Smart Management for Small Water Systems

Designing Water Rate Structures that Support Your Utility's Objectives

Thursday, August 24, 2017
1:00-2:00pm MT/3:00-4:00pm ET

This program is made possible under a cooperative agreement with EPA.

EFCN environmental finance center network

Smart Management for Small Water Systems

UNC ENVIRONMENTAL FINANCE CENTER

American Water Works Association

About the Environmental Finance Center Network (EFCN)

The Environmental Finance Center Network (EFCN) is a university-based organization creating innovative solutions to the difficult how-to-pay issues of environmental protection and improvement. The EFCN works with the public and private sectors to promote sustainable environmental solutions while bolstering efforts to manage costs.

The Smart Management for Small Water Systems Program

This program is offered free of charge to all who are interested. The Program Team will conduct activities in every state, territory, and the Navajo Nation. All small drinking water systems are eligible to receive free training and technical assistance.

What We Offer

Individualized technical assistance, workshops, small group support, webinars, eLearning, online tools & resources, blogs

The Small Systems Program Team

- Environmental Finance Center at The University of North Carolina at Chapel Hill
- Environmental Finance Center at Wichita State University
- EFC West
- New England Environmental Finance Center at the University of Southern Maine
- Southwest Environmental Finance Center at the University of New Mexico
- Syracuse University Environmental Finance Center
- Environmental Finance Center at the University of Maryland
- American Water Works Association (AWWA)

UNC Environmental Finance Center

Wichita State University Hugo Wall School of Public Affairs Environmental Finance Center

EFCWest Environmental Finance Center West

New England Environmental Finance Center

Southwest Environmental Finance Center

Environmental Finance Center Syracuse University

University of Maryland Environmental Finance Center

American Water Works Association

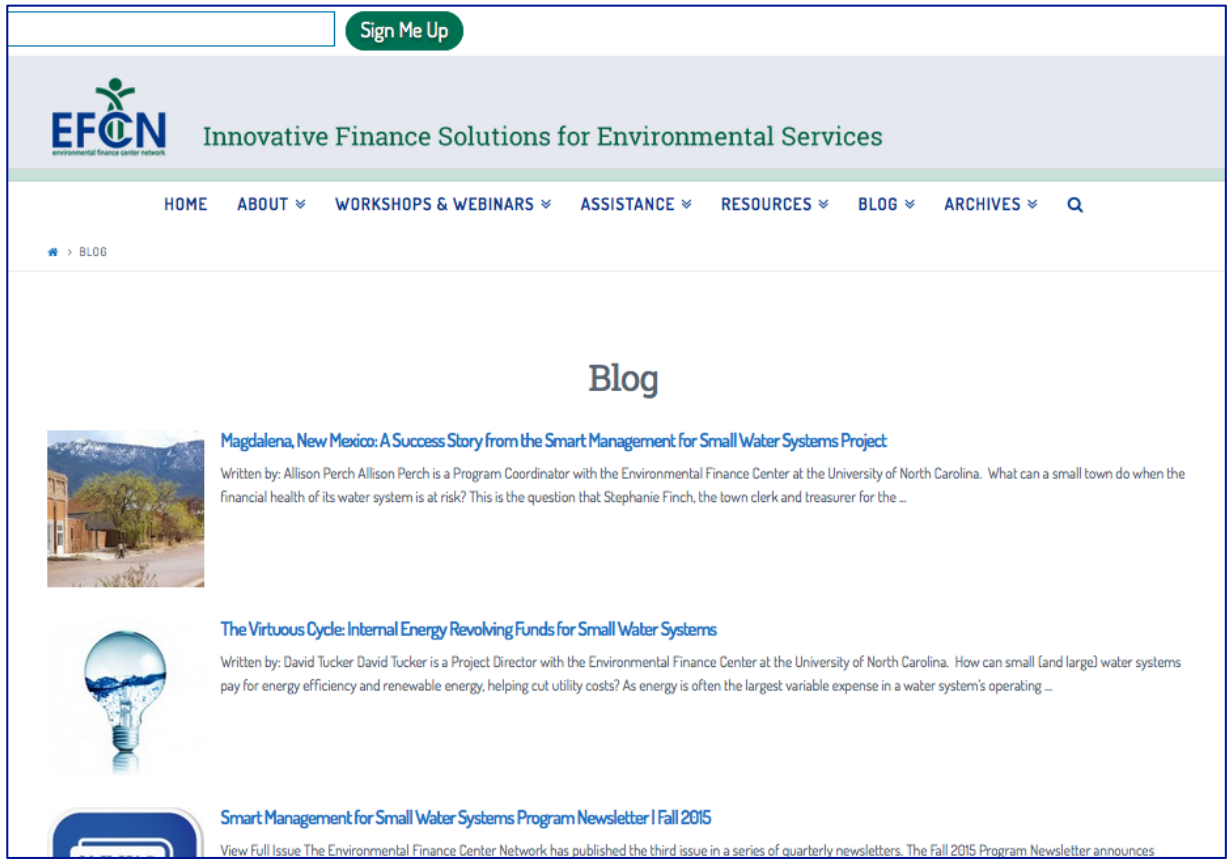
Areas of Expertise

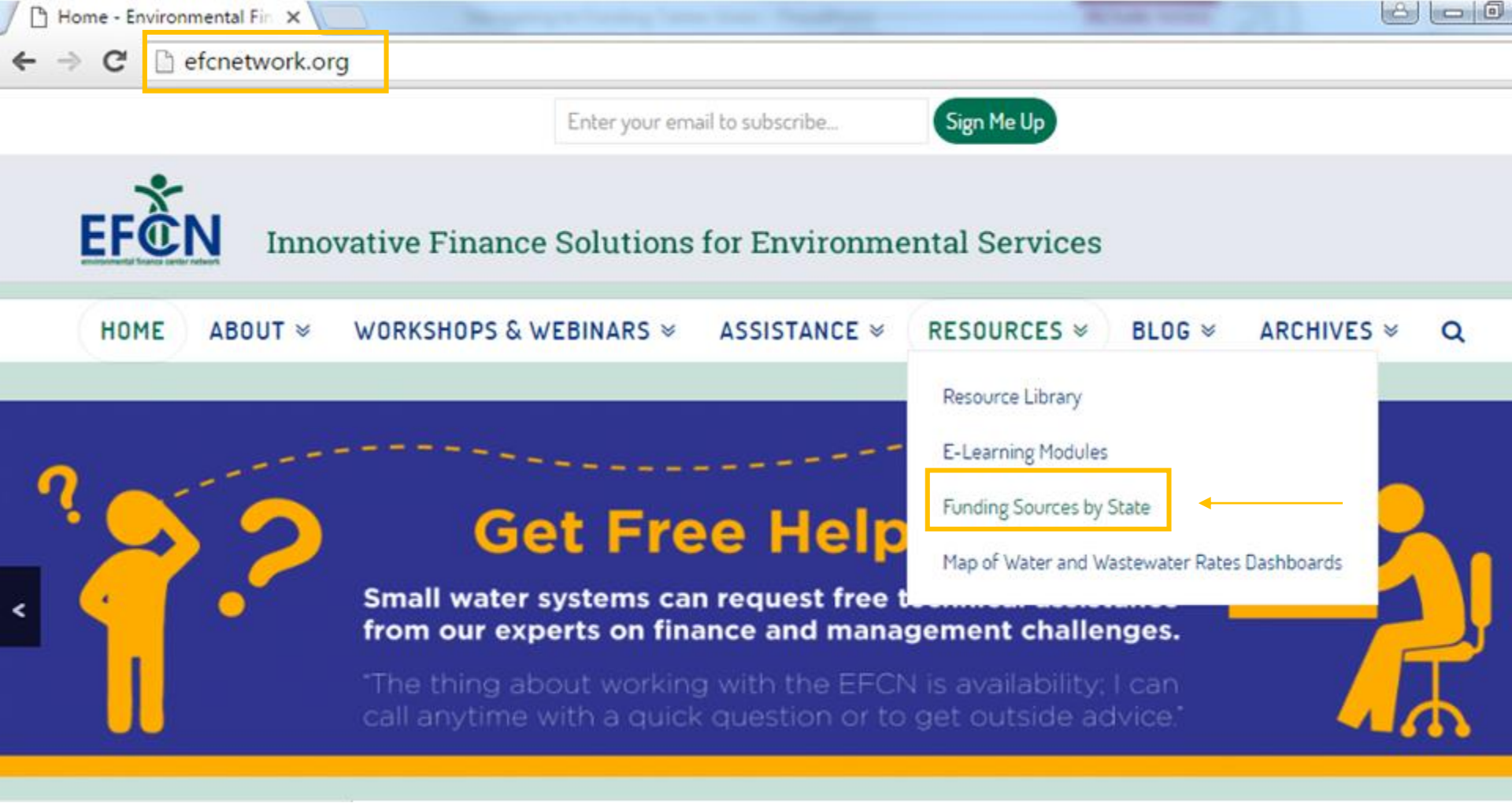
- Asset Management
- Rate Setting and Fiscal Planning
- Leadership Through Decision-making and Communication
- Water Loss Reduction
- Energy Management Planning
- Accessing Infrastructure Financing Programs
- Workforce Development
- Water Conservation Finance and Management
- Collaborating with Other Water Systems
- Resiliency Planning
- Managing Drought

Small Systems Blog

Learn more about water finance and management through our Small Systems Blog! Blog posts feature lessons learned from our training and technical assistance, descriptions of available tools, and small systems “success stories.”

efcnetwork.org/small_systems_blog/





Navigating to Funding Tables

Step 1: efcnetwork.org
Step 2: Select “Funding Sources by State” under the Resources Tab

Funding Sources by State

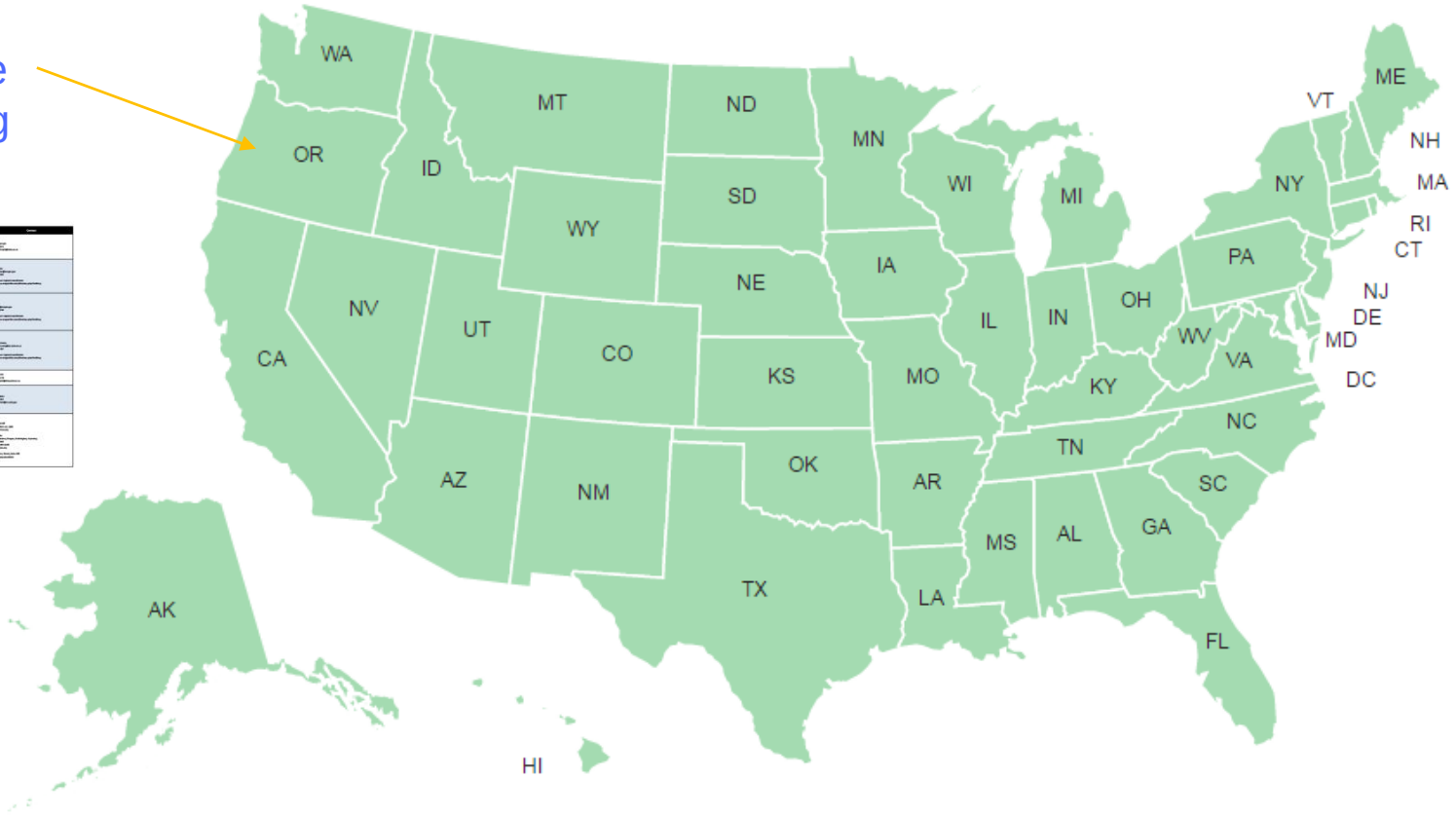
efcnetwork.org/funding-sources-by-state/

Funding Sources by State

Note: Some states may have additional resources listed below the map.

Click on the map below to view funding sources for each state:

Click on an individual state to view funding table.



Webinar Outline

- Present the basics of different rate structure design components
- Discuss when it is appropriate to favor some elements over others
- Introduce tools and resources to help you with rate setting

Terminology: Rates vs. Rate Structure

Rates

$ 32.00 / month, includes the first 2,000 gallons
+ $ 2.00 / 1,000 gallons for use between 2,000 and 5,000 gallons
+ $ 5.00 / 1,000 gallons for use between 5,000 and 20,000 gallons
+ $ 6.00 / 1,000 gallons for all use above 20,000 gallons

Rate Structure

Terminology for Rate Structure

Base Charge

Consumption Allowance

$ 32.00 / month, includes the first 2,000 gallons
+ $ 2.00 / 1,000 gallons for use between 2,000 and 5,000 gallons
+ $ 5.00 / 1,000 gallons for use between 5,000 and 20,000 gallons
+ $ 6.00 / 1,000 gallons for all use above 20,000 gallons

Volumetric Rates

Blocks

There is no one rate structure that works perfectly for all utilities

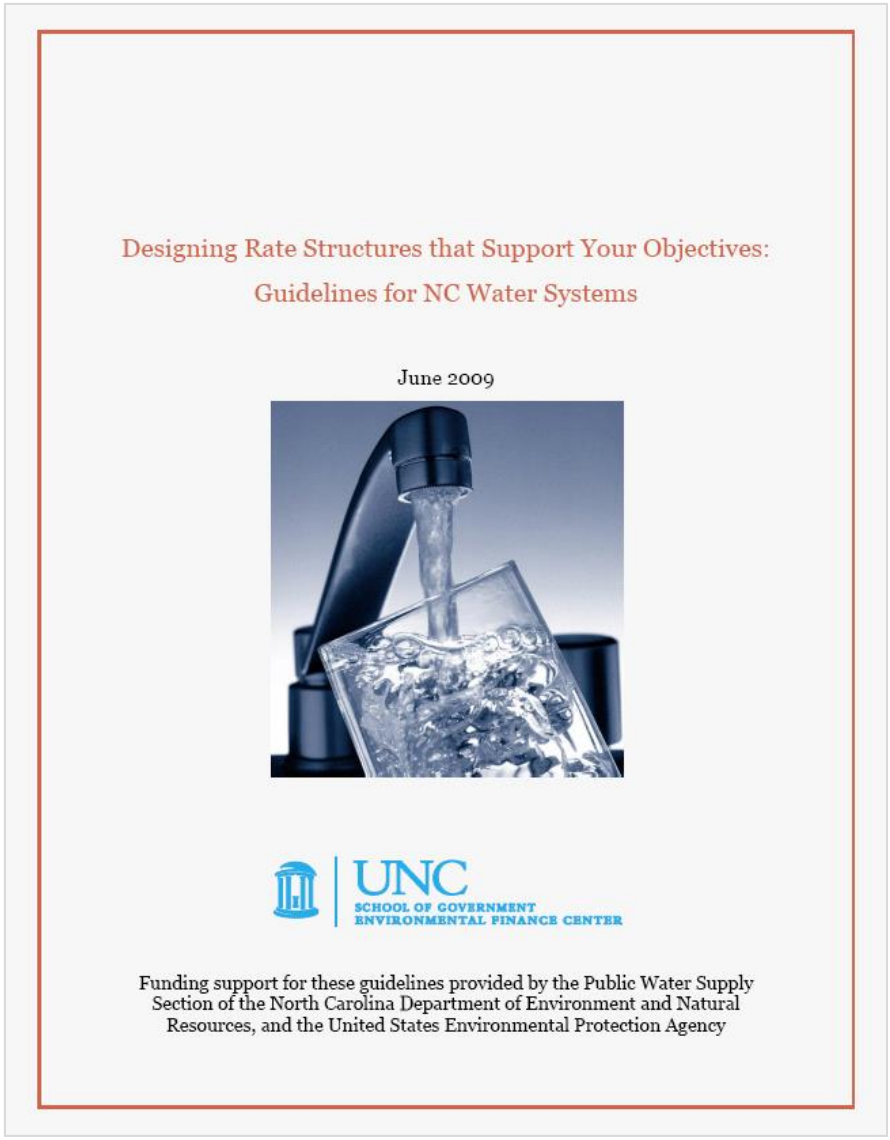
Rate Setting Resource

"Designing Rate Structures that Support Your Objectives"

Free guide written for utility managers.

http://efc.sog.unc.edu/
Find it in Resources / Publications

Click here for the direct link



What Goes Into Reviewing Rates for the Next Year?

Will it provide sufficient cost recovery?

What exactly does this include?

Are we following the applicable laws?

Will revenues be resilient to changing water demands?

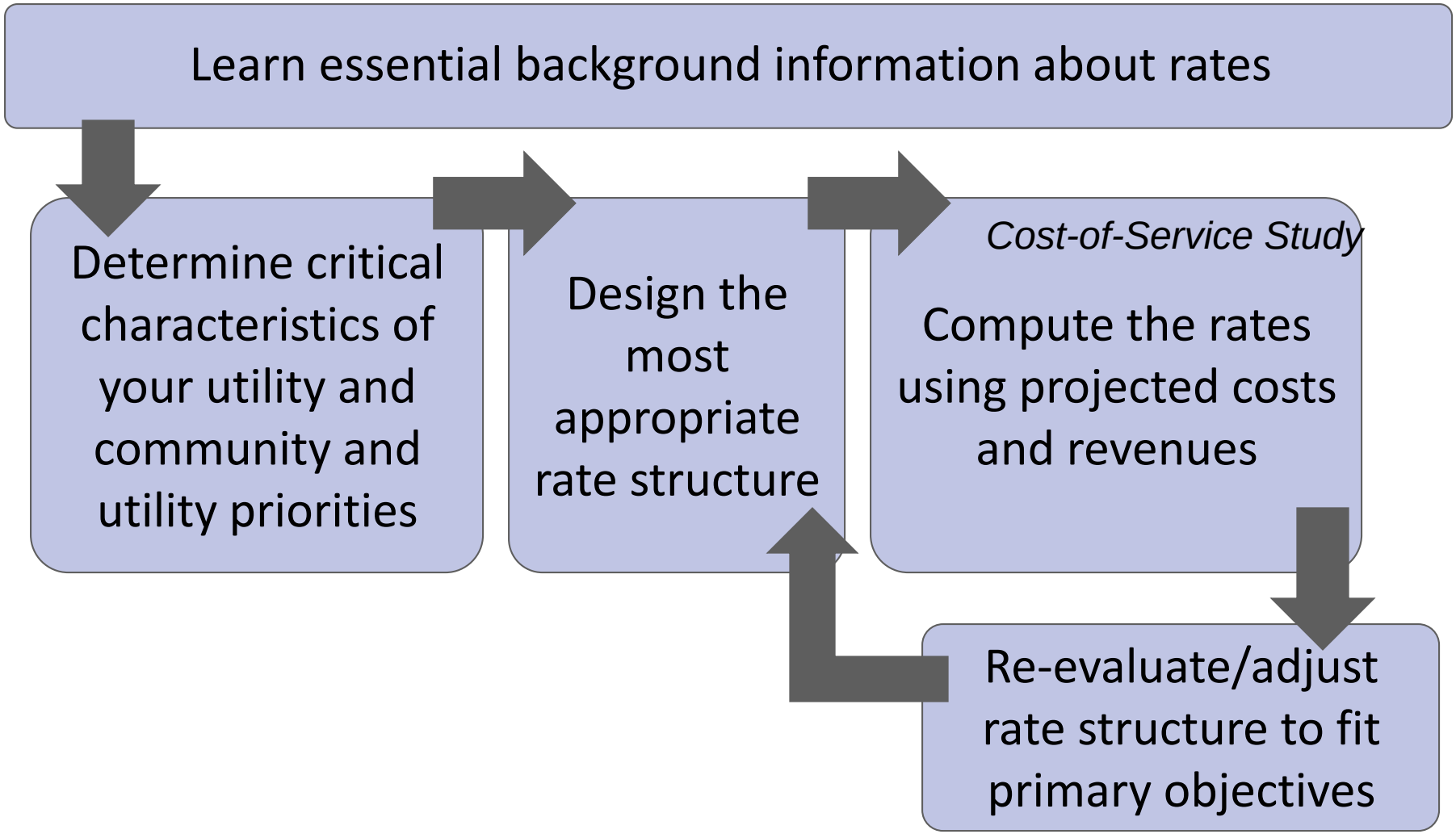
Are we allocating the costs to the right customers?

Do these rates send the right signals to our customers, based on our objectives?

Will our customers understand these rates?

Will our customers be able to pay these rates?

The Process of Setting Rates



Understanding Your Utility and Served Community

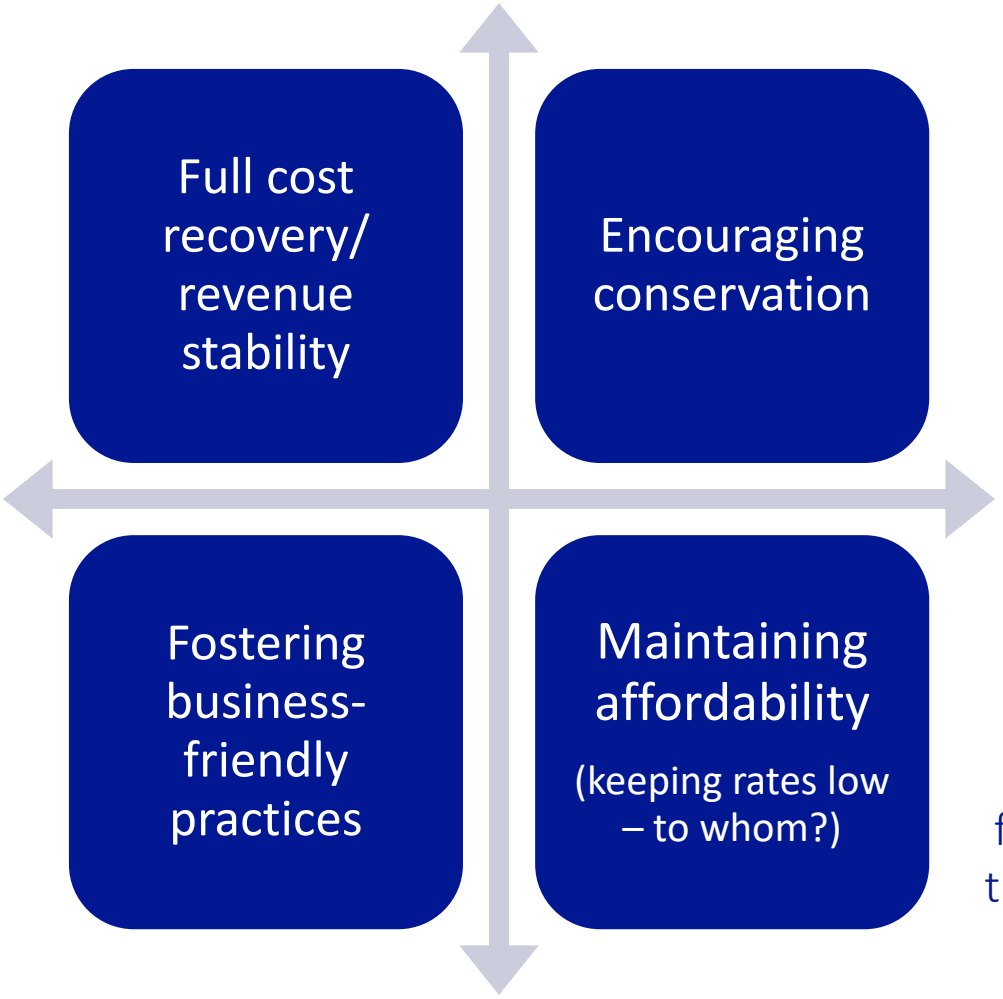
- How are your customer demands changing?
- Do you expect to meet demands comfortably?
- What is the make-up of your served community?

  Serve many large families? What is the community's ability to pay? Is it a seasonal community? Is there growth or decline in customers? Does a large fraction of your revenues come from a small number of customers? What is the mix of residential and non-residential customers? Who are your biggest customers?
- How often have customers been unable to afford their bills?

Understanding Your Utility and Served Community

- In the past few years, how much of your revenues and costs were fixed vs. variable?
- How have your operating expenses changed recently?
- Do you know what your capital expenses and debt service payments will be going forward?

Before You Begin:
Rank Your Utility's Rate Setting Objectives



1. _____
2. _____
3. _____
4. _____

Refer to this list and focus on the highest ranked objectives when following the guidelines for selecting the appropriate rate structure design.

Elements of Rate Structure Designs

1. Customer classes/distinction
2. Billing period
3. Base charge
4. Consumption allowance included with base charge
5. Volumetric rate structure
6. (If applicable) Number of blocks, block sizes and rate differentials
7. (Optional) Automatic adjustments

Also: frequency of rate reviews and rate changes

Elements of Rate Structure Designs: 1. Customer Classes/Distinction

Alternative	Targets
One rate structure for all	All are equal
Separate rate structure for residential, irrigation, commercial, industrial, governmental, or wholesale customers	Specific type of customer
One rate structure, but with different base charges based on meter size	Non-residential or multi-family housing
One rate structure for all, but with blocks that implicitly only target non-residential use	Non-residential
Negotiated rate structure with individual high-use customers (typically an industrial customer)	Only one customer
Different rates for customers outside municipal limits/service area boundaries	“Outside” customers

Elements of Rate Structure Designs: 2. Billing Period

	More Frequently (e.g.: Monthly)	Less Frequently (e.g.: Quarterly)
UTILITY	Steady monthly revenue stream; Rate changes effected quicker; Lost revenues from unpaid bills smaller; Communicate with customer more frequently	Less staff and lower billing costs; Possibly fewer late payments and cutoffs to deal with
CUSTOMER	Smaller, more regular bills (easier to pay); Higher and faster sensitivity to use and rate changes (leaks, conservation); More sensitive to rate structure design and less confusion	None except for the hassle of more frequent billing

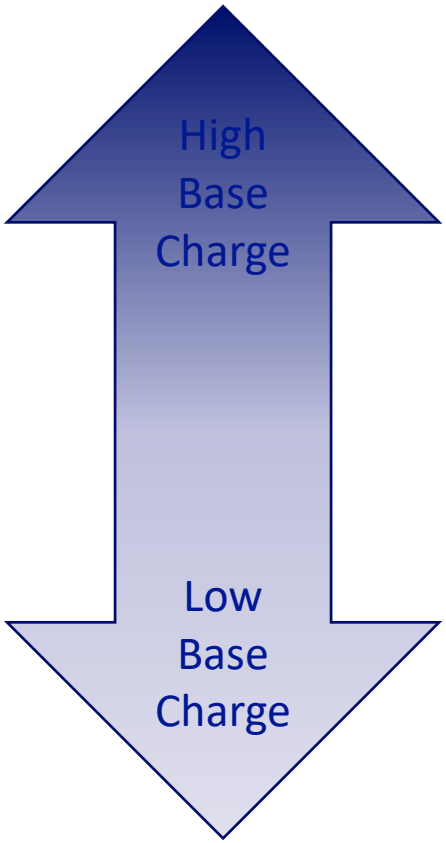
Suggestion: Use a monthly billing period if you can afford it

Elements of Rate Structure Designs: 3. Base Charges

PROS

Higher "guaranteed" revenue to pay off the fixed costs;
Higher month-to-month revenue stability

Provides strong incentive to keep use low;
Customers more likely to notice month-to-month change in bill due to change in use



CONS

Customers with very low use are paying a high unit price;
Customers do not witness a significant change in bill if conserve water

Revenues less stable for utility;
Revenues are highly seasonal

Suggestion: Smaller utilities with high fixed costs should lean towards higher base charges

Elements of Rate Structure Designs: 3. Base Charges

Two common ways to charge:

- Constant (by customer class): $35.00/month
- By meter size:
  - $35.00/month for 5/8” or ¾” meter
  - $55.00/month for 1” meter
  - $105.00/month for 2” meter, etc.

Elements of Rate Structure Designs: 4. Consumption Allowance with Base Charge

Bills and revenues are more sensitive to use changes

Provides a lifeline amount of water to offset some of the effects of high base charges

Provides a greater offset for the customer, but discourages conservation

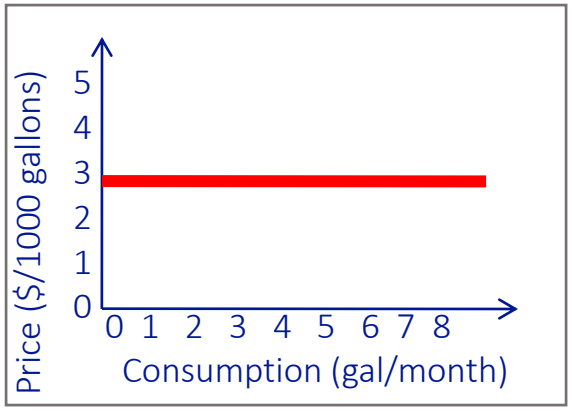
Do not include any
(0 gallons)

Include some amount
(e.g.: 1,000 gallons/month)

Include high amount
(e.g.: 3,000 gallons/month)

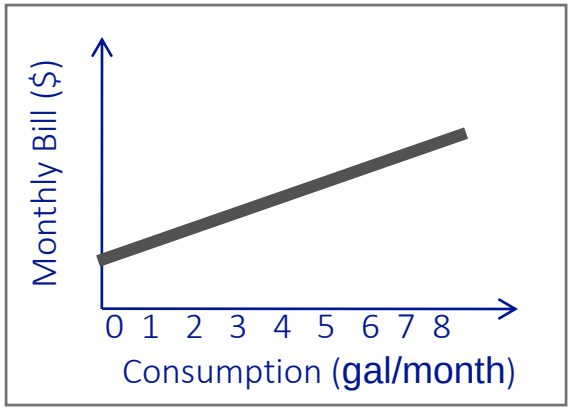
Suggestion: For systems with low base charges, do not include any consumption allowance. For systems with high base charges but wish to encourage conservation, keep consumption allowance low, if any.

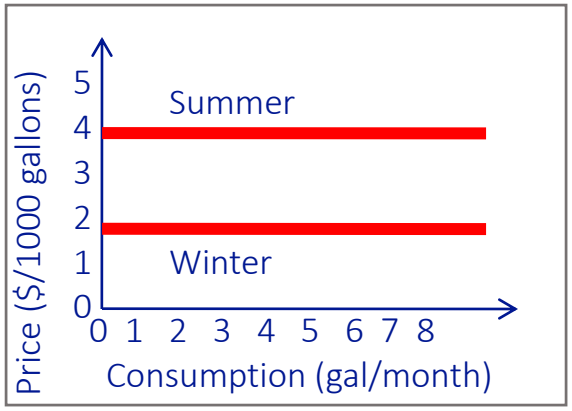
Elements of Rate Structure Designs: 5. Volumetric Rate Structure



Uniform ("Flat") Rates

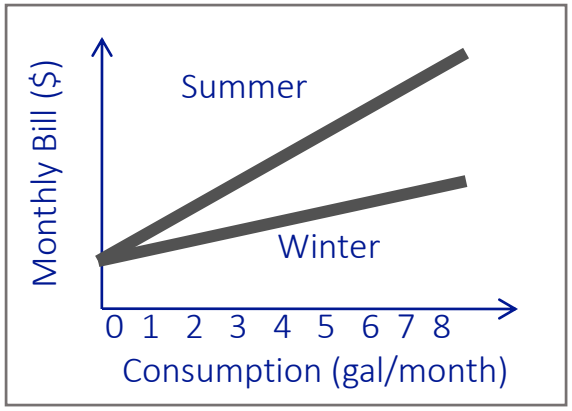
Simple and Fair





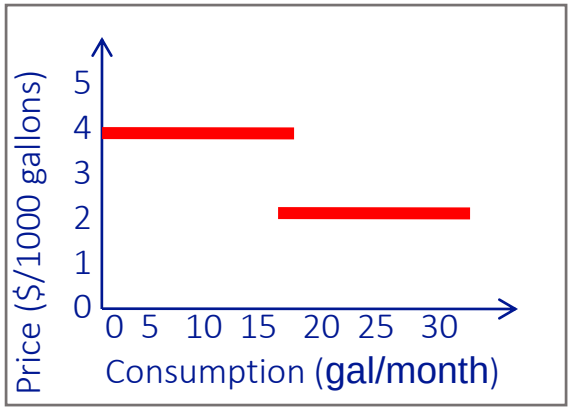
Seasonal (Uniform) Rates

Conservation-oriented, good for seasonal communities



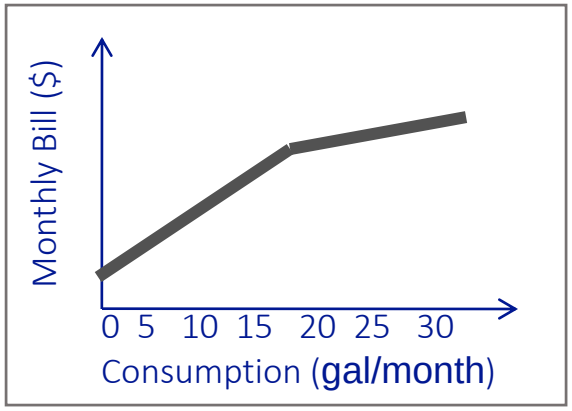
Suggestion: Pick the volumetric rate structure that fits your stated primary objectives best. Do not use decreasing blocks for residential consumption.

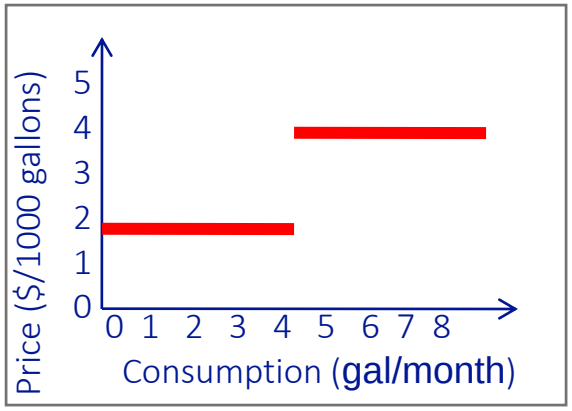
Elements of Rate Structure Designs: 5. Volumetric Rate Structure



Decreasing Block Rates

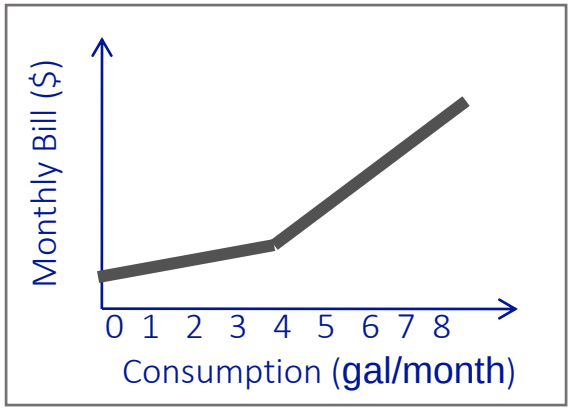
Provide price break for large users (e.g.: commercial). Not recommended for residential.





Increasing Block Rates

Conservation-oriented. Consider large families.



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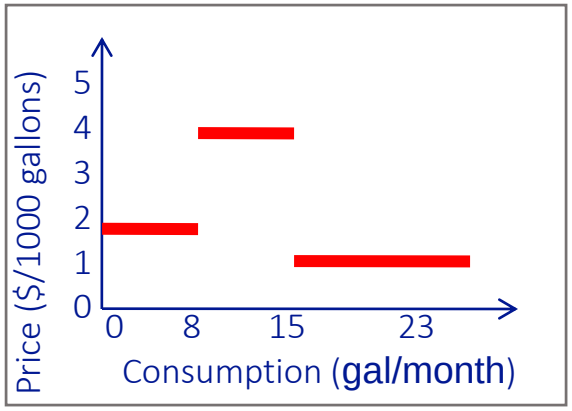
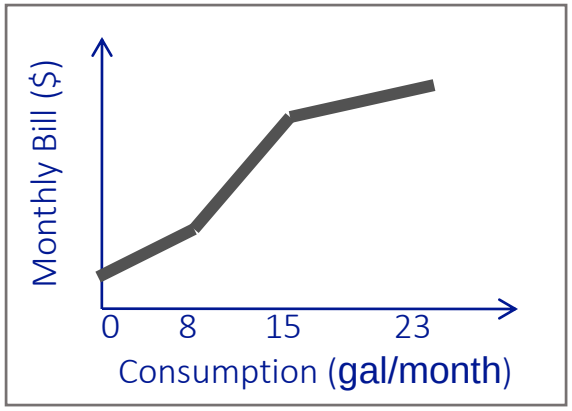
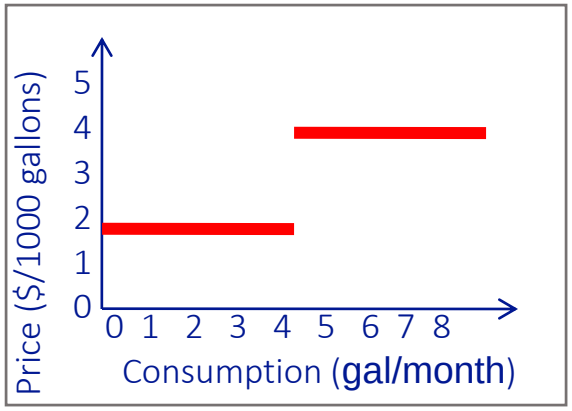
Elements of Rate Structure Designs: 5. Volumetric Rate Structure



Targeted Block Rates

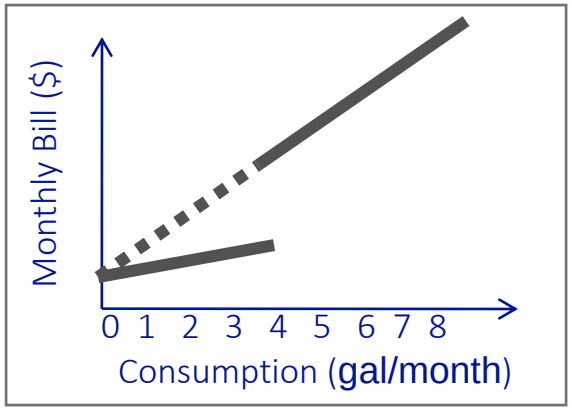
Increase *and* decrease based on desired targets: increasing for residential, decreasing for commercial





Uniform At One Block

Complex, but greater price incentives over traditional block rate structures



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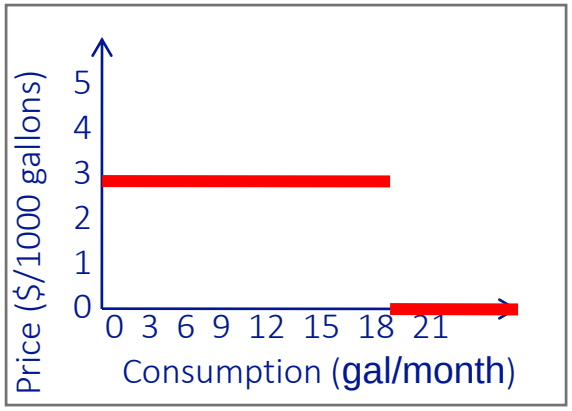
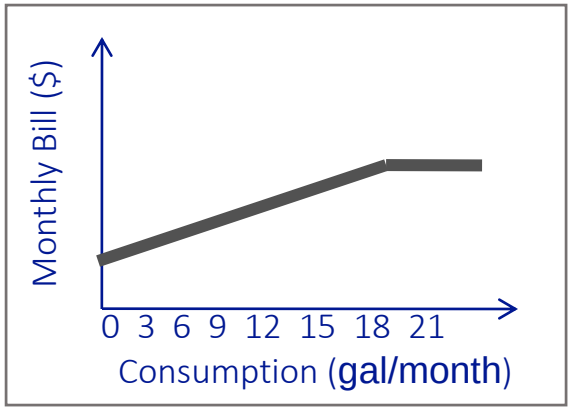
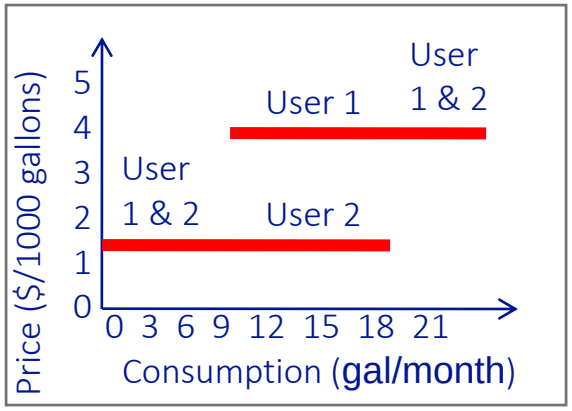
Elements of Rate Structure Designs: 5. Volumetric Rate Structure



Uniform Rates with Cap

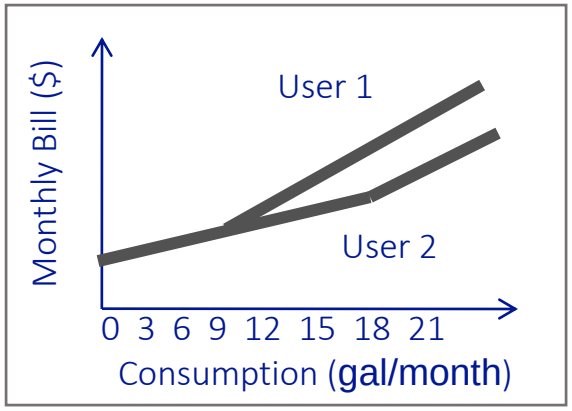
Only appropriate for residential **sewer**, cap at max. indoor use level





Budget-based Rates

Tailored to each customer, most equitable, accounts for family size and industry, conservation-oriented, but complex



Suggestion: Pick the volumetric rate structure that fits your stated primary objectives best. Do not use decreasing blocks for residential consumption.

Elements of Rate Structure Designs: 5. Volumetric Rate Structure

Another rate structure option:

Non-volumetric. Only charge a periodic fixed (base) charge and not based on volume, or include water with rent.

Not reading meters. Simplest and cheapest option.
Gives the customer zero financial incentive to be efficient in their water use while utility incurs

Elements of Rate Structure Designs: 6. (If Applicable) Block Designs

For block rate structures to be effective:

- Decide on the correct number of blocks

  How many targets should you set on residential use? Do you want all non-residential use to be charged at a uniform rate, or provide blocks for non-residential use as well?

- Decide on where the blocks should end/start

  Start the second block only where summertime residential use ends and non-residential use continues (i.e.: charge residential use at uniform rates)? Set increasing block rates for residential customers where the blocks end at average use (e.g.: 5,000 gal/month), then double it (e.g.: 10,000 gal/month), and then over that (to target irrigation use more specifically)?

Elements of Rate Structure Designs: 6. (If Applicable) Block Designs

For block rate structures to be effective:

- Set significant rate differentials between blocks

  Charging only 50 cents/1,000 gallons more in one block than in the preceding block defeats the purpose of using an increasing block rate structure. If you select a block rate structure, select significant rate differentials to see any added value of your rate structure.

- Keep in mind your base charge and consumption allowance

  High base charges and consumption allowances may be significant portions of the total bill, greatly diluting the effect of an increasing block rate structure on providing incentives to conserve. Offset high base charges by reducing the consumption allowance, or setting high block rates.

Elements of Rate Structure Designs: 6. (If Applicable) Block Designs

For block rate structures to be effective:

- Meter reading must be punctual

  If the meter is read a few days too late, it may unjustly place the last few days' of a customer's use in a higher block.

- Replace meters frequently and repair lines quickly

  Faulty meters or leaking pipes will cause the customer to be billed at the wrong block levels, costing either the utility lost revenue or the customer more.

Elements of Rate Structure Designs: 6. (If Applicable) Block Designs

For block rate structures to be effective:

- Consider the adverse effect on large families

  Large families consistently use high amounts of water throughout the year and may not have capacity to conserve. An increasing block rate structure therefore negatively affects the customer, without achieving any conservation objectives. Investigate your billing records to estimate the number of residential accounts that consistently use high amounts of water and use this knowledge to select the appropriate block sizes to mitigate this effect. Consider using uniform rates or budget-based rate structures if the community has many large families.

Elements of Rate Structure Designs: 7. (Optional) Automatic Adjustments

- Prepare for drought in advance: create an ordinance to give the utility the ability to raise rates temporarily during a water shortage scenario (sometimes called “drought surcharges”).
- Specify the potential rate increases precisely.
- Rate increases should be substantial to encourage conservation.
- Explicitly state the conditions that would trigger the temporary rate changes on and off. Tie the triggers to your water shortage response plans and water reservoir/well levels.

Note: Temporary rate increases that are significant in magnitude have been shown to be effective methods of encouraging conservation while recovering lost revenue.

Frequency of Rate Changes

Decide when and how often you will review your rates. Some alternatives:

- Always review your rates annually (recommended)
- Review your financial health indicators annually, and then review your rates if any of the indicators reflect poor financing

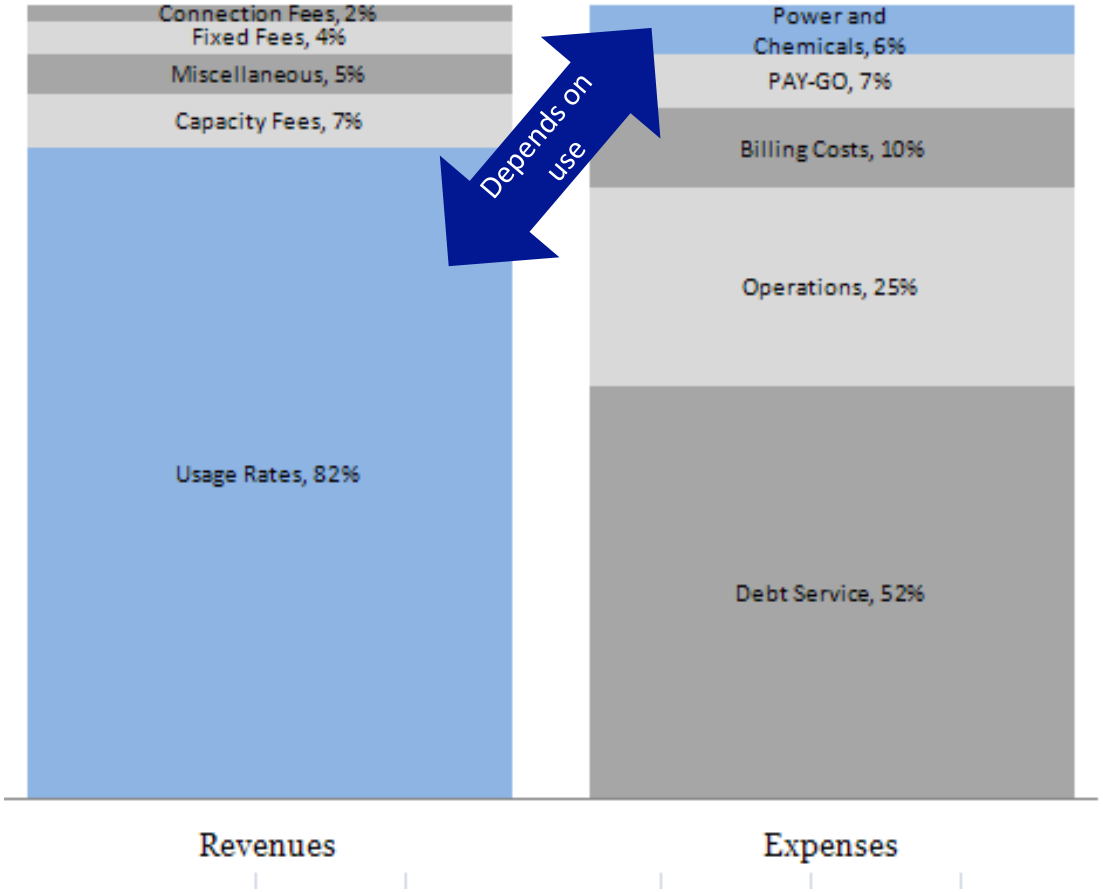
Fixed vs. Variable Revenues

- Variable revenues are 100% dependent on the volume of water:
  - The volumetric rates
- Fixed revenues do not depend on volume of water in the short-term:
  - Base (minimum) charges, flat fees, penalties and charges, connection fees, etc.

How Rates and Water Use Interact

Utilities' costs are mostly fixed, not dependent on the amount of water sold/used by the customers. But the majority of revenues come from the amount of water sold. If demand decreases, revenues drop significantly but not costs.

Revenue and Expenses for Charlotte-Mecklenburg Utilities in a Given Year



Source: Charlotte Water Director Doug Bean's presentation to the Charlotte City Council on December 1, 2008.

Important

Avoid maintaining low rates at the expense of your utility's financial health.

It will either lead to a sudden, massive rate increase in the future or to failing systems and endangering public health.

Examples of rate structures

A Few Scenarios

Keep in mind:

No one rate structure design fits all utilities, even in each of the following scenarios.

Showing the starting point of discussion – each utility would then have to evaluate and tailor rate structure according to own conditions.

Scenario: Groundwater System with a Very Small Customer Base

High fixed costs, small number of customers

- High base charges, possibly with a consumption allowance.
- Monthly billing if very small number of customers; bi-monthly if cost savings outweigh cash flow stability (phase the meter reading over the two months)

Warning: No one rate structure design fits all utilities, even in this scenario.

Scenario: Small, Purchase Water System

High variable costs, small number of customers

- Lower base charges (sufficient to pay off the monthly fixed/minimum charge to the seller utility plus at least most of own fixed costs),
- No consumption allowance (unless included by the seller utility)
- High volumetric rates that exceed the variable rates you are paying the utility

Warning: No one rate structure design fits all utilities, even in this scenario.

Scenario: Worried About Affordability of Rates for Residential Customers

- Do not compromise revenue sufficiency to maintain artificially low rates
- Create separate residential rate structure:
  - Low base charges with no consumption allowance
  - Increasing block rates with a first block only up to lifeline amount (~ 2,000 gallons/month)
  - Relatively steep increases in rates between blocks
  - Monthly billing
- Consider separate “Customer Assistance Programs”
- Find out if it is legal to charge different rates for low-income or fixed-income customers (in many cases, it is not)

Warning: No one rate structure design fits all utilities, even in this scenario.

Scenario: Water Demands are Decreasing

- Increase base charges and the percent of revenues from fixed charges.
- If using block rates, considering consolidating some of the blocks and/or decreasing the size of the blocks accordingly.

Warning: No one rate structure design fits all utilities, even in this scenario.

Scenario: Want to Encourage Conservation

- Monthly billing
- Lower base charge with no consumption allowance, higher volumetric rates
- Uniform rates, increasing block rates, or budget-based rates.
- Seasonal rates during peak demand season.
- Many, small block sizes and steep differentials in rates between blocks. Low rate for the first block.
- Have a water shortage rate structure

Warning: No one rate structure design fits all utilities, even in this scenario.

Scenario: Have Highly Seasonal Demands

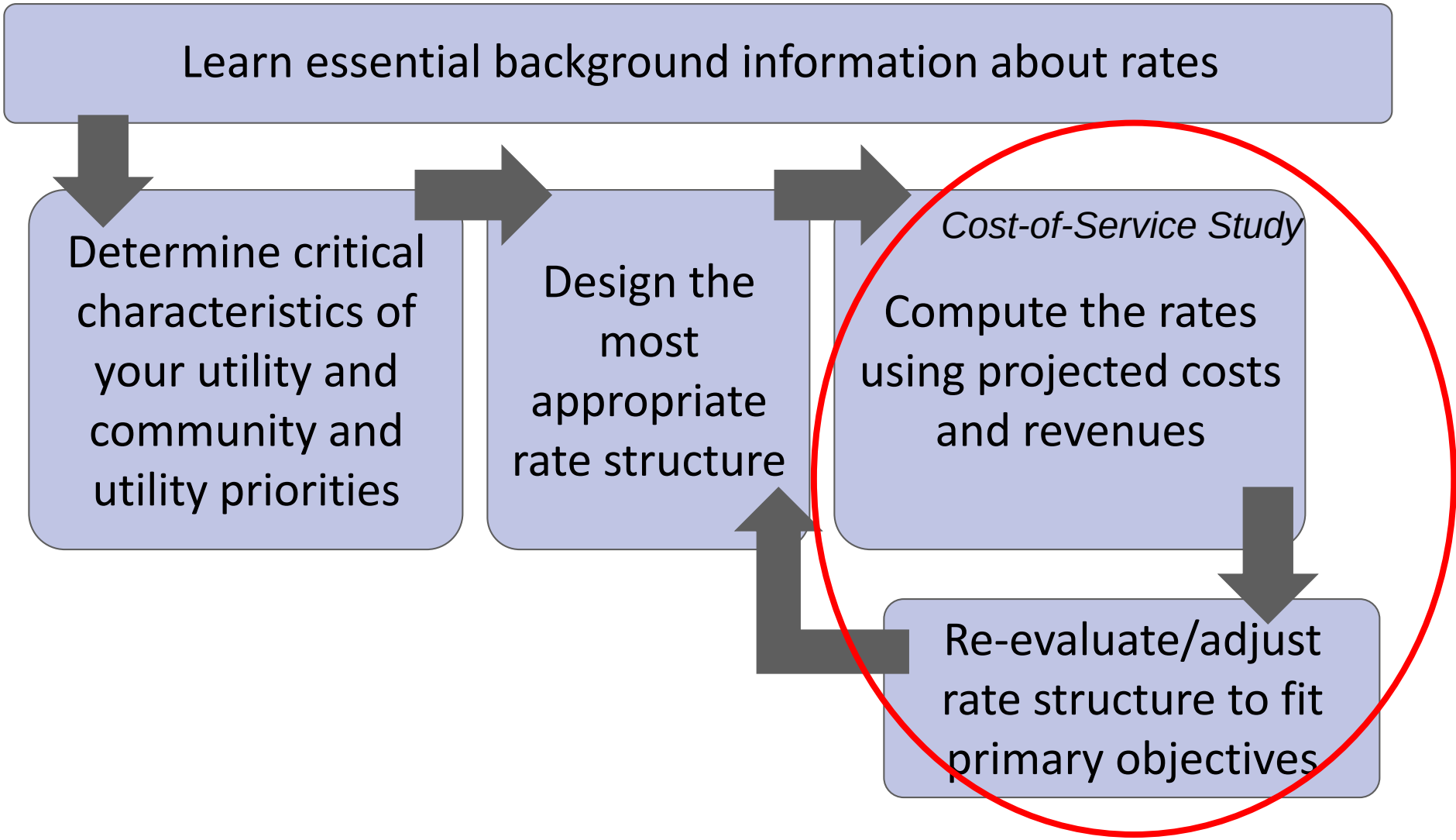
Resorts, second home communities, etc.

- Charge a base charge year-round
- Consider seasonal rate structure: higher rates during high season(s)
- If seasonal demand is due to irrigation water, have a separate irrigation rate structure where rates are higher than standard water rates

Warning: No one rate structure design fits all utilities, even in this scenario.

You Have a General Rate Structure Design in Mind. Now What?

The Process of Setting Rates



Compute the Rates

- Assess your budgeted expenses and allocate them to different customer groups
- Assess water usage patterns and accounts in each of the customer groups
- Attempt to charge rates that would generate revenues from each customer group that is proportional to their allocated expenses
- Resources available

Rate Setting Resources

http://www.awwa.org

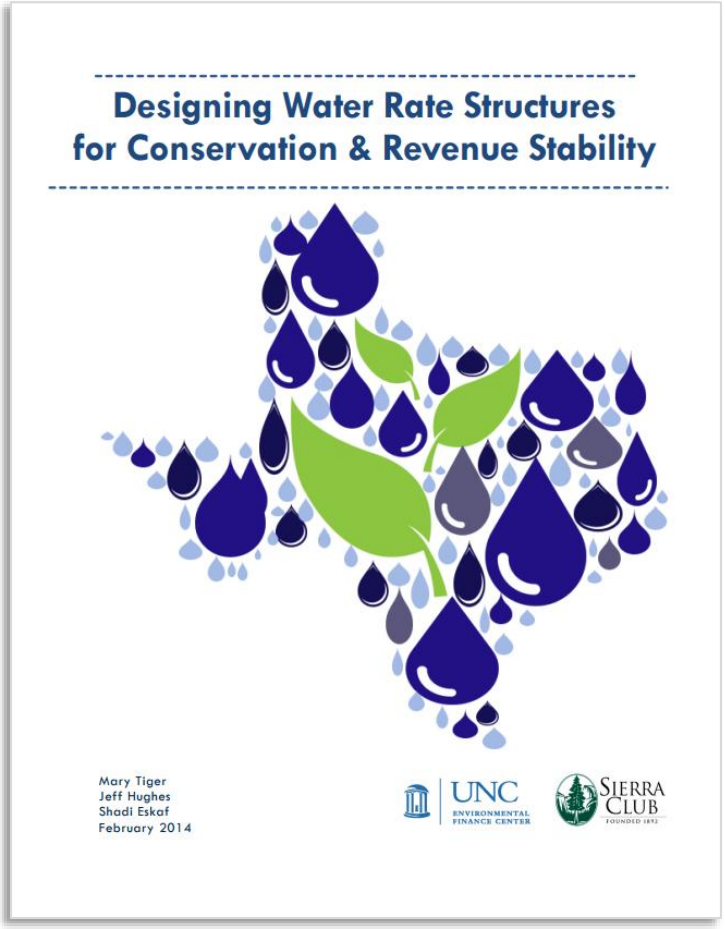
EPA United States Environmental Protection Agency

Setting Small Drinking Water System Rates for a Sustainable Future

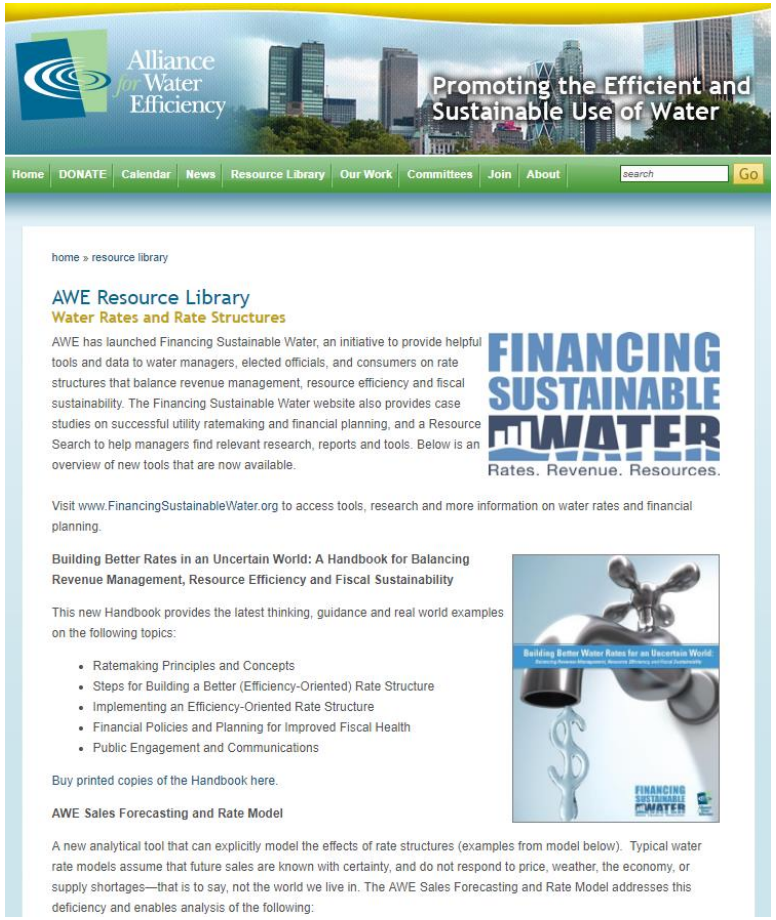
One of the Simple Tools for Effective Performance (STEP) Guide Series

https://www.epa.gov/dwcapacity/resources-setting-small-system-water-rates-0

Setting Rates for Conservation

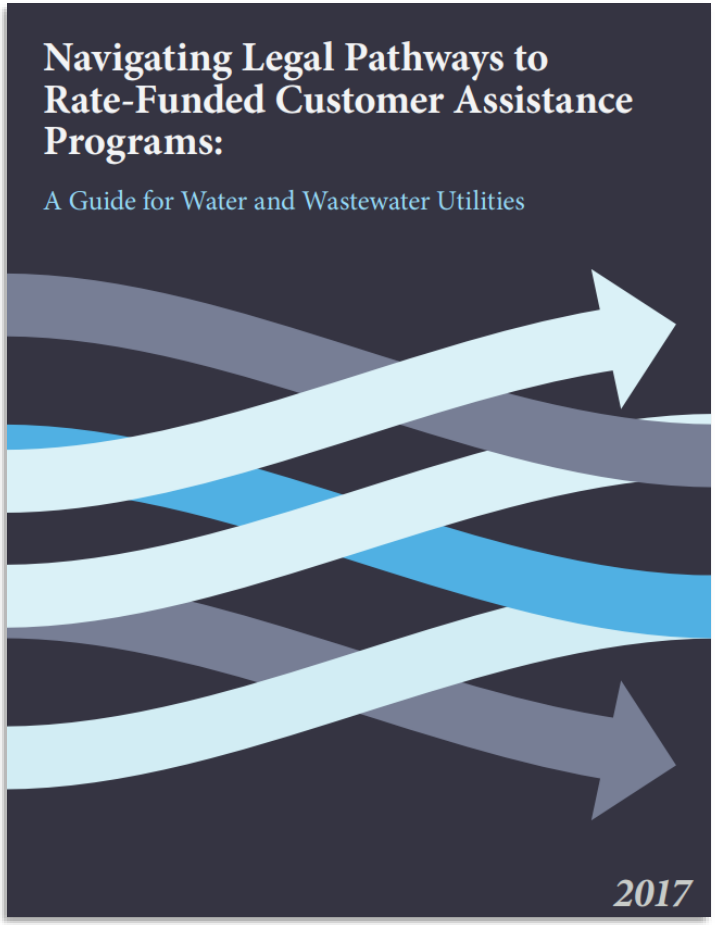


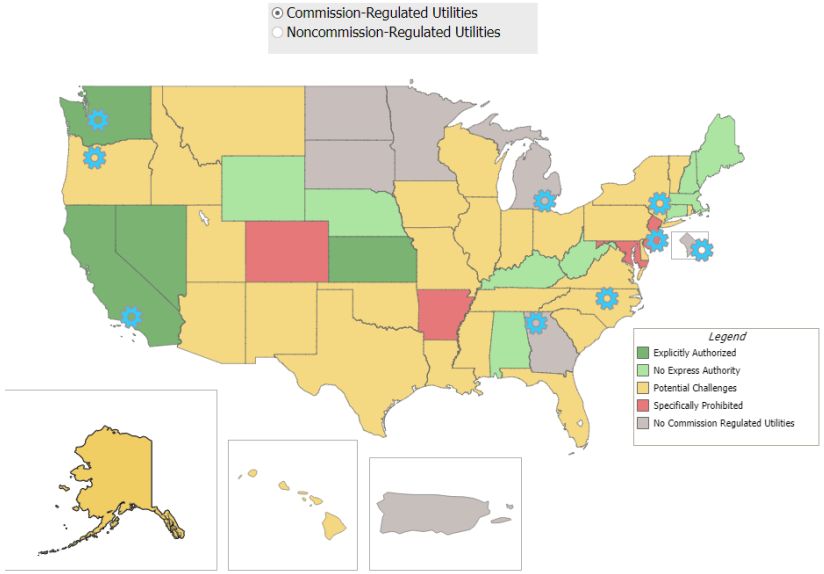
https://efc.sog.unc.edu/reslib/item/designing-water-rate-structures-conservation-and-revenue-stability



http://www.a4we.org

Customer Assistance Programs





https://efc.sog.unc.edu/project/navigating-legal-pathways-rate-funded-customer-assistance-programs

What can do and what can you not do, legally, to help customers with their bills

Various Decision-Making Tools

http://www.efc.sog.unc.edu/project/utility-financial-tools

or http://efcnetwork.org/resources/tools/

The EFC has created several free tools to assist water utilities in addressing the challenges and questions we commonly see in our teaching and advising. These tools cover a broad range of finance and management topics, including rates and revenue, financial benchmarking, affordability, capital finance, communicating with the board, and evaluating loans and grants.

Rates and Revenue

Water and Wastewater Rates Analysis Model

Usethistool to review your rates to ensure projected revenues cover projected expenses. This tool will help you determine whether proposed rates will keep the utility financially self-sufficient for the next few years.

Water Utility Revenue Risk Assessment Tool

Use this tool to assess how much revenues might be affected by changing demand patterns. The tool will help you compare effects on existing rates and on alternative rate structures.

Benchmarking

Financial Sustainability and Rates Dashboards

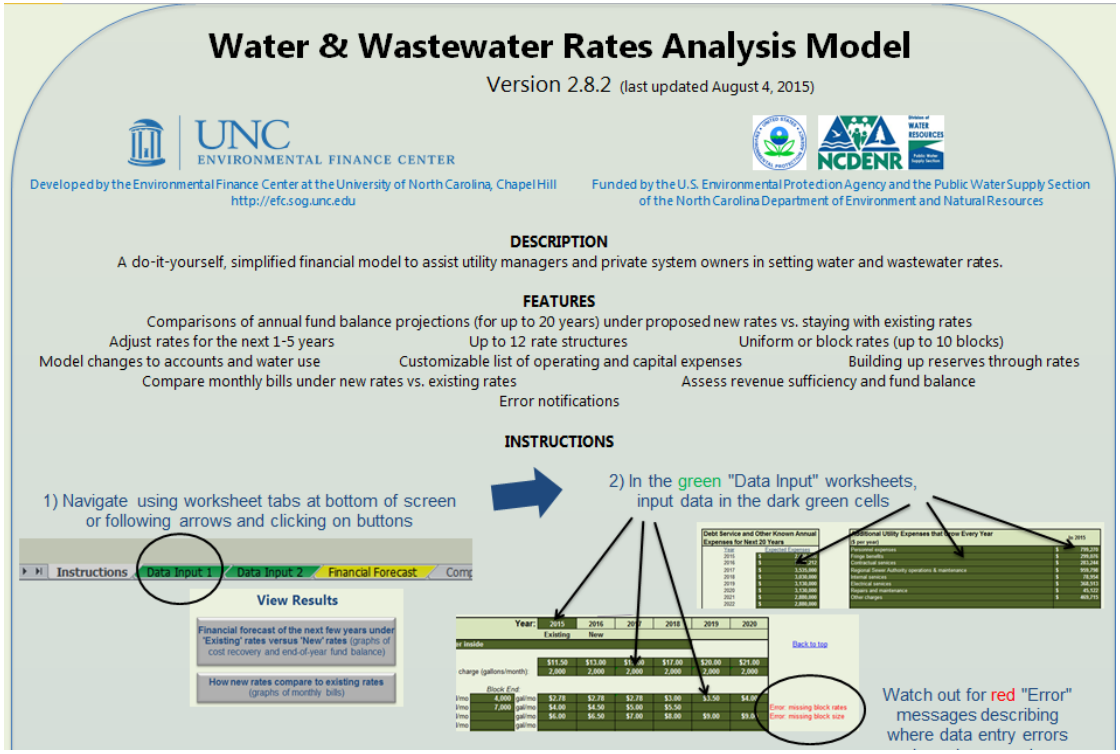
Our flagship tools for water utilities, these interactive dashboards allow you to benchmark your utility's rates against other utilities with similar characteristics. The dashboards also help you evaluate rates, cost recovery, affordability, pricing signal, and other financial benchmarks. Use the dashboards to communicate important information about your rates with your board, the media, and the public.

Water & Wastewater Rates Analysis Model

http://efc.sog.unc.edu or http://efcnetwork.org

Find the most up-to-date version in Resources / Tools

Free, simplified Excel tool allowing you to model and compare two rate structures on your projected fund balance

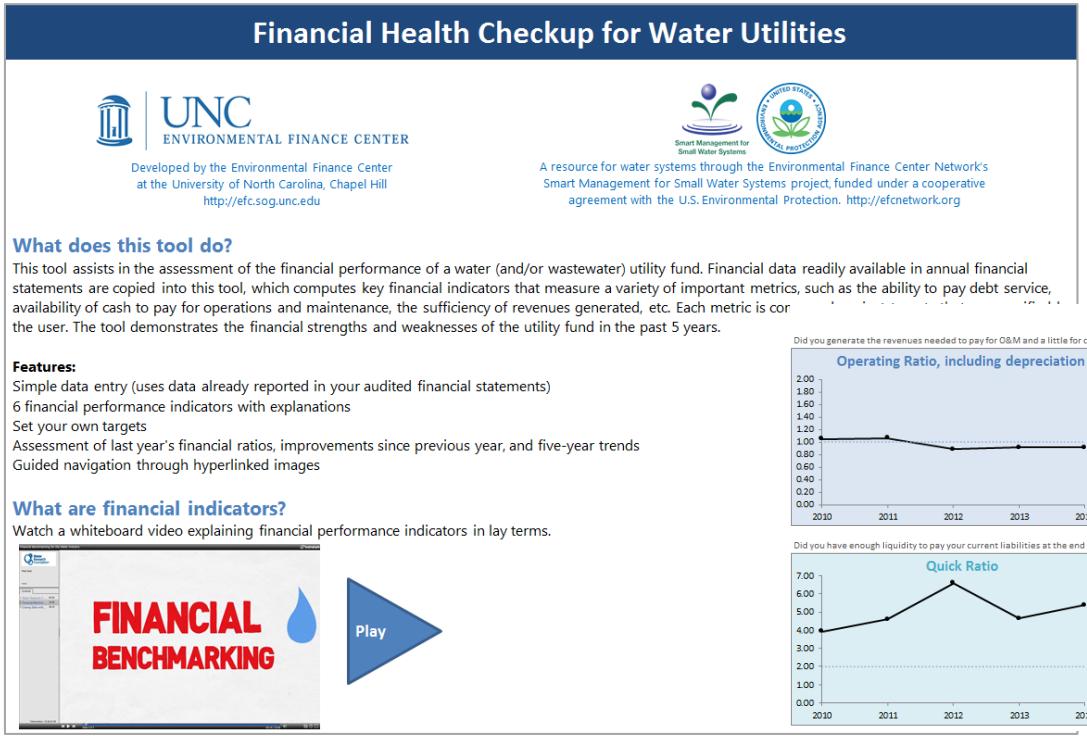


Financial Health Checkup for Water Utilities

http://efc.sog.unc.edu or http://efcnetwork.org

Find the most up-to-date version in Resources / Tools

Free, simplified Excel tool allowing you to track and benchmark financial performance metrics for your water/sewer fund in the past 5 years

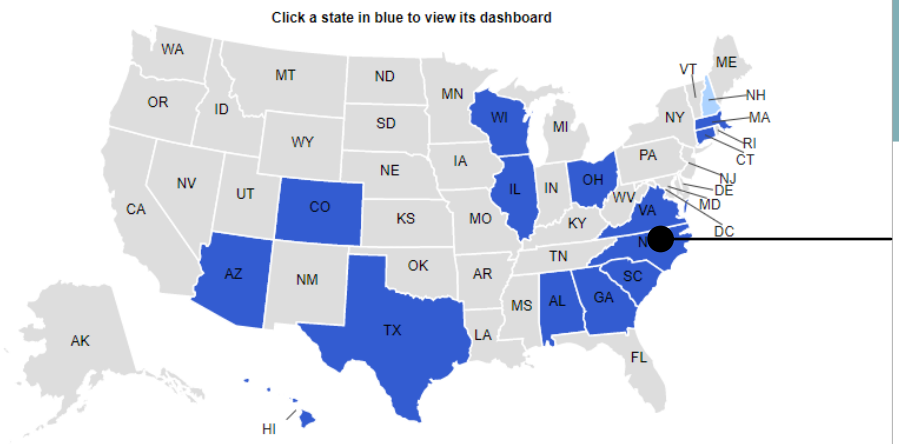


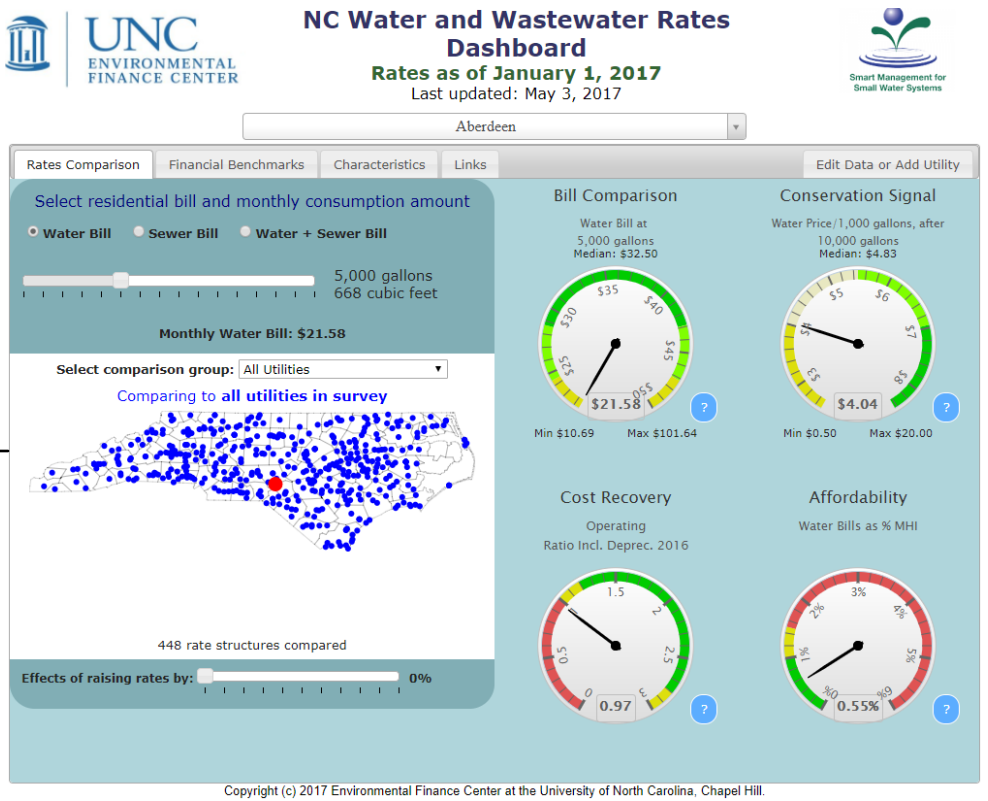
Water & Wastewater Rates Dashboards

http://efc.sog.unc.edu or http://efcnetwork.org

Find the most up-to-date version in Resources / Tools

Free online interactive tools allowing hundreds of utilities to compare and benchmark their rates, financial performance, and other metrics





Subscribe to Keep Up-to-Date with the *Environmental Finance* Blog

http://efc.web.unc.edu

Blog posts include topics on:

- Declining demands
- Increasing rates
- Financial performance indicators
- Conservation pricing
- Debt
- What's wrong with %MHI
- Affordability
- Financial strategies
- Communication strategies
- Inflation for cost of capital
- And much more!

10 Statistically-Proven Tips for

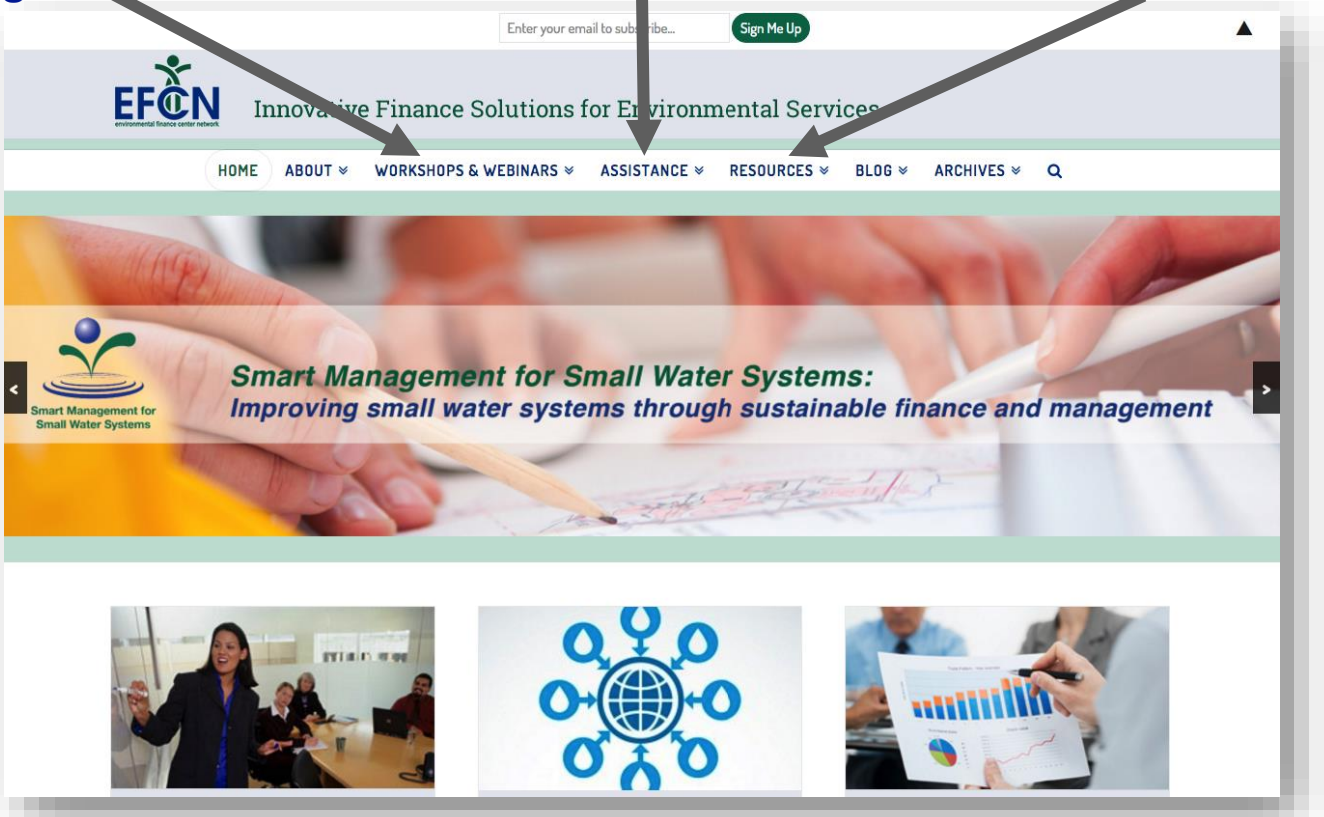
Small water systems

www.EFCNetwork.org

Workshops, webinars, and recordings

Sign up for free in-depth (multi-day or multi-hour) direct assistance

Collection of resources for small water systems (tools, guides)



Free, thanks to a cooperative agreement with the U.S. E.P.A.

Thank you.

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