Smart Management for Small Water Systems

Financial Tools for Small Drinking Water Systems

Stacey Isaac Berahzer
Dover, DE
May 3, 2016

EFCN environmental finance center network

American Water Works Association

UNC ENVIRONMENTAL FINANCE CENTER

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

UNC ENVIRONMENTAL FINANCE CENTER

UNC SCHOOL *of* GOVERNMENT

Dedicated to enhancing the ability of governments and other organizations to provide environmental programs and services in fair, effective, and financially sustainable ways through:

- Applied Research
- Teaching and Outreach
- Program Design and Evaluation

How you pay for it matters

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 Project 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 EFCN Project Team

- Environmental Finance Center at The University of North Carolina at Chapel Hill
- EFC West
- Environmental Finance Center at Wichita State University
- New England Environmental Finance Center at University of Southern Maine
- Southwest Environmental Finance Center
- Syracuse University Environmental Finance Center

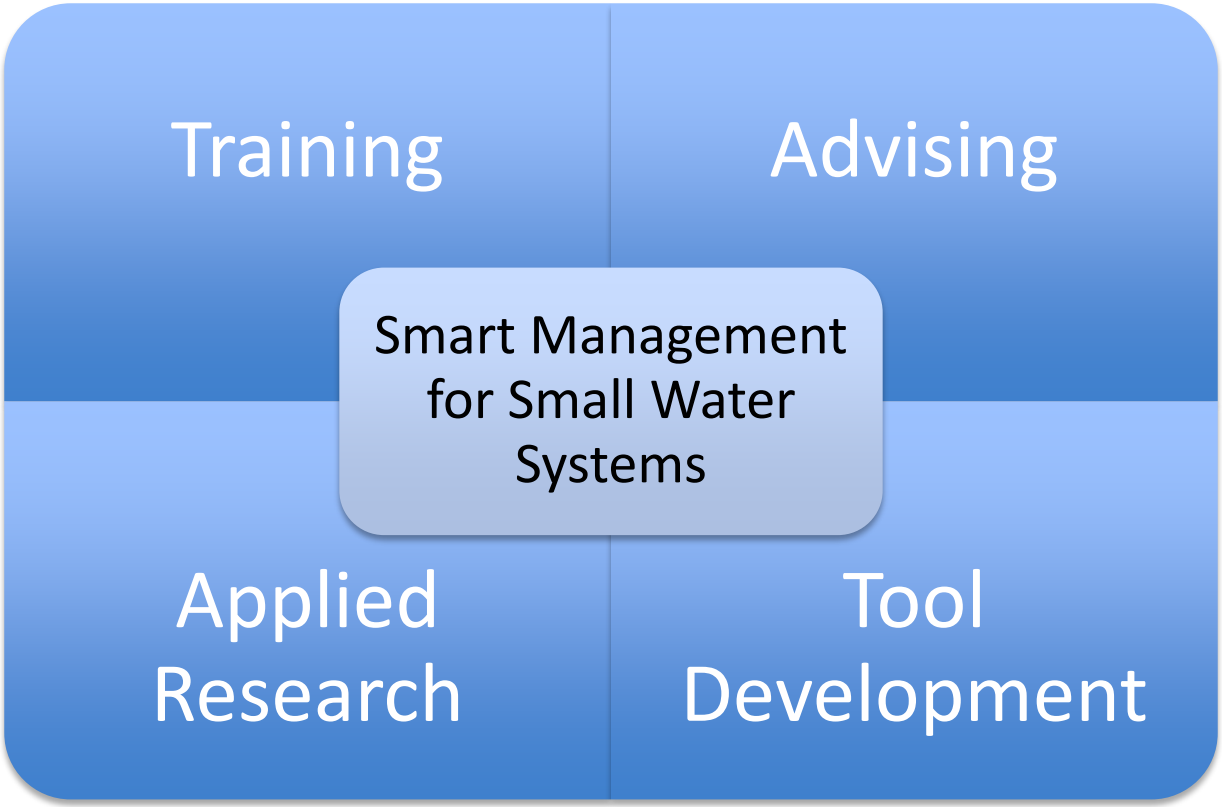
Areas of Expertise

- Asset Management
- Energy Management Planning
- Financial Management
- Leadership Through Decision-making and Communication
- Managing Drought
- Water Loss Reduction
- Collaborating with Neighboring Communities
- Multi-funding
- Water Conservation
- Management and Finance 101
- Climate Resiliency
- Workforce Development

Session Objectives

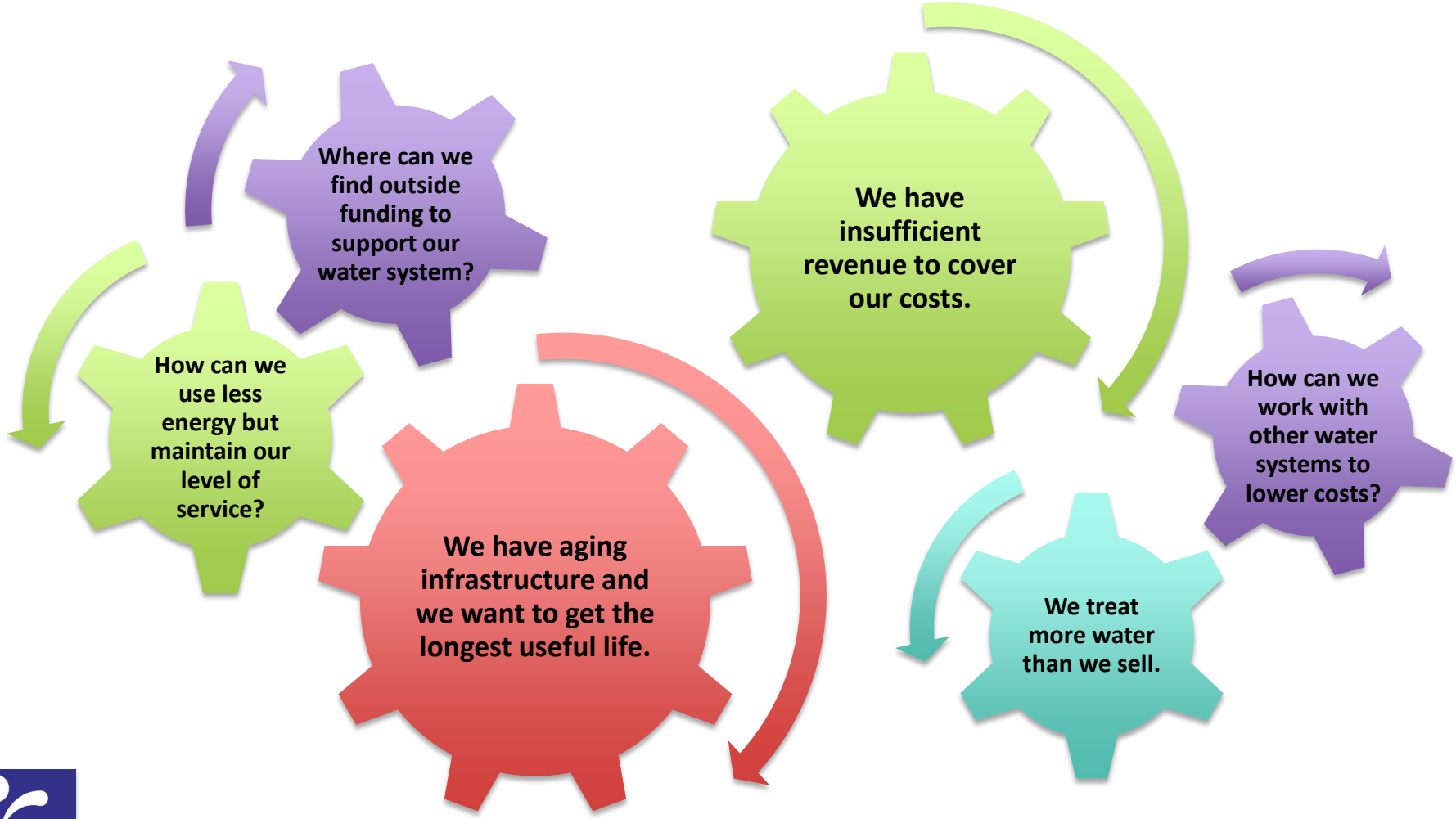
- Understand your system's current financial condition
- Learn how to plan for and finance your water system now and into the future

What we offer



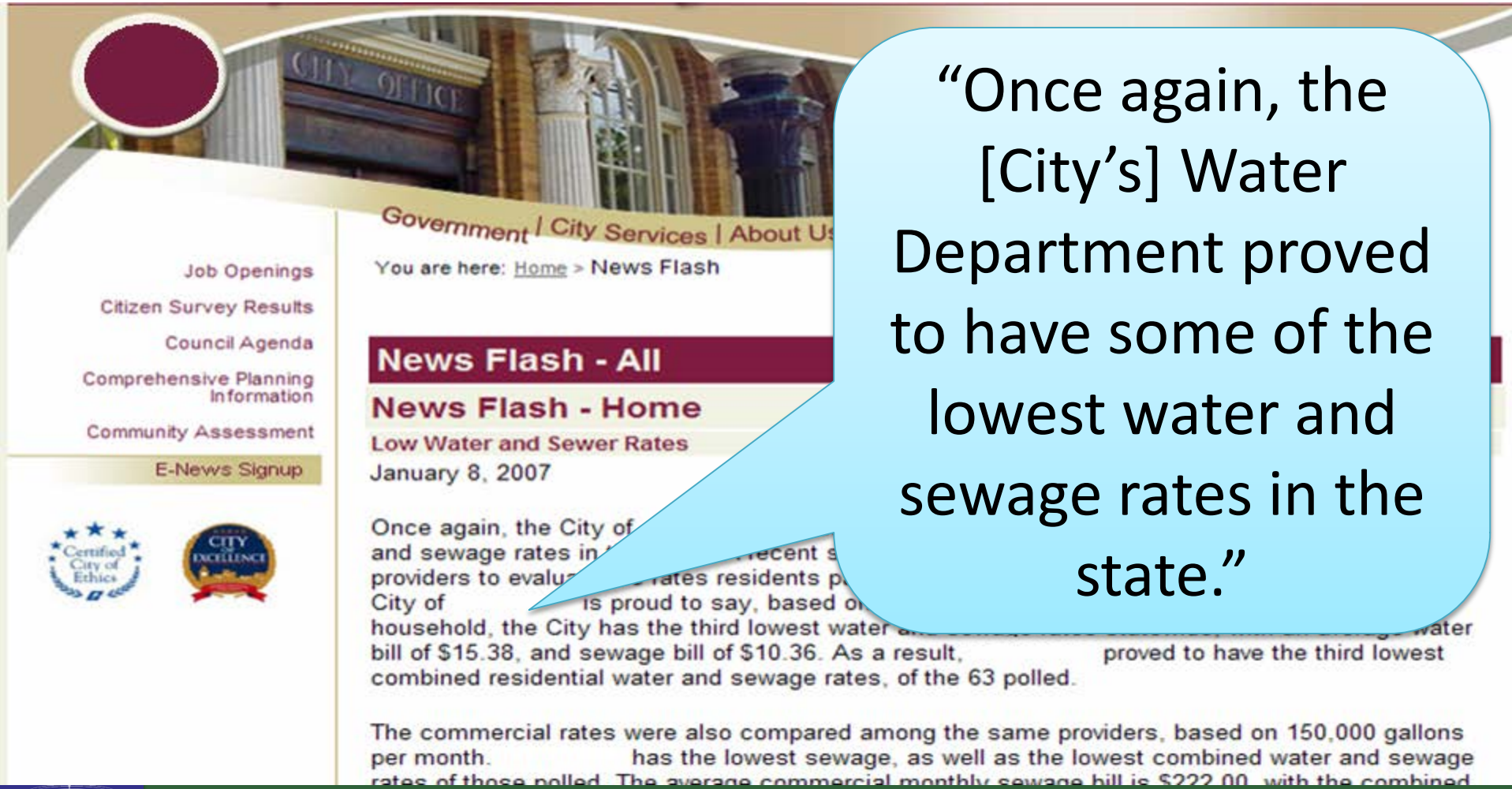
Individualized technical assistance, workshops, small group support, webinars, eLearning, online tools & resources, blogs

Our tools are designed to meet your challenges:



Rate Setting - How much money do you need?

Systems Love Low Rates, but...



"Once again, the [City's] Water Department proved to have some of the lowest water and sewage rates in the state."

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?

Learn essential background information about rates

Determine critical characteristics of your utility and community

Design the most appropriate rate structure

Cost-of-Service Study

Compute the rates using projected costs and revenues

Re-evaluate/adjust rate structure to fit primary objectives

The Process of Setting Rates

Basic Principles

- Aim at full cost pricing
- Set equitable rates
- Share rate structure with customers
- Rate should be easy to understand
- Rates should be examined annually
- Consider fixed costs vs. variable costs
- Allow for reserve account(s)
- *Promote water conservation?*
- *Promote economic development?*

“Full Cost Pricing”

- Operations & maintenance expenditures
- Taxes and accounting costs
- Contingencies for emergencies
- Principal and interest on long-term debt
- Reserves for capital improvement
- Source water protection

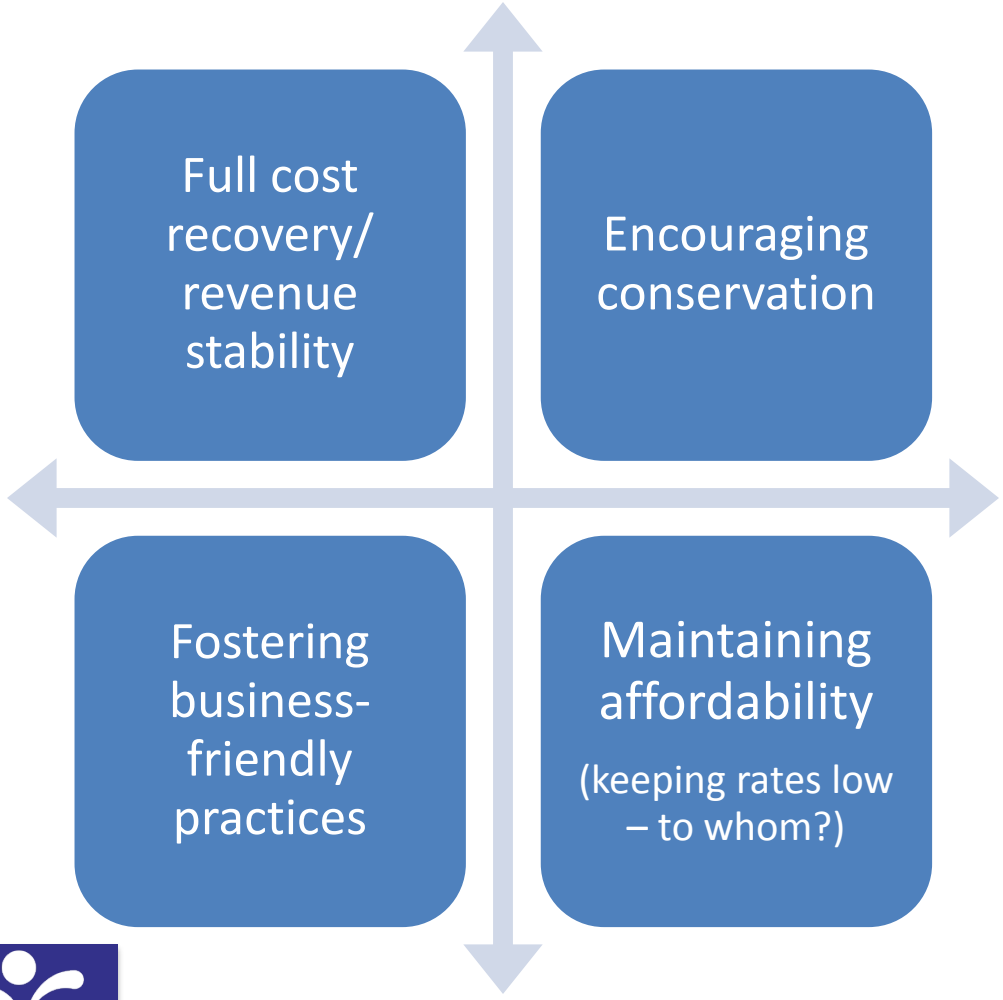
Grants Aren't Completely Free Money

- Application for the grant can be expensive – staff time and money
- Applications can take months to process
- Often lots of strings attached
- Often require a percentage match
- Lots of competition
- Difficult to sustain

Rates & Monthly Charges

- What type of rates and monthly charges do you levy?
  - Charges based on metered usage?
  - Flat monthly charges?
  - Something else?
  - Nothing?

Rank Your 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.

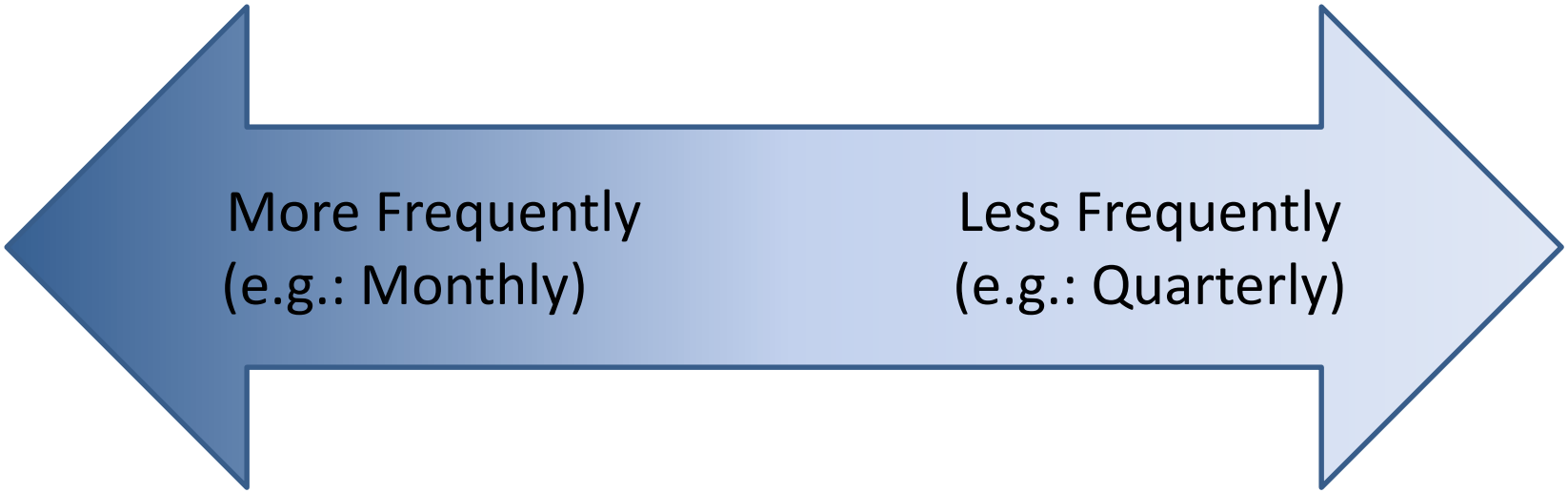
What are your rate setting objectives?

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) Drought Rates
8. Frequency of rate changes

Mark your Customer Classes on your sheet

Billing Period

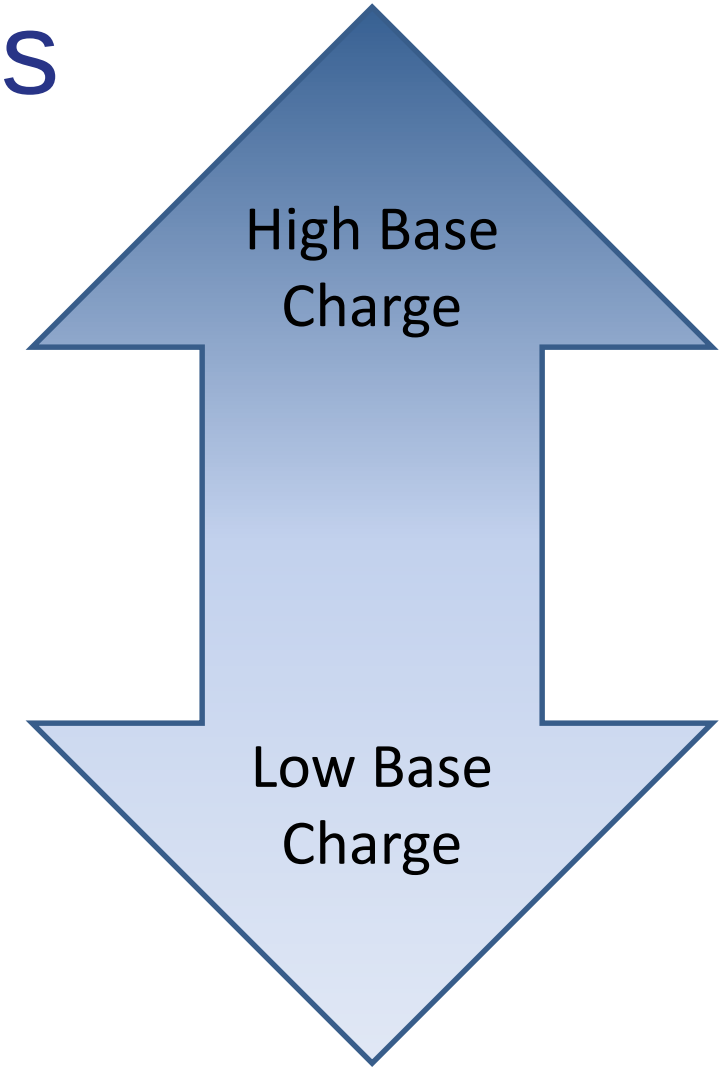


Suggestion: Use a monthly billing period if you can afford it

Mark your Billing Period on your sheet

Base Charges

Suggestion: Smaller utilities should lean towards higher base charges



Mark your Base Charge on your sheet

Consumption Allowance with Base Charge

Do not include any (0 gallons)	Include some amount (e.g. 1,000 gal/mo)	Include high amount (e.g. 3,000 gal/mo)

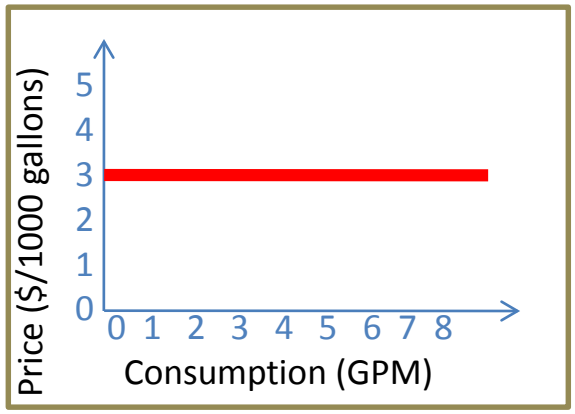
Suggestion: For systems with low base charges, do not include any consumption allowance. For systems with high base charges but wish to encourage conservation, keep consumption allowance low, if any.

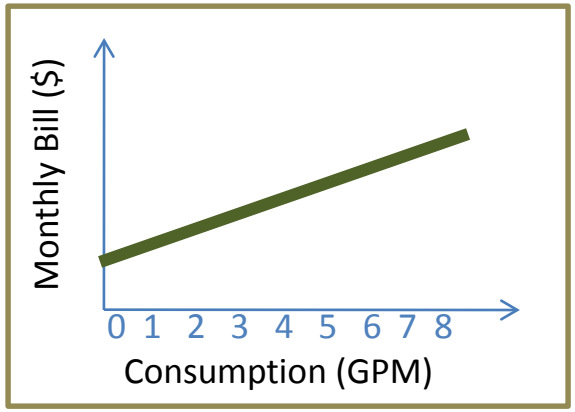
Mark your Consumption Included in the Base Charge on your sheet

Volumetric Rate Structure

Uniform ("Flat") Rates

- Fair and simple

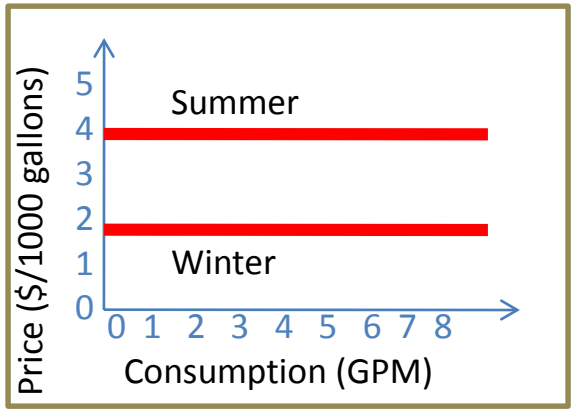


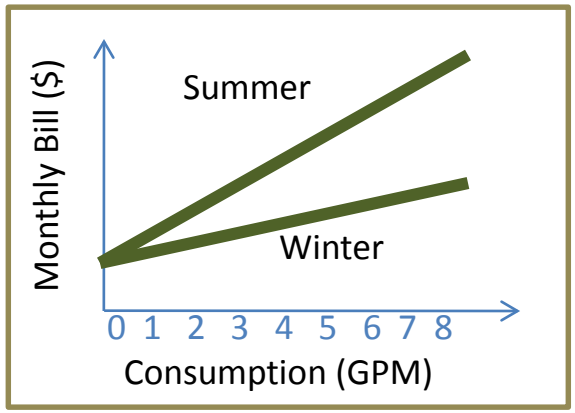


Volumetric Rate Structure

Seasonal (Uniform) Rates

- Conservation-oriented, good for seasonal communities

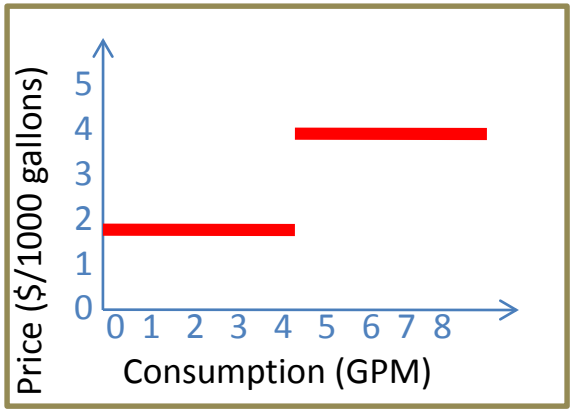


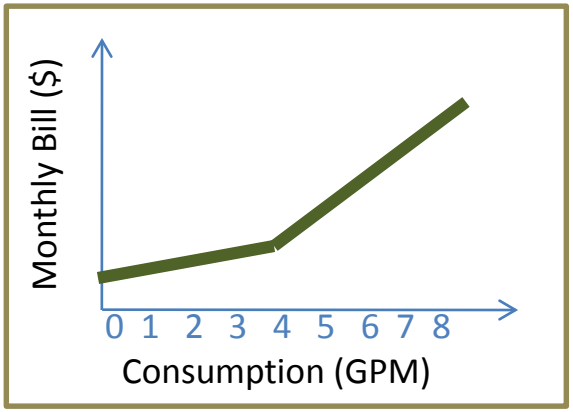


Volumetric Rate Structure

Increasing Block Rates

- Conservation-oriented
- Consider large families

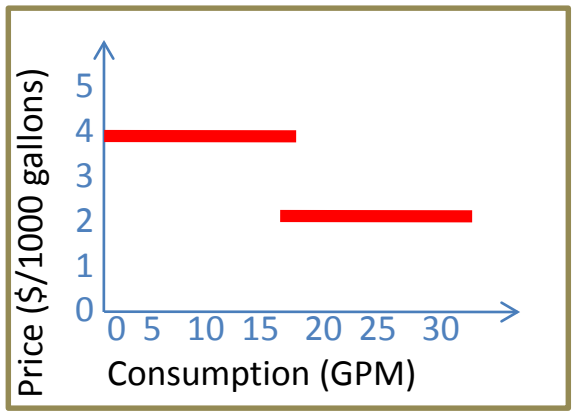


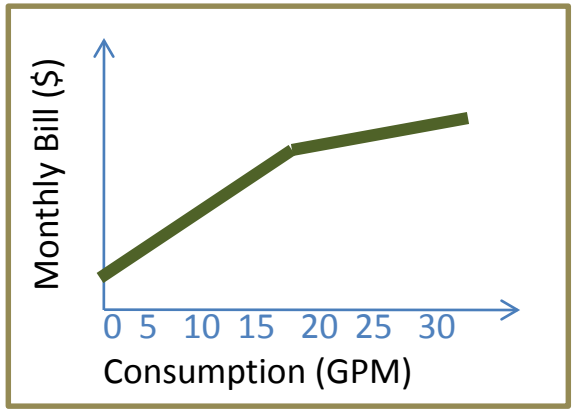


Volumetric Rate Structure

Decreasing Block Rates

- Provide price break for large users (e.g.: commercial)
- Do not use for residential





Mark your Rate Structure on your sheet

(If Applicable) Block Designs

For block rate structures to be effective:

- Decide on the correct number of blocks
- Decide on where the blocks should end/start
- Set significant rate differentials between blocks

(If Applicable) Block Designs

For block rate structures to be effective:

- Keep in mind your base charge and consumption allowance
- Meter reading must be punctual, and meters must be replaced frequently
- Think about large families

If you have block rates, mark your Number of Blocks on your sheet

(Optional) Drought Rates

- Prepare for drought in advance: create an ordinance *in advance* to give the utility the ability to raise rates temporarily during a water shortage scenario (sometimes called “drought surcharges”).

Mark whether your have Drought Rates on your sheet

How Rates and Usage Interact

Set rates based on projected water use

Raising rates lowers water use

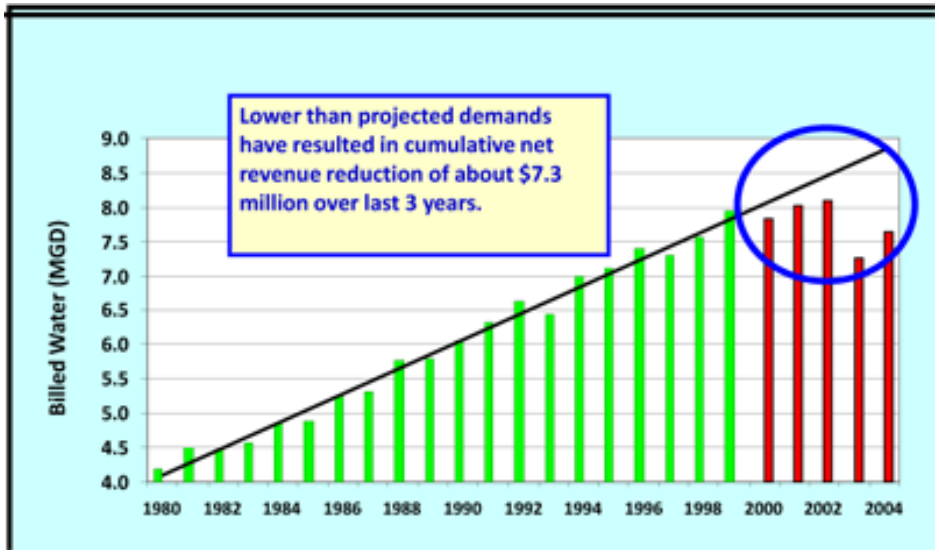
Rule of thumb: water use declines ~2-6% as rates increase 10%

Background Information:
How Rates and Usage Interact

Public Perception:

Source: Fayetteville Observer 2/6/2004

Utility Reality:

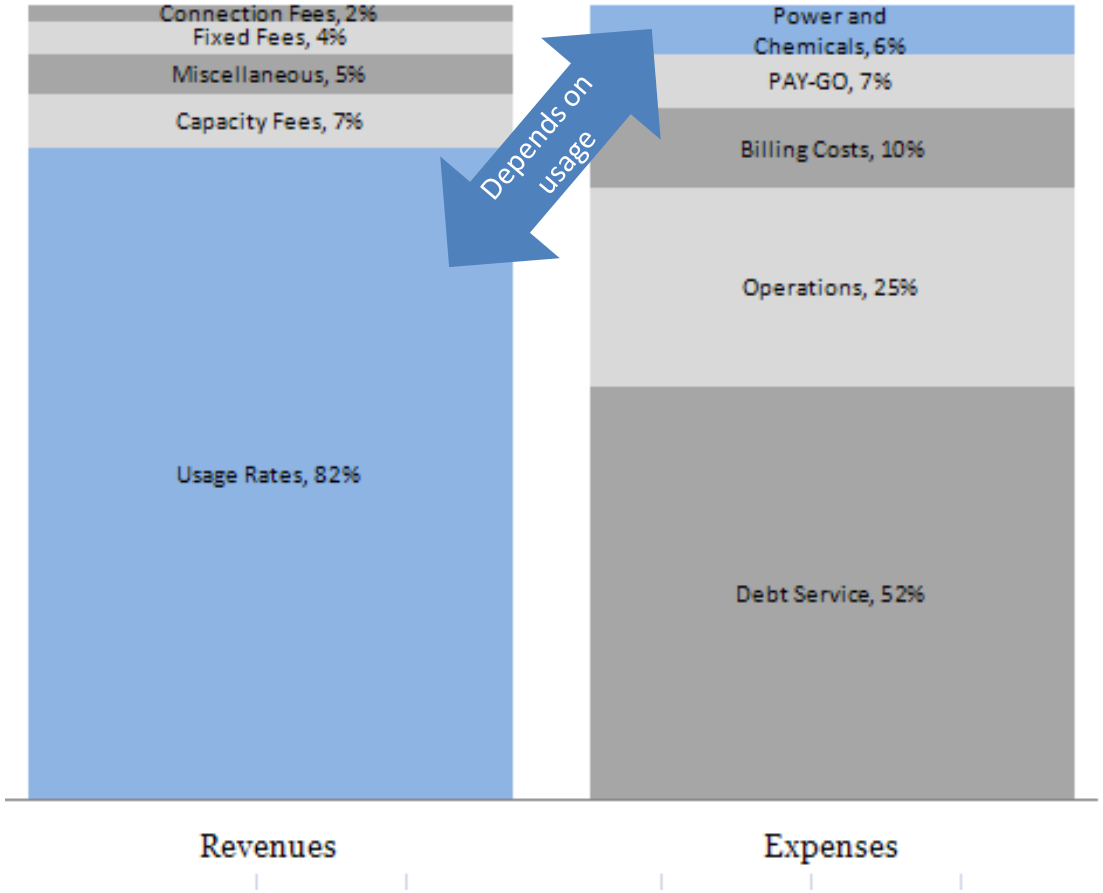


Source: Orange Water & Sewer Authority

Why Does this Happen?

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 customers conserve, revenues drop significantly but not costs.

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



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

Frequency of Rate Changes

- 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
- Perhaps less politically charged option: Raise rates each year automatically based on inflation

Mark your Frequency of Rate Review on your sheet

Frequency of Rate Changes

- *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.*

Look at your rate setting objectives. Look at your rate structure. Do they line up? What changes do you want to consider?

Scenario: Rural Water Utility With Naturally High Costs and Excess Capacity, Wants to Maintain Affordability

1. Customer class: possibly create separate residential class.
2. Billing period: use monthly.
3. Base charge: if majority of customers use little water, charge fair base charge and include allowance. Otherwise, low base charge, and shift high rates to high volume users.
4. Consumption allowance: if including, set at a lifeline amount (~2,000 gallons/month).
5. Volumetric rate structure: probably use uniform
6. (If applicable) Block design: if using, first block at least 4,000 GPM, depending on your customers' consumption.
7. (Optional) Temporal adjustments: none.
8. Frequency of rate changes: annual.

Note: Set up a customer assistance program: http://efc.sog.unc.edu/reslib/item/customer-assistance-program-costing-tool-north-carolina.

Water and Sewer Rates Analysis Model

Free, rate-setting tool using only MS Excel, developed by the Environmental Finance Center at UNC.

Water and Sewer Rates Analysis Model

UNC ENVIRONMENTAL FINANCE CENTER

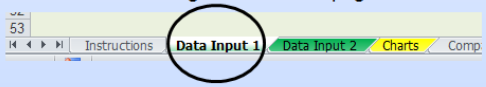
Version 2.7 (updated March 24, 2014)

20-year fund balance estimates under proposed new rates vs. existing rates: compare side-by-side

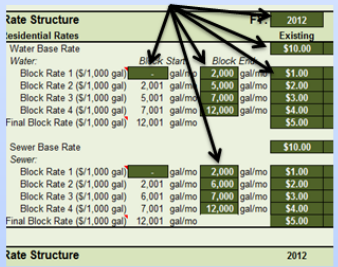
Uniform or block rates *Residential and non-residential rates* *Changes to customers and demands*

INSTRUCTIONS

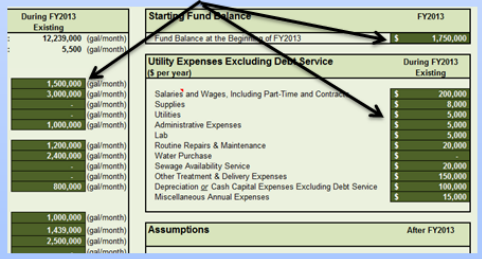
1) Click on tabs at bottom of screen to navigate to different pages.



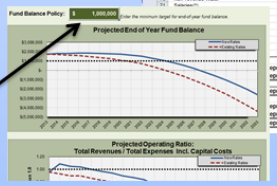
2) On the "Data Input 1" tab enter current and new rate details in the dark green cells.



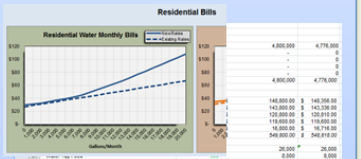
3) On the "Data Input 2" tab enter current consumption levels, utility finances, and other assumptions in the dark green cells.



4) On the "Charts" tab, see projections of the End of Year Fund Balance, and input a Fund Balance Policy in the dark green cell at the top of the page.



5) Compare new rates to existing rates in "Compare Monthly Bills" and their impacts on costs and revenues in "Existing Rates" or "New Rates".



Note: This tool models the impact on a utility's fund balance of a one-time increase in rates, rather than an ongoing series of rate increases.
*Update this tool **every year** and do not rely on analysis conducted more than one year ago.*

Funded by the Public Water Supply Section, Division of Water Resources at the NC Department of Environment and Natural Resources, and the U.S. Environmental Protection Agency

Download the latest version at http://efc.sog.unc.edu. Find it in Resources / Tools.

Tool development was funded by the Public Water Supply Section of DWR/ NCDENR and partly by the USEPA.

http://efc.sog.unc.edu/reslib/item/water-sewer-rates-analysis-model

Data Input 1

Rate_Analysis-version2 - Microsoft Excel

Water and Sewer Rates Analysis Model. Version 2.0

Inputs: Rates and Rate Structures

Input current rate and account information in the dark green cells to analyze projected cashflows from rate changes.

Data Input Color Explanation:

White:	Data to be entered, can be changed
Black:	Automatically calucated data; do not change!
Red:	Important Results

cubic feet to gallons converter

100 cubic feet = 748 gallons

$/ccf to $/1000 gallons converter

$ 1.00 /hundred cubic feet = $1.34 /1,000 gallons

Input block sizes (state and end) in gallons/month
Input rates in $/1000 gallons
Use the converters above for converting from cubic feet units

Rate Structure — Residential Rates	FY: 2012 Existing	2013 New
Water Base Rate	$10.00	$12.00
Water:		*End:*
Block Rate 1 ($/1,000 gal)	$1.00	$1.25 gal/mo
Block Rate 2 ($/1,000 gal)	$2.00	$2.25 gal/mo
Block Rate 3 ($/1,000 gal)	$3.00	$3.25 gal/mo
Block Rate 4 ($/1,000 gal)	$4.00	$4.25 gal/mo
Final Block Rate ($/1,000 gal)	$5.00	$5.25
Sewer Base Rate	$10.00	$12.00
Sewer:		
Block Rate 1 ($/1,000 gal)	$1.00	$1.25 gal/mo
Block Rate 2 ($/1,000 gal)	$2.00	$2.25 gal/mo
Block Rate 3 ($/1,000 gal)	$3.00	$3.25 gal/mo
Block Rate 4 ($/1,000 gal)	$4.00	$4.25 gal/mo
Final Block Rate ($/1,000 gal)	$5.00	$5.25

EFC: If your utility has uniform rates, use the input box for "Block Rate 1"

EFC: Input Final Block Rate here regardless of the number of blocks your utility uses.

Rate Structure — Commercial Rates	2012 Existing	2013 New
Water Base Rate	$10.00	$12.00
Water:		*End:*
Block Rate 1 ($/1,000 gal)	$1.00	$1.25 gal/mo
Block Rate 2 ($/1,000 gal)	$2.00	$2.25 gal/mo
Block Rate 3 ($/1,000 gal)	$3.00	$3.25 gal/mo
Block Rate 4 ($/1,000 gal)	$4.00	$4.25 gal/mo
Final Block Rate ($/1,000 gal)	$5.00	$5.25
Sewer Base Rate	$10.00	$12.00
Sewer:		
Block Rate 1 ($/1,000 gal)	$1.00	$1.25 gal/mo
Block Rate 2 ($/1,000 gal)	$2.00	$2.25 gal/mo
Block Rate 3 ($/1,000 gal)	$3.00	$3.25 gal/mo
Block Rate 4 ($/1,000 gal)	$4.00	$4.25 gal/mo
Final Block Rate ($/1,000 gal)	$5.00	$5.25

EFC: If your utility has uniform rates, use the input box for "Block Rate 1"

EFC: Input Final Block Rate here regardless of the number of blocks your utility uses.

Rate Structure — Irrigation Rates	2012 Existing	2013 New
Irrigation Base Rate	$0.00	$0.00
Irrigation:		*End:*
Block Rate 1 ($/1,000 gal)	$3.50	$3.50 gal/mo
Block Rate 2 ($/1,000 gal)		gal/mo
Block Rate 3 ($/1,000 gal)		gal/mo
Block Rate 4 ($/1,000 gal)		gal/mo
Final Block Rate ($/1,000 gal)		

EFC: If your utility has uniform rates, use the input box for "Block Rate 1"

EFC: Input Final Block Rate here regardless of the number of blocks your utility uses.

Number of Accounts	2012 Existing	Growth Rate:
Residential Water	3000	0.50%
Residential Sewer	2500	0.50%
Commercial Water	200	0.50%
Commerical Sewer	80	0.50%
Irrigation Water	3000	0.50%

Tap Fees	2012 Existing	2013 New
Average Sewer Tap Fee	$2,000.00	$2,400.00
Average Water Tap Fee	$500.00	$600.00
Average Irrigation Tap Fee	$2,200.00	$2,500.00

Miscellaneous	2012 Existing
Uncollected Bills	8.0%
Non-revenue Water	15.0%

Funded by the NC Department of Environment and Natural Resources and the U.S. Environmental Protection Agency

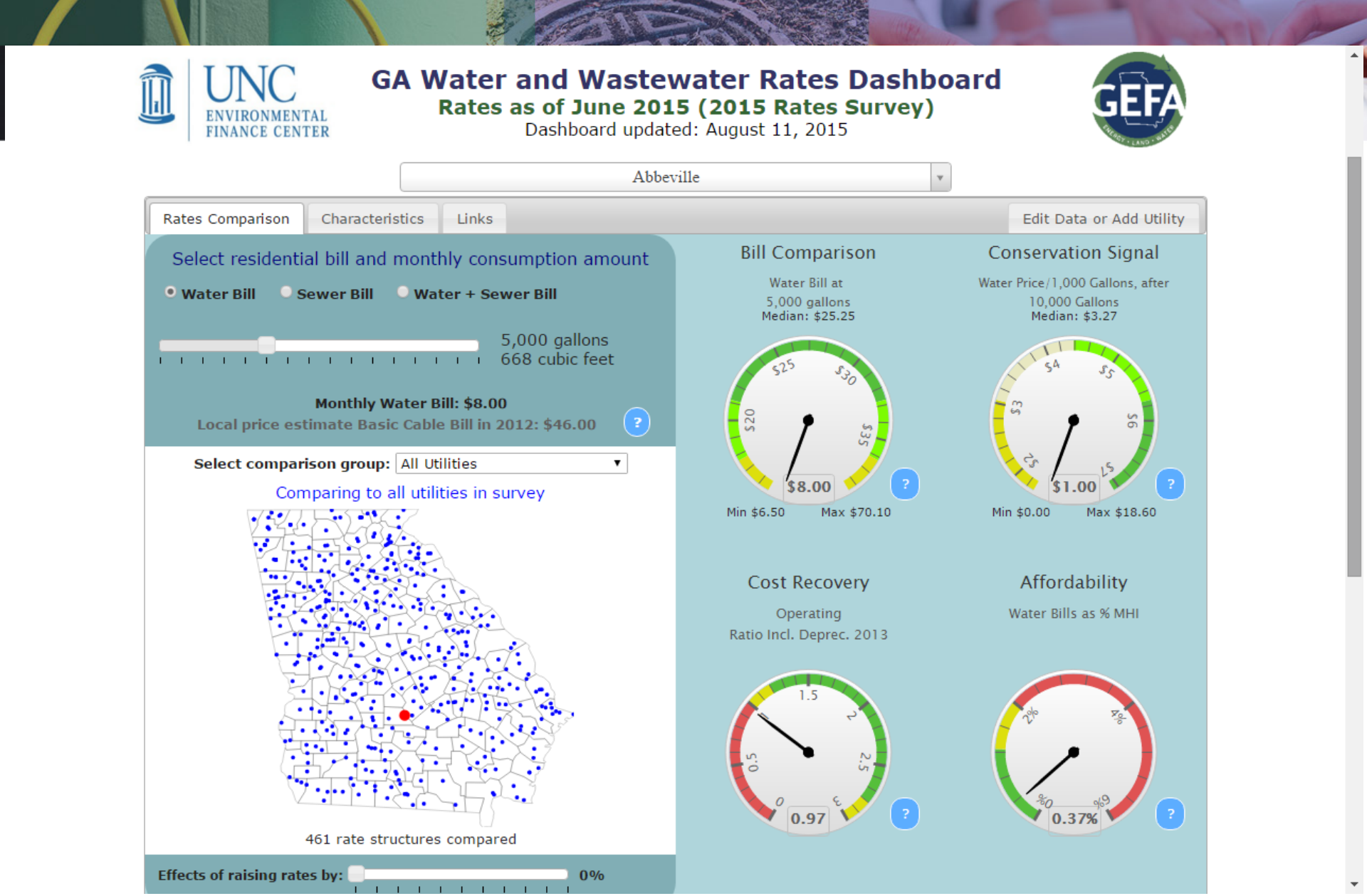
Instructions | Data Input 1 | Data Input 2 | Charts | Fund Balance - Existing Rates | Fund Balance - New Rates

Ready | Calculate | Scroll Lock

Water and Sewer Rates Analysis Model - Results

- Results are Excel Spreadsheet with:
  - The Fund Balance Under **Existing** Rates
  - The Fund Balance Under **Proposed** Rates

…Projected for the next 20 years



Example of a Rates Dashboard from One State

Can You Sleep at Night?

Is your system self sufficient?	Operating Ratio
Are you able to cover your debt service after paying for your day to day operations?	Debt Service Coverage Ratio
If your customers stop paying their bills, how long can you maintain operations?	Days Cash on Hand
Can your system meet its short term obligations?	Current Ratio
How much of your system's expected life has already run out?	Asset Depreciation

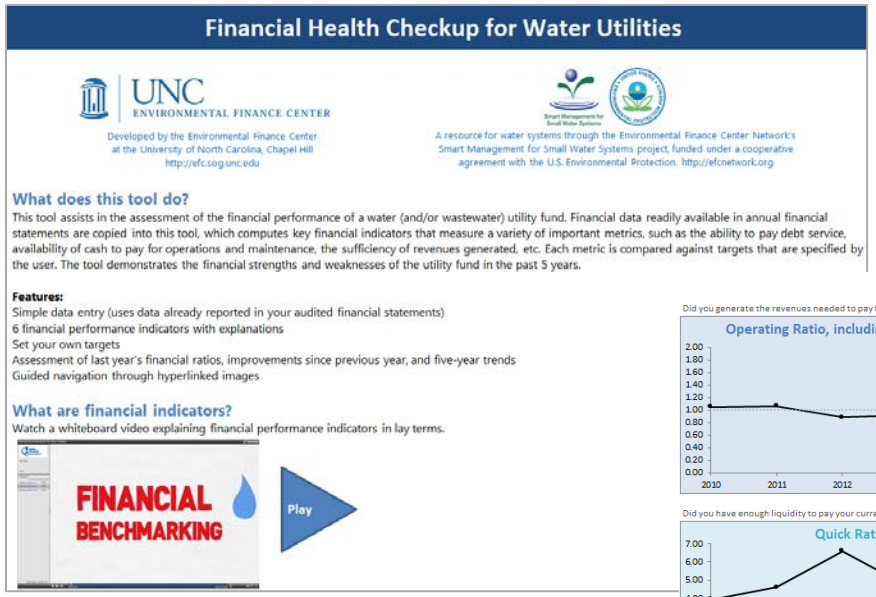
Whiteboard Video:
Financial Benchmarking for Water Utilities

http://www.waterrf.org/Pages/Projects.aspx?PID=4366

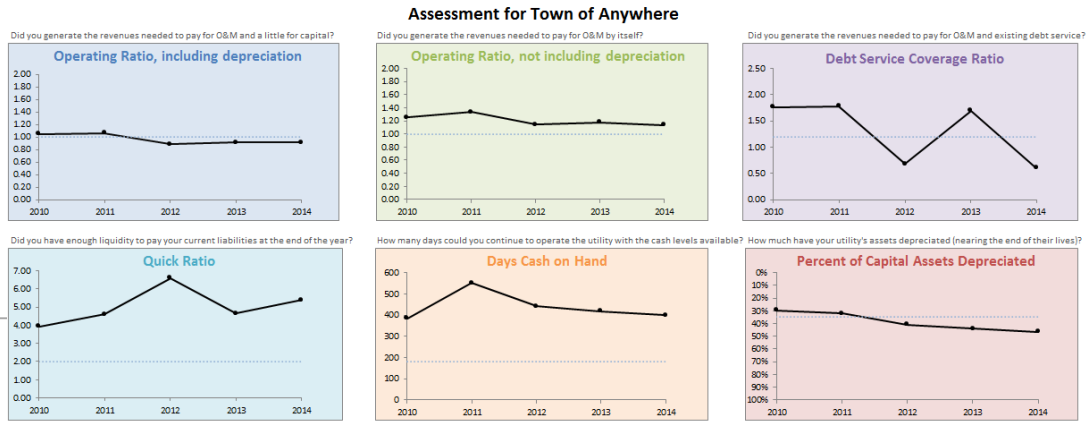
Financial Health Checkup for Water Utilities

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

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



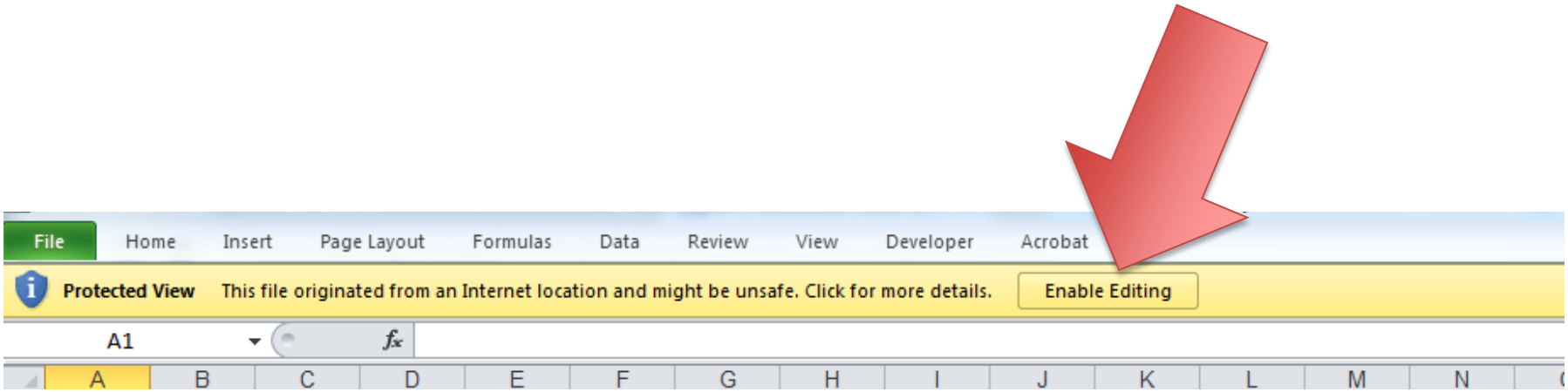
Excel®- based tool
Free to use



Created by the Environmental Finance Center at the University of North Carolina, Chapel Hill's School of Government

A resource for water systems from the EFCN's Smart Management for Small Water Systems project funded under a cooperative agreement with the U.S. E.P.A.

Tip: when you first use this file after downloading from our website, click on “Enable Editing” at the top



Why Care About This?

- Funders and ratings agencies care about this

- As you think about the future needs of your system, you have to know where you are starting from

So....

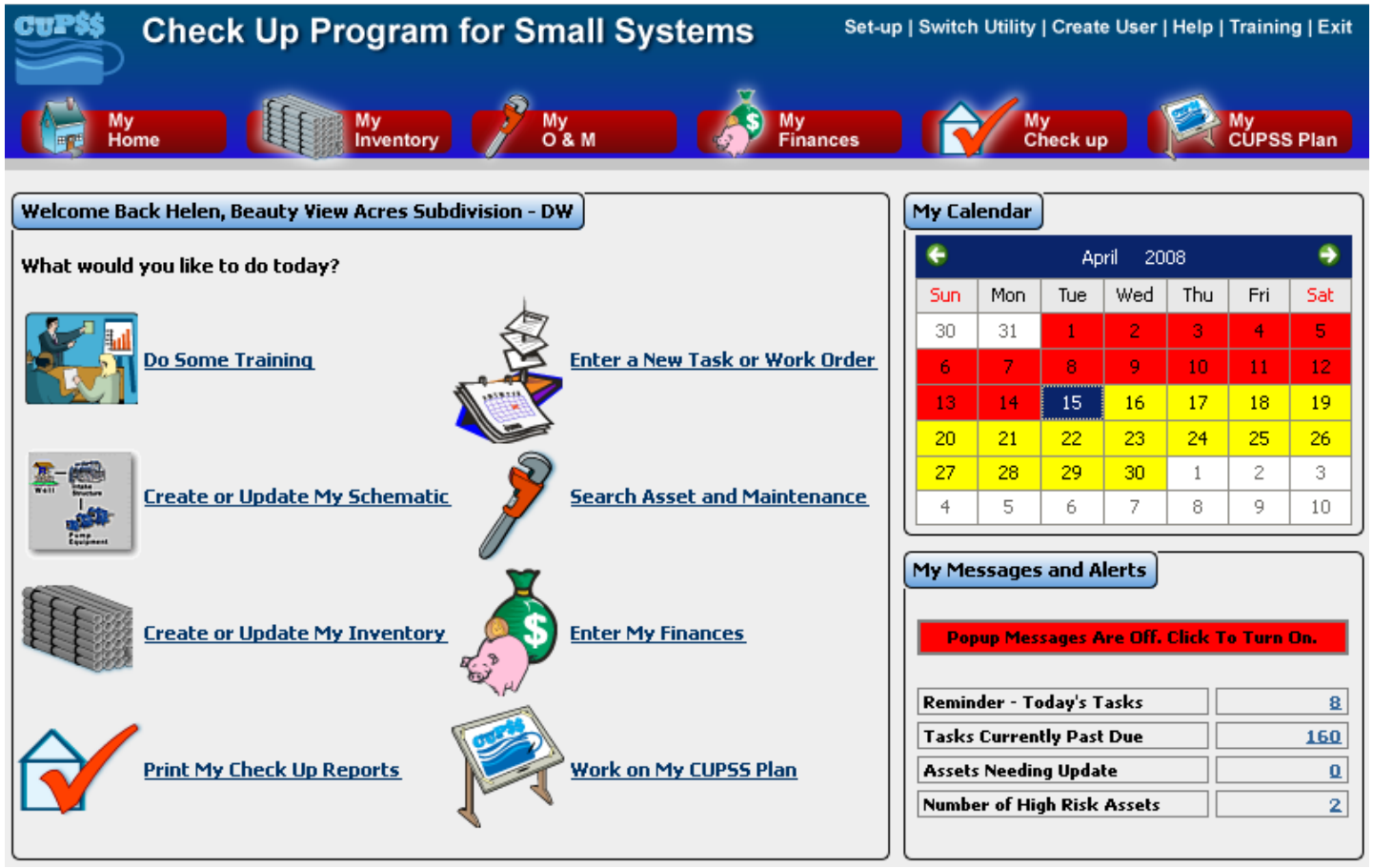
- Now that we know where we are, let's decide where we are going…

- How do we estimate the future costs and revenues?

Long Term Capital Planning

Software: CUPSS (EPA)

http://www.epa.gov/cupss/



Resource Webpage for Capital Planning

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UNC ENVIRONMENTAL FINANCE CENTER

search this site

About Services Programs Resources Eve

Mission Statement

We work to enhance the ability of governments and other organizations to provide environmental programs and services in fair, effective and financially sustainable ways.

Project Tools

User-friendly Capital Improvement Plan (CIP) Tool for Water & Wastewater Utilities

Calculator, 03/20/2014 (MS Excel, 802 Kb)

Enter in all capital projects and this tool will project your fund balance (revenues, expenses and reserves), and necessary rate increases for the next 20 years, and more!

What to Include in your Capital Plan:

PROJECT

CAPITAL PLANNING

AND WASTEWATER

This project, p
Support projec
Department of
together many
water and wast
creation of a C
Management P

Blog Post on "Using an Index to I Future"

Read a short blog post on selecting an appropri

Summary of
"What to Include in Your Capital Plan: A Reference Guide for NC Water and Wastewater Utilities"

Last updated: February 2011

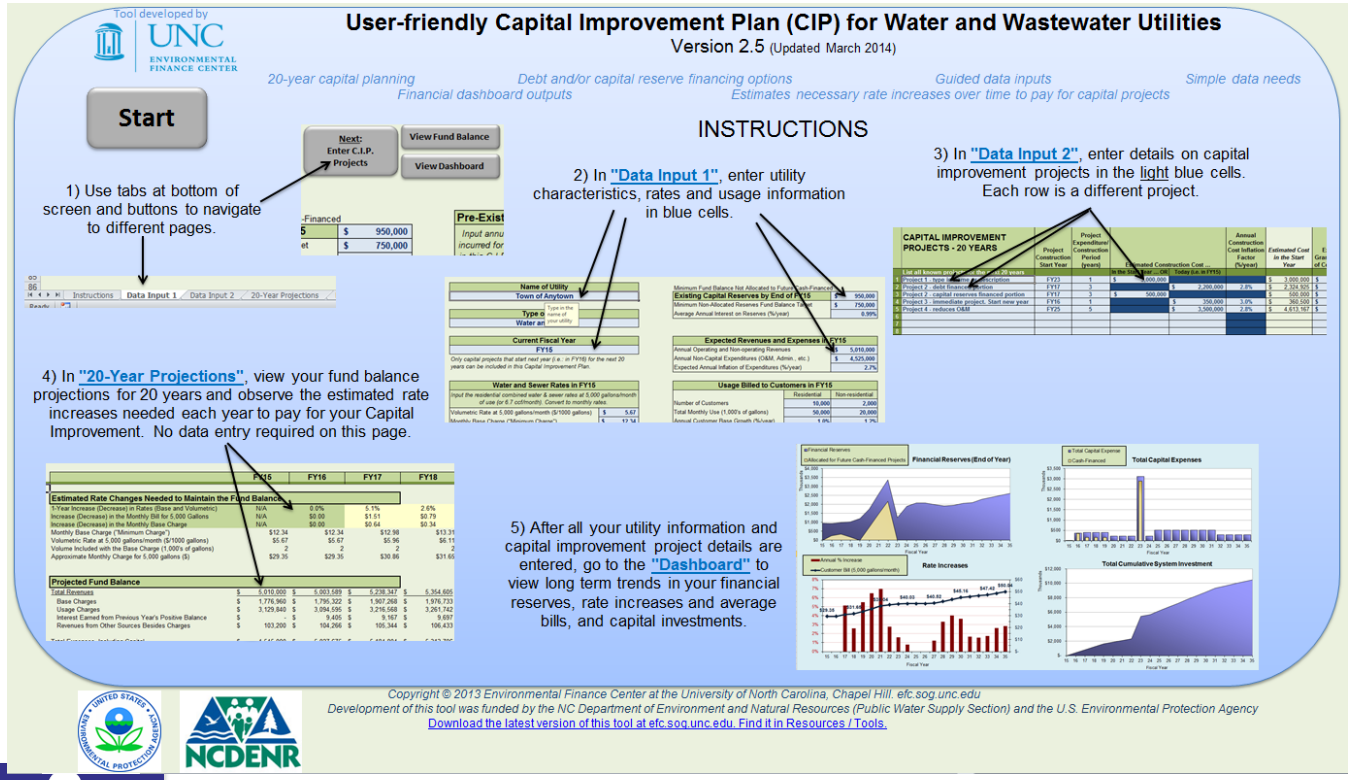
Categories	EPA's "Asset Management: A Handbook for Small Water Systems"	Jack Vogt (SOG Faculty)'s "Capital Budgeting and Finance Guide"	DENR PWSS Capacity Development Program	DENR PWSS Loans and Grants	DENR DWQ Construction Grants and Loans	G.S. 159G-23	USDA Loans and Grants	NC Rural Economic Development Center	Local Government Commission 108-C Form	EPA Drinking Water Needs Survey	DENR DWR Local Water Supply Plans	EPA Software: CUPSS
Goal statement/Introduction to your capital plan		☑						☑				☑
Date of documentation of capital plan	☑			☑						☑		☑
Capital planning time period	☑	☑	☑	☑	☑	☑	☑	☑		☑	☑	☑
Description of systems			☑	☑	☑		☑	☑			☑	☑
Existing capacity and demand			☑	☑	☑	☑	☑	☑			☑	☑
Description of customers			☑	☑	☑	☑	☑	☑	☑		☑	☑
Inventory of existing assets (details on each asset)	☑		☑	☑	☑			☑	☑		☑	☑
Condition of systems			☑	☑	☑	☑	☑	☑	☑		☑	☑
Project-specific details (complete for each project in every year)	☑	☑	☑	☑	☑	☑	☑	☑		☑		☑
Financial planning (complete for each year in time period)	☑	☑	☑	☑	☑	☑	☑	☑	☑			☑
Long-term planning descriptions (may be not project-specific)			☑	☑	☑	☑		☑			☑	☑
Approvals		☑		☑	☑	☑	☑	☑		☑		
Updating the capital plan	☑		☑					☑		☑		☑
Ties or links to other studies	☑			☑	☑	☑	☑	☑			☑	

For updates and to view details in each category, go to http://www.efc.unc.edu/projects/capitalplanning.html

Created by the Environmental Finance Center at the UNC School of Government

User-Friendly Capital Improvement Plan (C.I.P.) for Water & Wastewater Utilities Tool

Free, simplified CIP tool using only MS Excel,
developed by the Environmental Finance Center at UNC.

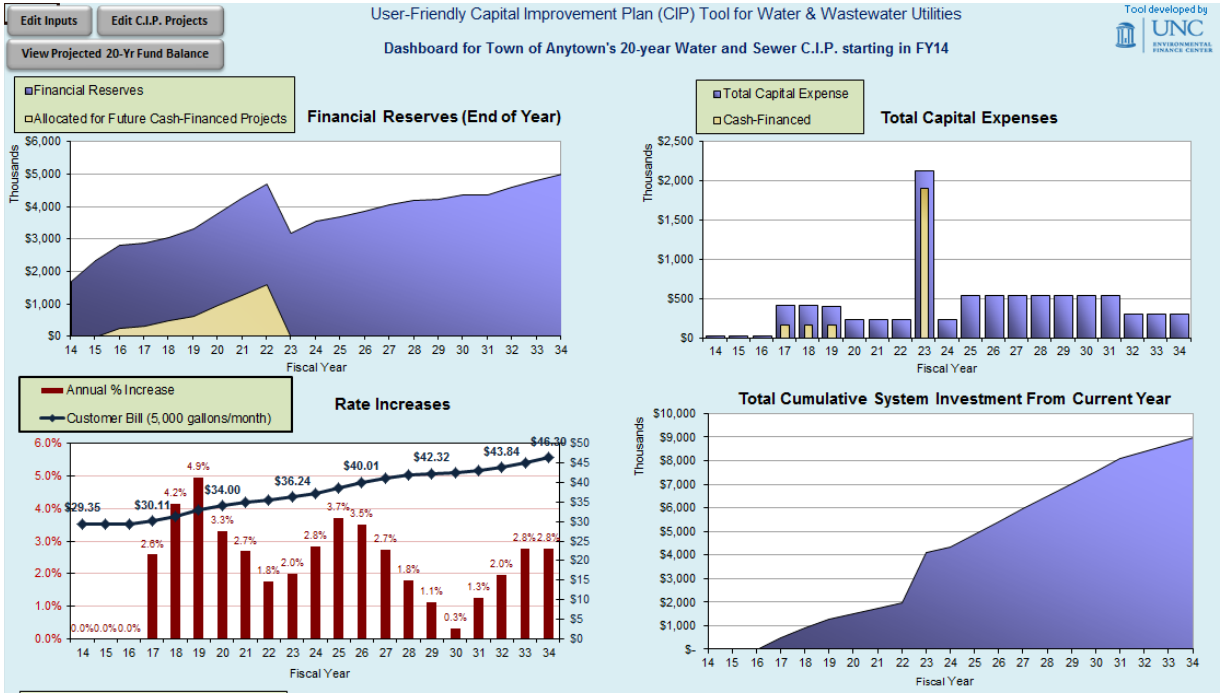


Download the latest version at http://efc.sog.unc.edu. Find it in Resources / Tools.

Tool development was funded by the Public Water Supply Section of DWR/ NCDENR and partly by the USEPA.

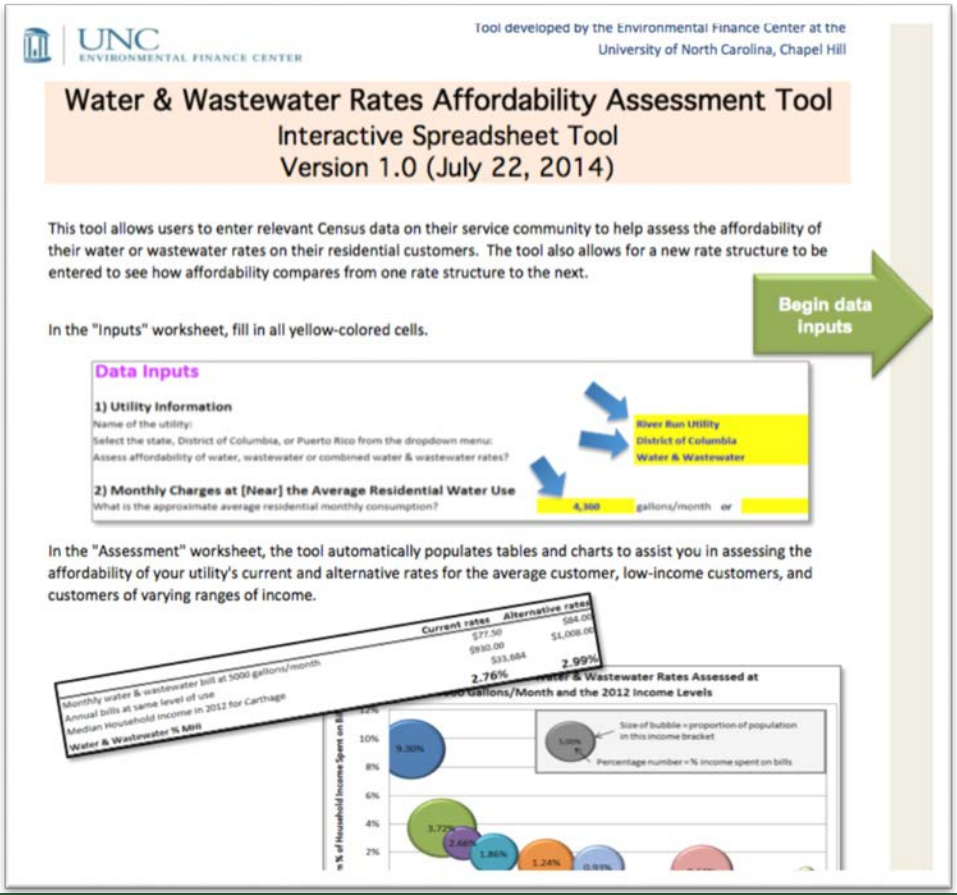
What the Tool Does

Summarizes your utility's capital needs in the next 20 years, and estimates rate increases needed to fully fund the capital projects, based on debt and/or cash funding requirements



Affordability of Water and Sewer Rates and the Affordability Assessment Tool

- On the EFC Website
  Go to http://efc.sog.unc.edu and search for "Affordability Assessment Tool"



More EFC Related tools

sog.efc.unc.edu→ resources → tools

Tools Developed by the EFC at UNC

- Capital Improvement Plan (CIP) Tool for Water and Wastewater Utilities, version 2.0
- Water & Sewer Rates Analysis Model, version 2.0
- Dashboard for Using Capital Reserve Fund to Avoid Rate Shock
- Customer Assistance Program Costing Tool
- Rates Dashboards for Several Different States' Water and Wastewater Utilities
- Revolving Fund Model
- Loan Assistance Program

Are you interested in technical assistance for your small water system? (choose one)

- Yes
- No
- Would Like More Information About This

Contact:

Stacey Isaac Berahzer

Environmental Finance Center

University of North Carolina at Chapel Hill

770-509-3887

berahzer@unc.edu