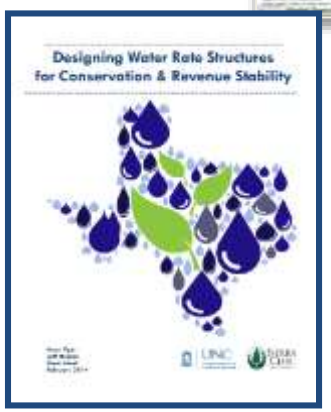
Rate Design and Evaluation

- AWE Financing Sustainable Water Resources
  - Understanding the Role of Ratemaking
  - Rate Design, Evaluation, Implementation
- Designing Rate Structures for Conservation and Revenue Stability (UNC/Sierra Club)
  - Innovative Rate Structures



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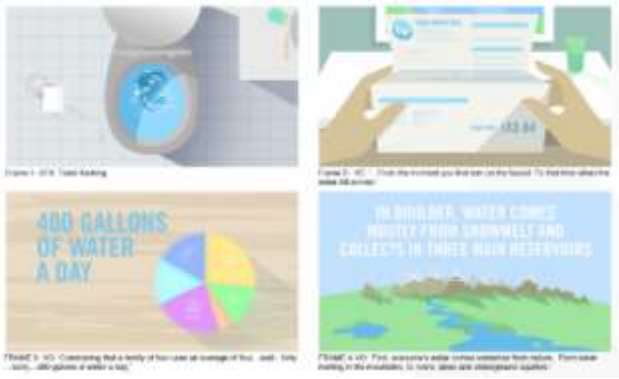
Communicating with Stakeholders

- Building Better Water Rates for an Uncertain World - Implementation Chapter
- New Multimedia Assets
  - AWE “What’s Water Worth” video for customers (Winter 2014)
  - UNC EFC Water¢lips: Video Series for Water Utilities, their Boards, and Funders
- Rate Approval Process Communication Strategy and Toolkit- WaterRF 4455
  - Communicate the need and impact of rate adjustments with new tool RateCase (Spring 2015)



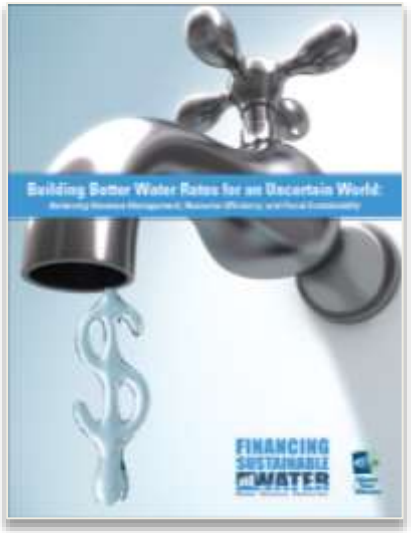
Financial Planning and Management

- EPA: Sustainable and Effective Practices for Creating Your Own Water Utility Roadmap
- Ceres: Bond Financing Distributed Water Systems
- AWE: Financial Instruments for Managing Weather Risk

Financing Sustainable Water

What is Financing Sustainable Water?

- **Building Better Rates in an Uncertain World:** A Handbook to explain key concepts, provide case studies and implementation advice
- **AWE Sales Forecasting and Rate Model:** Innovative, user-friendly tool to model scenarios, solve for flaws, and incorporate uncertainty into rate making
- **FinancingSustainableWater.org:** Web-based resources to convene the latest research and information in one location



FINANCING SUSTAINABLE WATER

Rates. Revenue. Resources.

A project of the Alliance for Water Efficiency

Rates. Revenue. Resources.

Financing Sustainable Water is an initiative of the Alliance for Water Efficiency. It was created to provide practical information to guide utilities from development through implementation of rate structures that balance revenue management, resource efficiency and fiscal sustainability. This website will be updated frequently with new content and we encourage visitors to return often for additional information and resources. The Alliance serves as a North American advocate for water efficient products and programs, and provides information and assistance on water conservation efforts. Learn More

WATER MANAGERS

Find guidance on sustainable financial management

ELECTED OFFICIALS

Support your utility through smart management practices

CONCERNED CITIZENS

Learn how you can help create a sustainable water future

MEDIA

Get facts on today's water challenges and solutions

RATES HANDBOOK
Building Better Rates for an Uncertain World

RATE MODEL
Sales Forecasting and Rate Model

RECENT NEWS

- Welcome to Financing...

FEATURED RESOURCES

- Case Study: Cobb County
  Public Engagement Success
- Report: Westminster, CO
  Conservation Lowers Rates

FSW: Key Concepts

- Revenue instability is a feature of ALL rate structures
- Efficiency objectives should be identified at the start
- One size does not fit all
- Embracing uncertainty enables better decision-making
- Better rate analysis requires good data
- Customer understanding and empowerment is key
- Sound financial policies can support fiscal sustainability

An Alliance for Water Efficiency Handbook

Building Better Water Rates for an Uncertain World

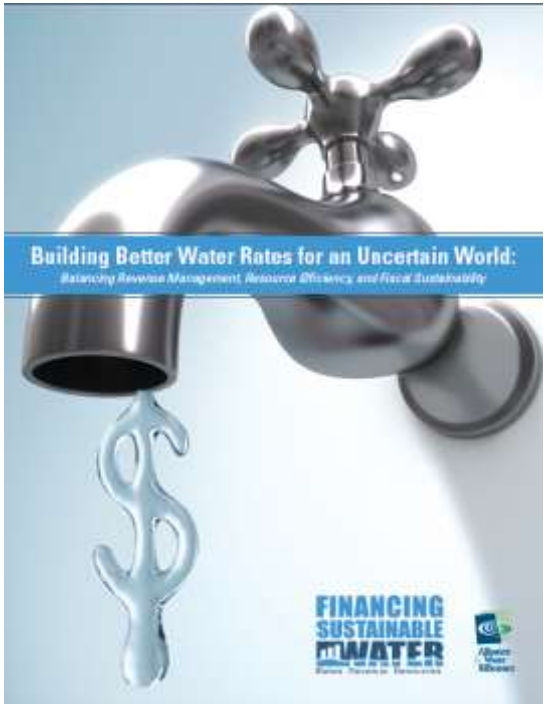
Balancing Revenue Management, Resource Efficiency, And Fiscal Sustainability

Thomas Chesnutt, A&N Technical Services

SECTION I: Introduction
SECTION II: Today's Imperative for Utility Financial Management
SECTION III: The Role of Ratemaking
SECTION IV: Building a Better (Efficiency-Oriented) Rate Structure
SECTION V: Financial Policies & Planning for Improved Fiscal Health
SECTION VI: Implementing an Efficiency-Oriented Rate Structure

Appendices

- Appendix A – Costing Methods
- Appendix B – Demand and Revenue Modeling
- Appendix C – AWE Sales Forecasting and Rate Model User Guide



What Do Utilities Have to Achieve?

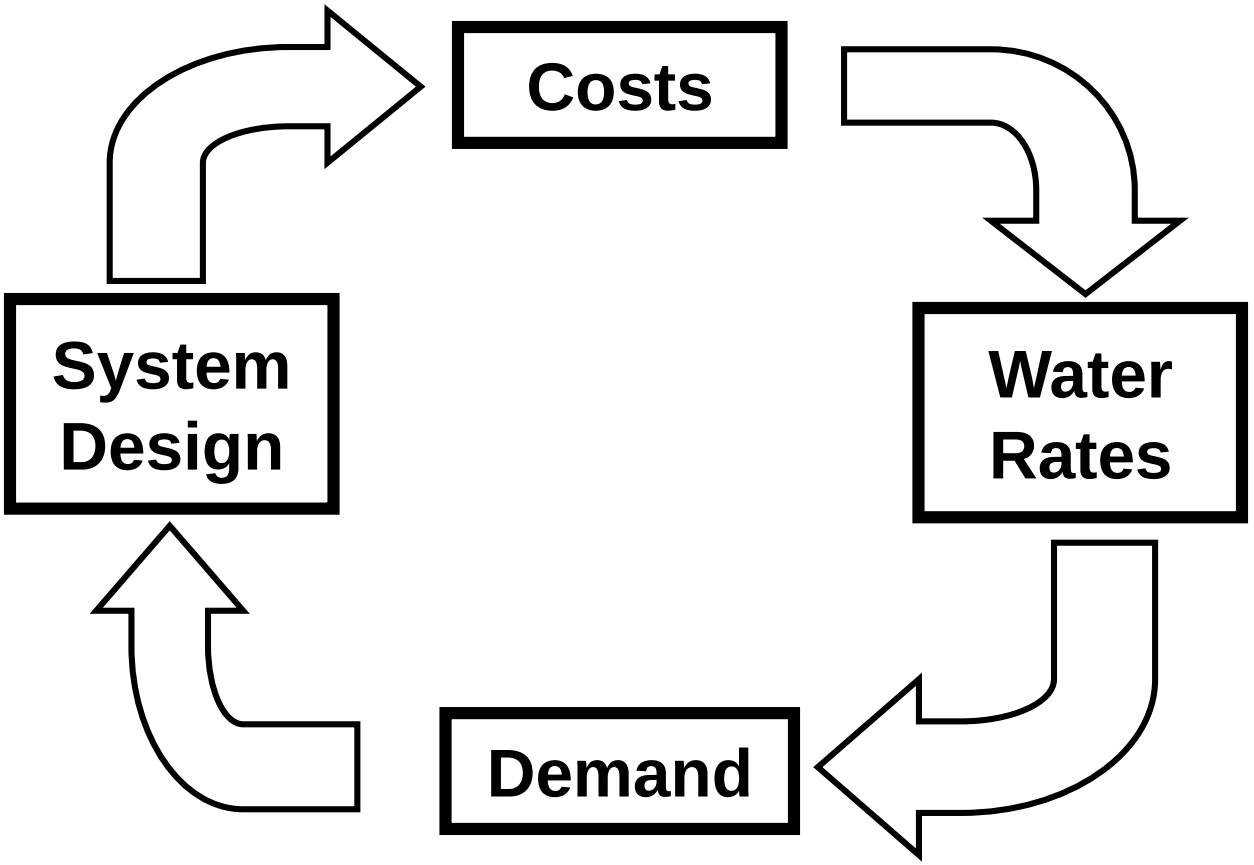
- **Ends** of Water Utilities: Water Services
  - *Reliable Delivery of Quality Water*
  - *Handling of Waste water, Storm water, Watershed management*
- By what financial **means** do utilities achieve these ends?
  - *Cost Recovery (Short term)*
  - *Resource Efficiency (Short and Long term)*
  - *Fiscal Sustainability (Long term)*

What Questions Need Answers for Better Rates?

In an uncertain world, what information could lead to better water rates?

- *Customer Consumption Variability*—How can weather, drought/shortage, or external shock affect customer consumption?
- *Demand Response*—If I change rates, what happens to demand volume and revenue?
- *Drought Pricing*—How should I plan for water rates under the contingency of nonzero drought/shortage occurrence?
- *Probability Management*—What is the likelihood of deficit?
- *Fiscal Sustainability*—What are likelihoods over a 5-year time horizon
- *Affordability*—Can customers afford water service?

Water Flow and Flow of Economic Logic

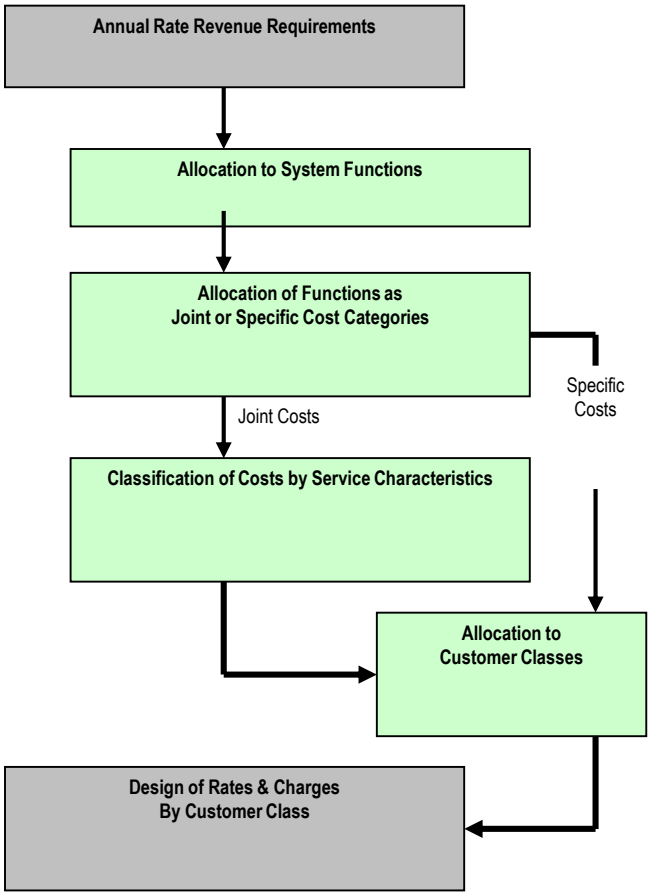


The Heart of the Problem

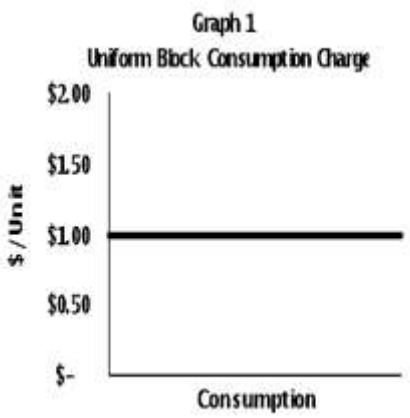
- Water rates have traditionally been focused solely on historical cost-recovery
- When system costs change quickly, and perhaps unpredictably, historical rates do not reflect today's cost consequences
- Rates do not then give customers correct information to make consumptive decisions

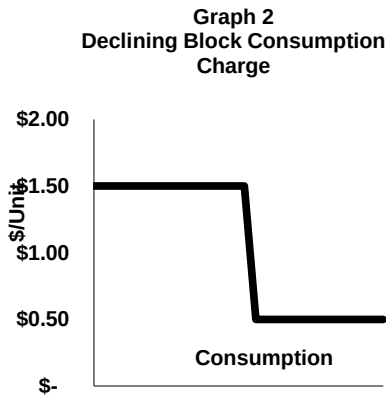
Building a Better Efficiency-Oriented Structure

- Identify and Prioritize Ratemaking Objectives
- Determine Revenue Requirements
- Allocate Costs
- Design A Rate Structure
- Evaluate the Rate Structure against Objectives
- Decide on a Rate Structure



Introduction to Rate Setting





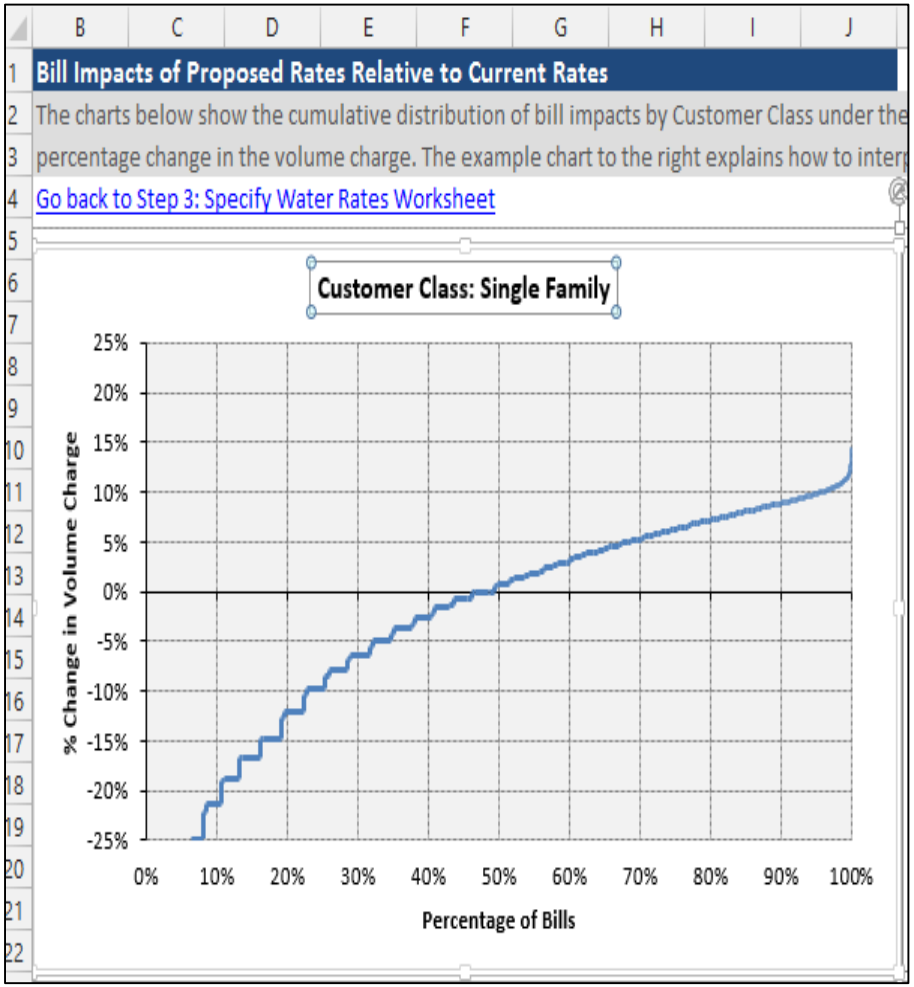
- Budget-based water rates
- Marginal/Incremental Cost pricing
- Volumetrically-based Fixed Charges
- “Value of Service” pricing
- Policy-based rates
- Drought pricing
- Additional “innovative” rate structures

Tools for Evaluating Rates Against Objectives

- Modeling Water Demand Variability
- Modeling Water Revenue Variability
- Customer Bill Analysis
- Affordability Assessment
- Assessing Fiscal Sustainability
- The AWE Sales Forecasting and Rate Model can do all this!

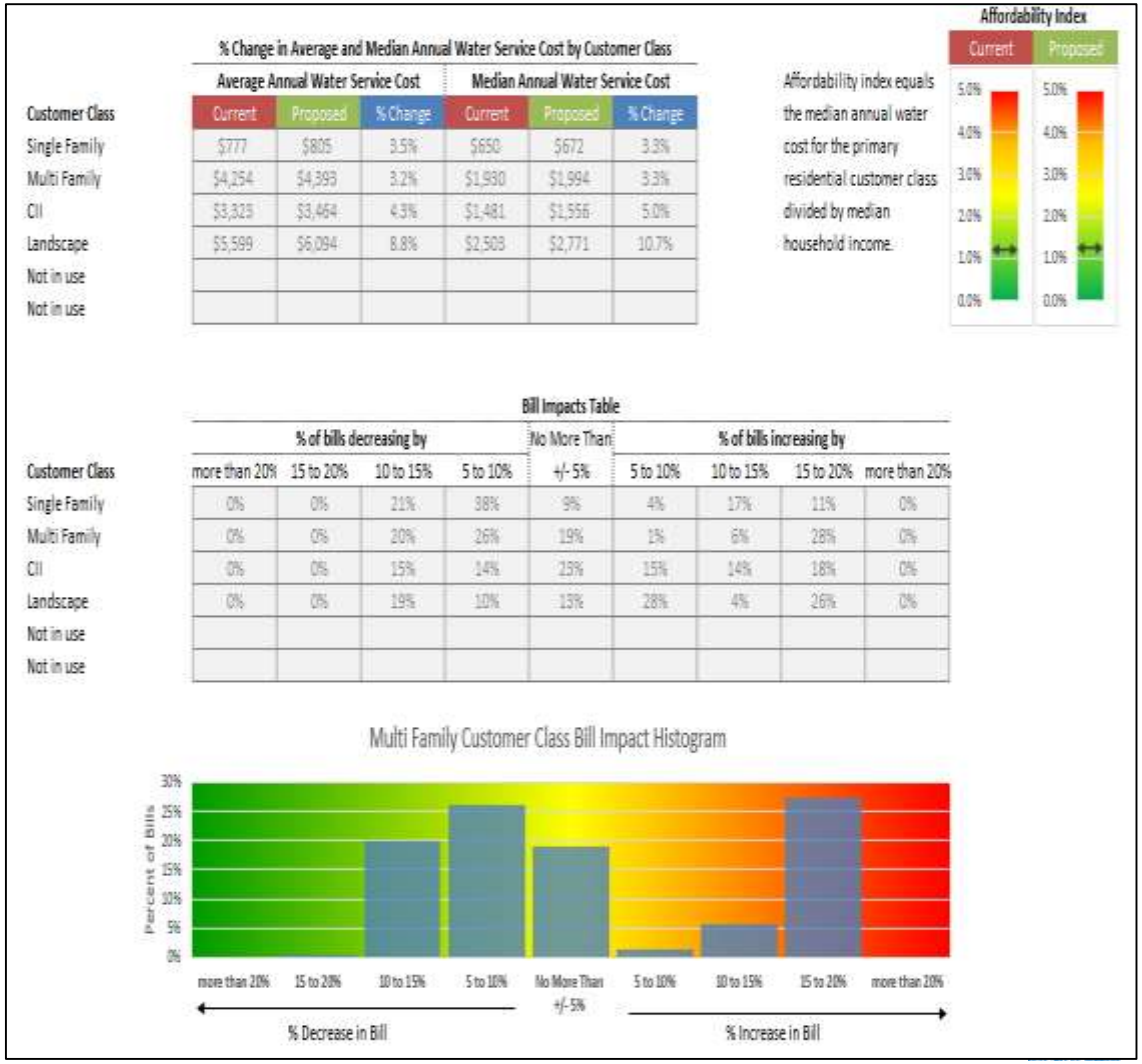
Customer Bills and Bill Impact Analysis

- Designing better water rates involves change
- Change entails political risks
- Understanding customer bill changes gives an informed basis for these risks



Affordability of Water Service

- Average Bills less than some fraction of median income in community (USEPA) does not guarantee “affordability”
- Need in depth and informative understanding of affordability
- See AWE Sales Forecasting and Rate Model for an example
- Other resources: UNC EFC Water Rates Affordability Assessment Tool



% Change in Average and Median Annual Water Service Cost by Customer Class

Customer Class	Average Annual Water Service Cost			Median Annual Water Service Cost		
	Current	Proposed	% Change	Current	Proposed	% Change
Single Family	$777	$805	3.5%	$650	$672	3.3%
Multi Family	$4,254	$4,393	3.2%	$1,930	$1,994	3.3%
CII	$3,323	$3,464	4.3%	$1,481	$1,556	5.0%
Landscape	$5,599	$6,094	8.8%	$2,503	$2,771	10.7%
Not in use						
Not in use						

Affordability index equals the median annual water cost for the primary residential customer class divided by median household income.

Affordability Index

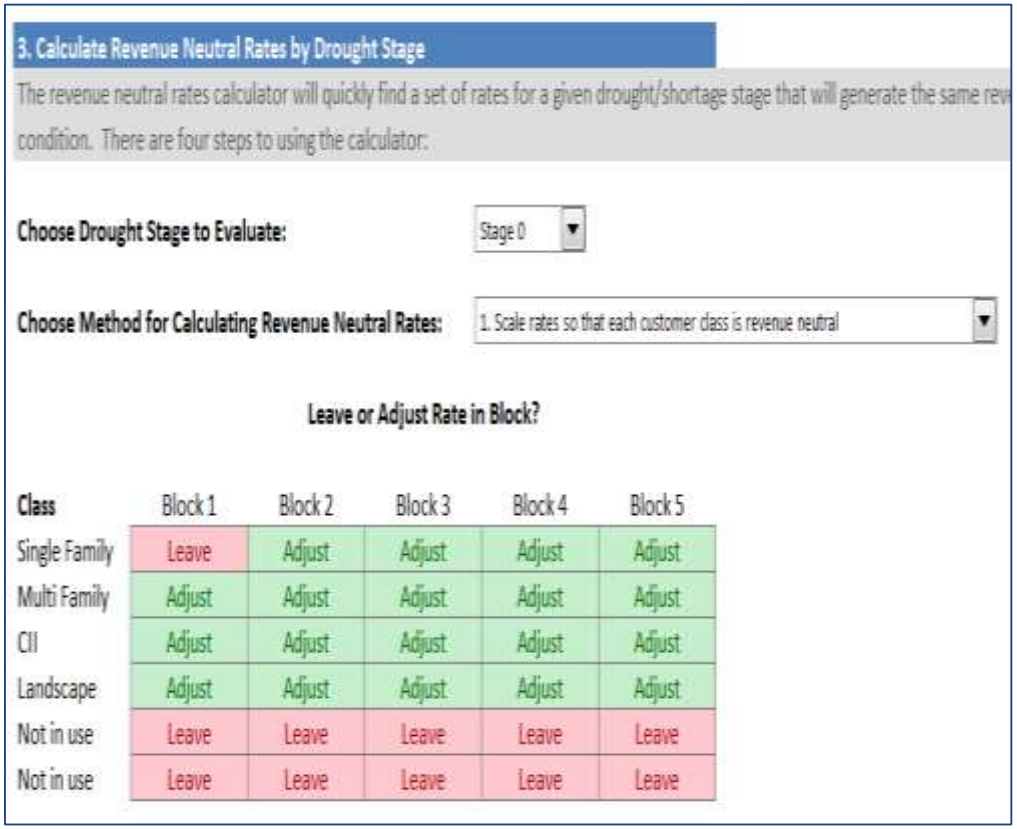
Bill Impacts Table

Customer Class	% of bills decreasing by				No More Than	% of bills increasing by			
	more than 20%	15 to 20%	10 to 15%	5 to 10%	+/- 5%	5 to 10%	10 to 15%	15 to 20%	more than 20%
Single Family	0%	0%	21%	38%	9%	4%	17%	11%	0%
Multi Family	0%	0%	20%	26%	19%	1%	6%	28%	0%
CII	0%	0%	15%	14%	23%	15%	14%	18%	0%
Landscape	0%	0%	19%	10%	13%	28%	4%	26%	0%
Not in use									
Not in use									

Multi Family Customer Class Bill Impact Histogram

Drought Pricing for Revenue Neutrality

- Shortages are when, not if.
- Imposing curtailments on customers affects revenues.
- Drought rates that maintain revenue neutrality through various drought stages can be planned for, communicated, and effectively implemented.



3. Calculate Revenue Neutral Rates by Drought Stage

The revenue neutral rates calculator will quickly find a set of rates for a given drought/shortage stage that will generate the same rev
condition. There are four steps to using the calculator:

Choose Drought Stage to Evaluate: Stage 0

Choose Method for Calculating Revenue Neutral Rates: 1. Scale rates so that each customer class is revenue neutral

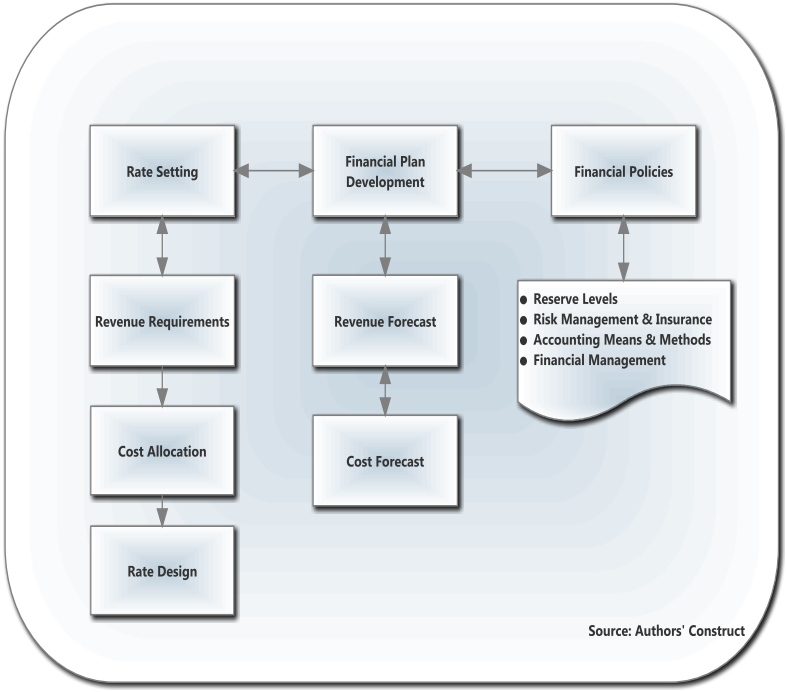
Leave or Adjust Rate in Block?

Class	Block 1	Block 2	Block 3	Block 4	Block 5
Single Family	Leave	Adjust	Adjust	Adjust	Adjust
Multi Family	Adjust	Adjust	Adjust	Adjust	Adjust
CII	Adjust	Adjust	Adjust	Adjust	Adjust
Landscape	Adjust	Adjust	Adjust	Adjust	Adjust
Not in use	Leave	Leave	Leave	Leave	Leave
Not in use	Leave	Leave	Leave	Leave	Leave

Efficiency and Sustainability

Embedding water rate setting within Financial Management:

- Water Rate Setting is not a theoretical exercise
- Water Rate Setting occurs within Financial Planning
- Water Rate Setting can be guided by Financial Policies



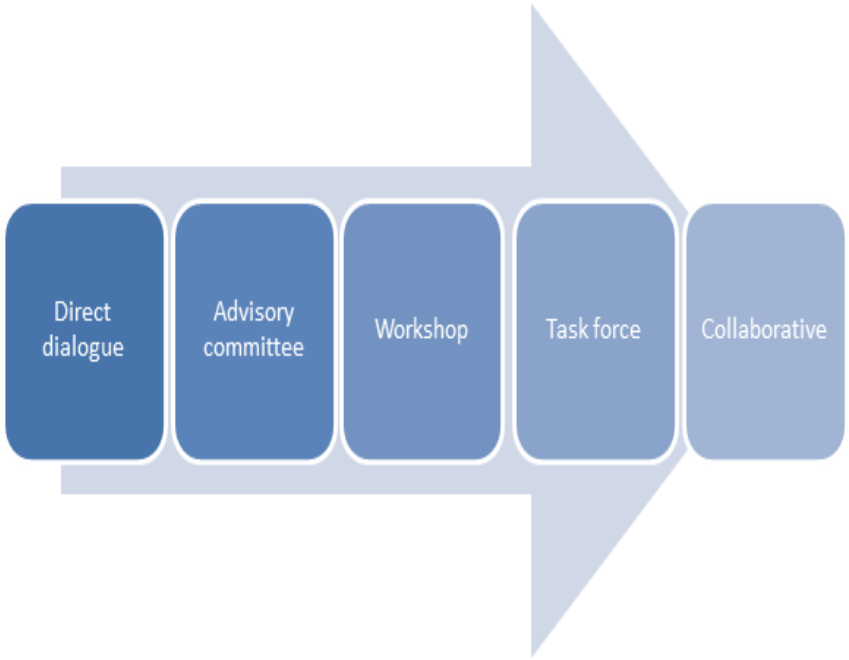
See Rothstein and Galardi, (2012) *Financing Water Utilities' Sustainability Initiatives: Challenging Institutionalized Governance and Market Failures*.

Financial Planning and Policies

- Revenue and Expense Forecasting
- Revenue Management and Fiscal Sustainability
- Rate Stabilization – Financial Planning
- Adaptive Rate Design
- Revenue Recovery Mechanisms
- Cost Recovery Mechanisms
- Conclusion: Transformational Change for Efficiency

Implementation and Public Engagement

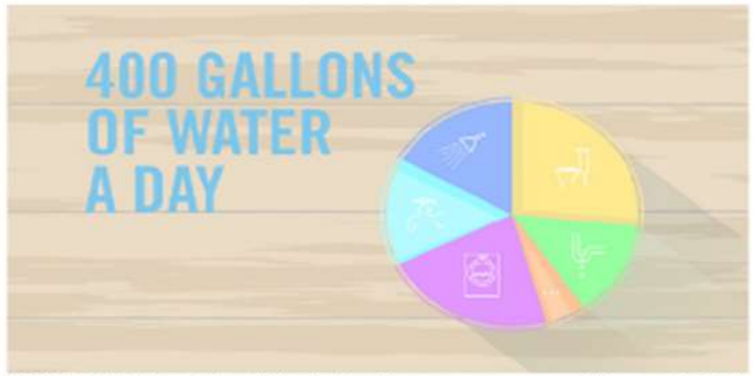
- Integrated and Collaborative Planning
- Securing Buy-In from Leadership
- Getting to Yes: Approval from Elected Officials
- Internal Communications and Customer Service
- The Public as Partners
- Clear Signals and Empowered Customers
- Maintaining Dialogue and Fine-tuning



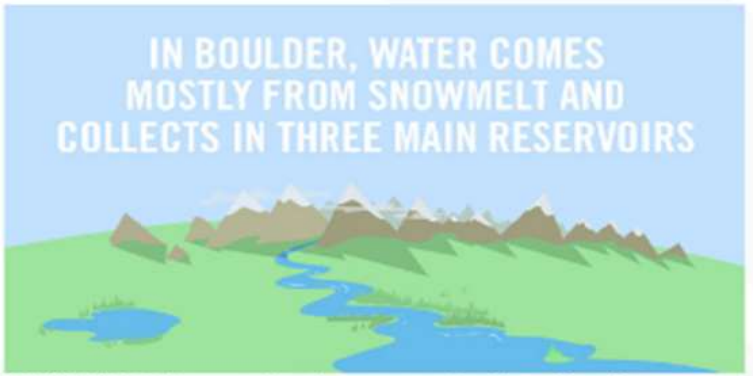
“What’s Water Worth” Consumer Video

Frame 1- SFX: Toilet flushing

Frame 2- VO: “…From the moment you first turn on the faucet. To that time when the water bill arrives.”



FRAME 3- VO: ‘Considering that a family of four uses an average of four…wait…forty …sorry…400 gallons of water a day,’



FRAME 4-VO: ‘First, everyone’s water comes somehow from nature. From snow melting in the mountains, to rivers, lakes and underground aquifers.’

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