

Rate Setting Using the Water & Sewer Rates Analysis Model

Asset Management Training for
Tribal Utility Management and
Operations
Atlanta, GA

Stacey Isaac Berahzer

September 25, 2014



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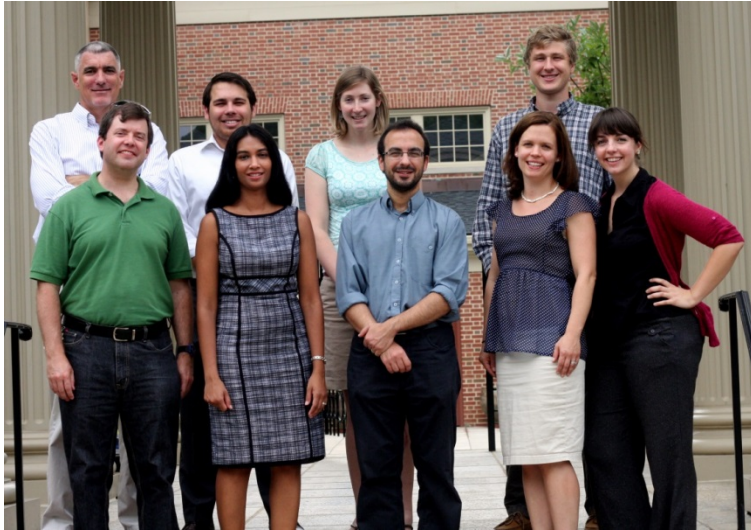
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- Applied Research
- Teaching and Outreach
- Program Design and Evaluation



How you pay for it matters



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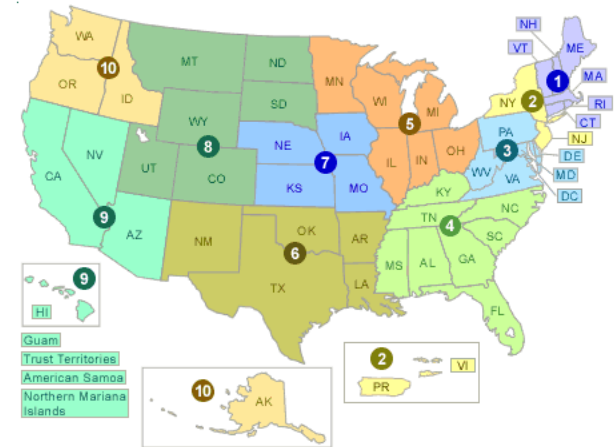
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Smart Management for Small Water Systems


under a Cooperative Agreement with the US EPA

- The EFCN provides training and technical assistance to small public water systems in all fifty states and five territories to help local water systems achieve and maintain compliance with the Safe Drinking Water Act.
- Workshops, trainings and direct assistance:
 - Asset Management
 - Water Loss Reduction
 - Water System Collaboration
 - Fiscal Planning and Rate Setting
 - Energy Management
 - Funding Coordination, and
 - Managerial and Financial Leadership
- Sign up for direct assistance at <http://efcnetwork.org/one-on-one/>



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

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

- Click on tabs at bottom of screen to navigate to different pages.
- On the **"Data Input 1"** tab enter current and new rate details in the dark green cells.
- On the **"Data Input 2"** tab enter current consumption levels, utility finances, and other assumptions in the dark green cells.
- 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.
- Compare new rates to existing rates in **"Compare Monthly Bills"** and their impacts on costs and revenues in **"Existing Rates"** or **"New Rates"**.

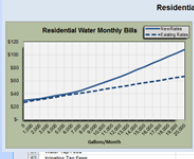
Rate Structure

Residential Rates	Existing	2012
Water Base Rate		\$10.00
Block Rate 1 (\$/1,000 gal)	2.001	2.000
Block Rate 2 (\$/1,000 gal)	5.001	5.000
Block Rate 3 (\$/1,000 gal)	7.001	7.000
Block Rate 4 (\$/1,000 gal)	12.001	12.000
Final Block Rate (\$/1,000 gal)		\$5.00

Sewer Base Rate

Existing	2012
Block Rate 1 (\$/1,000 gal)	2.000
Block Rate 2 (\$/1,000 gal)	6.000
Block Rate 3 (\$/1,000 gal)	7.000
Block Rate 4 (\$/1,000 gal)	12.000
Final Block Rate (\$/1,000 gal)	

Residential Bills



Rate Structure

Existing	2012
Block Rate 1 (\$/1,000 gal)	2.000
Block Rate 2 (\$/1,000 gal)	6.000
Block Rate 3 (\$/1,000 gal)	7.000
Block Rate 4 (\$/1,000 gal)	12.000
Final Block Rate (\$/1,000 gal)	

Starting Fund Balance

During FY2013	Existing	FY2013
Existing	12,235,000	
Fund Balance at the Beginning of FY2013	5,500	1,750,000

Utility Expenses Excluding Debt Service (\$ per year)

During FY2013	Existing
Salaries and Wages, Including Part-Time and Contract	200,000
Supplies	8,000
Utilities	5,000
Administrative Expenses	5,000
Lab	5,000
Routine Repairs & Maintenance	20,000
Water Purchase	20,000
Sewage Availability Service	20,000
Other Treatment & Delivery Expenses	150,000
Depreciation of Cash Capital Expenses Excluding Debt Service	100,000
Miscellaneous Annual Expenses	15,000

Assumptions

After FY2013
1,000,000 (gal/month)
1,430,000 (gal/month)
2,500,000 (gal/month)

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.

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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 of this tool at <http://efc.sog.unc.edu>. Find it in Resources / Tools.
Provide feedback or ask questions by emailing Shadi Eskaf at eskaf@sog.unc.edu

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



Are you directly involved in calculating/ reviewing/setting water or sewer rates?

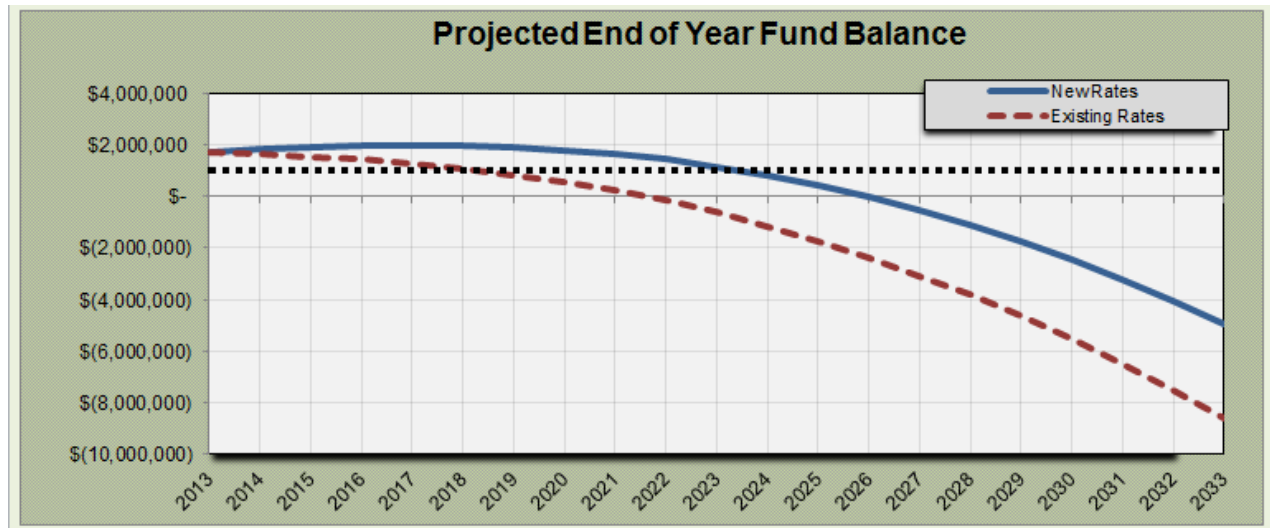
- A. Yes, in my current position
- B. Yes, in a former position
- C. Not yet, but I am learning about it
- D. No

Objectives

- Introduce the EFC's Water & Sewer Rates Analysis Model
- Demonstrate how to use it
- List some other resources
- Answer questions about the tool or rate-setting in general

What the Tool Does

Forecasts end-of-year fund balance for next 20 years, based on rates, water use, expenses



Rate Structures

Projects revenues from flat charges, uniform rates or block rates

- For water, sewer and irrigation
- For residential and commercial rate structures

Rate Structure					FY:	2013
Residential Rates					Existing	
Water Base Rate					\$16.00	
Water:		Block Start:		Block End:		
Block Rate 1 (\$/1,000 gal)	-	gal/mo	3,000	gal/mo	\$2.00	
Block Rate 2 (\$/1,000 gal)	3,001	gal/mo	8,000	gal/mo	\$2.00	
Block Rate 3 (\$/1,000 gal)	-	gal/mo	-	gal/mo		
Block Rate 4 (\$/1,000 gal)	-	gal/mo	-	gal/mo		
Final Block Rate (\$/1,000 gal)	8,001	gal/mo			\$2.00	
Sewer Base Rate					\$18.00	
Sewer:		Block Start:		Block End:		
Block Rate 1 (\$/1,000 gal)	-	gal/mo	3,000	gal/mo	\$2.00	
Block Rate 2 (\$/1,000 gal)	3,001	gal/mo	8,000	gal/mo	\$2.00	
Block Rate 3 (\$/1,000 gal)	-	gal/mo	-	gal/mo		
Block Rate 4 (\$/1,000 gal)	-	gal/mo	-	gal/mo		
Final Block Rate (\$/1,000 gal)	8,001	gal/mo			\$2.00	

What type of Rate Structure Does Your Water/Sewer System Use?

- A. No charge
- B. A flat charge
- C. A uniform rate
- D. An increasing block rate
- E. A decreasing block rate

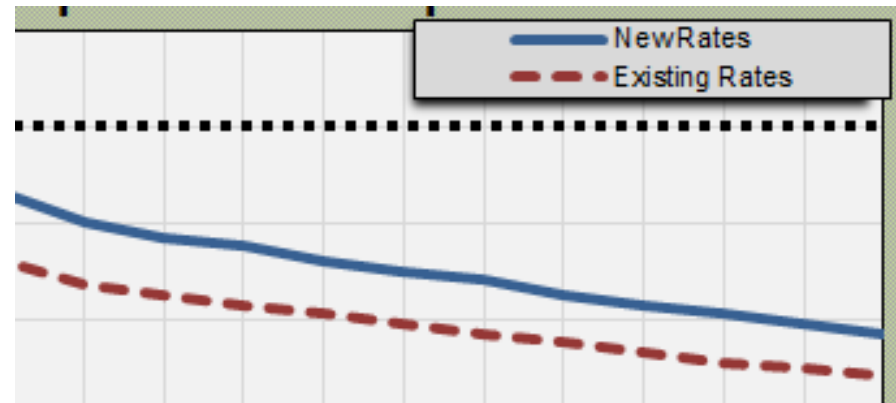


Compare 2 Rate Structures

Compares two rate structures side-by-side

- Allows you to tweak and adjust numbers and observe effects on end-of-year fund balance

FY:		2013	2014
		Existing	New
		\$16.00	\$20.00
<i>Block End:</i>			
3,000	gal/mo	\$2.00	\$1.75
8,000	gal/mo	\$2.00	\$2.25
-	gal/mo		
-	gal/mo		
		\$2.00	\$4.25
		\$18.00	\$22.00
3,000	gal/mo	\$2.00	\$1.75
8,000	gal/mo	\$2.00	\$2.25
-	gal/mo		
-	gal/mo		
		\$2.00	\$4.25



Expenses

Projects your expenses from those that ...

... you assume will inflate at a constant rate each year

+

... you can predict individually in each year

Utility Expenses Excluding Debt Service (\$ per year)		During FY2013 Existing
Enter all expenses that are not listed in the "Debt Service and Other Known Annual Expenses" box. All expenses in this box are assumed to grow linearly at a constant rate.		
Salaries and wages, including part-time and contracts	\$	450,000
Supplies	\$	25,000
Energy and utilities	\$	15,000
Administrative expenses	\$	5,000
Lab	\$	5,000
Routine repairs & maintenance	\$	20,000
Water purchase	\$	-
Taxes	\$	-
Consultants, service providers, trainings	\$	1,000
Miscellaneous annual expenses	\$	224,000
Depreciation <u>or</u> Cash Capital Expenses excluded from "Debt Service"	\$	200,000
All expenses in this box are assumed to grow linearly every year at a constant rate		
Inflation of Utility Expenses (%/year)		4.00%

Debt Service and Other Known Annual Expenses		
Enter debt service (principal + interest) and all other capital and non-capital expenses that are known for each individual year and are excluded from the "Utility Expenses" box.		
FY2013	\$	25,000
FY2014	\$	25,000
FY2015	\$	25,000
FY2016	\$	5,000
FY2017	\$	5,000
FY2018	\$	5,000
FY2019	\$	-
FY2020	\$	-
FY2021	\$	-

Customer Water Use

- Use your own customers' water use records to project demands and revenue generation
- and simple assumptions on their projections due to trends as well as changing price effects (elasticity)

Monthly Consumption (gallons per month)		During FY2013 Existing
Calculated total water sold per month:		12,239,000 (gal/month)
Data check: avg. residential monthly water use:		5,500 (gal/month)
View example of how to determine consumption by blocks		
Residential		
Water Block 1 :	1,500,000	(gal/month)
Water Block 2:	3,000,000	(gal/month)
Water Block 3:	-	(gal/month)
Water Block 4:	-	(gal/month)
Final Water Block:	1,000,000	(gal/month)
Sewer Block 1 :	1,200,000	(gal/month)
Sewer Block 2:	2,400,000	(gal/month)
Sewer Block 3:	-	(gal/month)
Sewer Block 4:	-	(gal/month)
Final Water Block:	800,000	(gal/month)
Commercial		
Water Block 1 :	1,000,000	(gal/month)

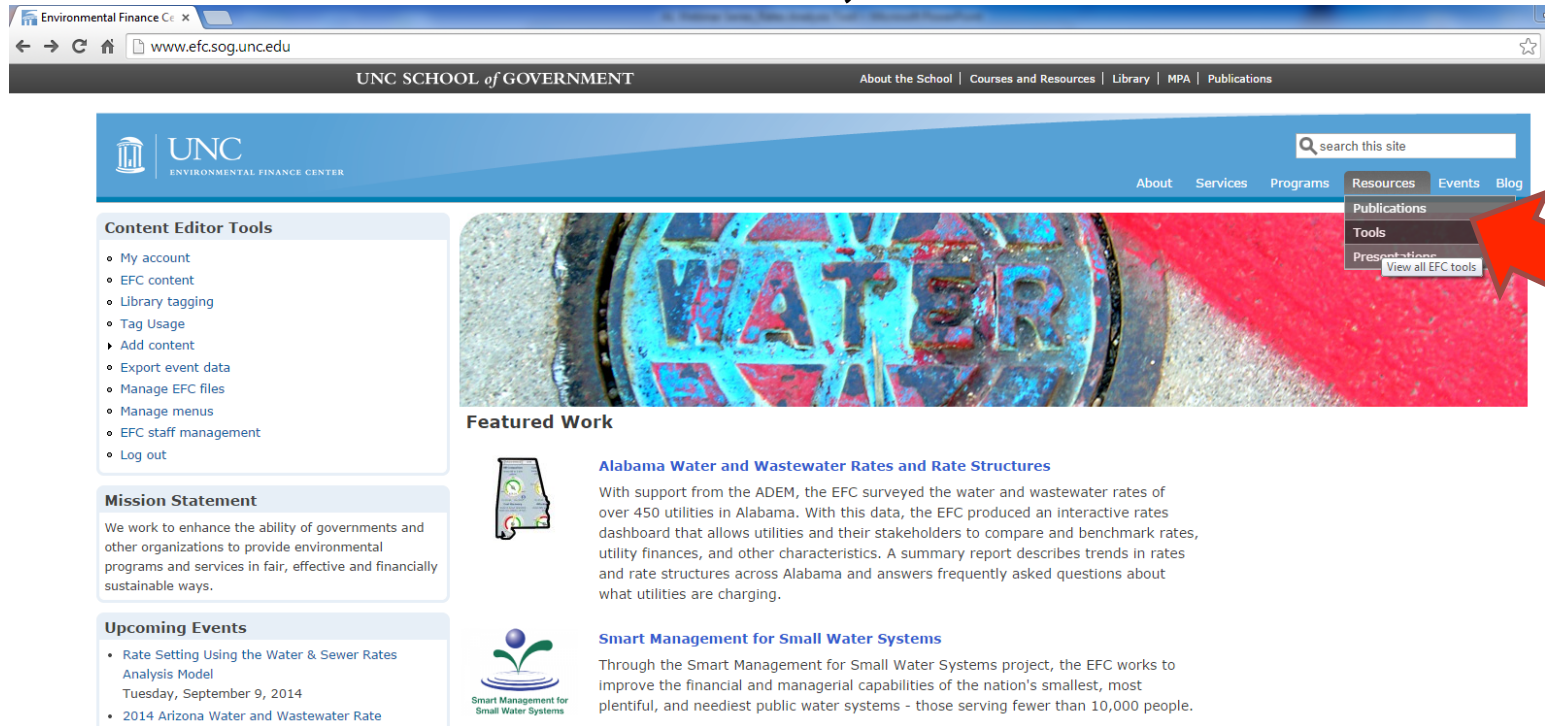
“Simple” tool = some limitations

(in this version)

- Limited to the options and assumptions included. Cannot add more complexity.
 - e.g.: by meter size, seasonal rates, more than 5 blocks, different expense trends over time, etc.
- Projects 20 years based on only ONE rate change (for the upcoming year), not multiple rate changes.
 - Tool is meant to be used every year, not to set rates several years ahead of time

This tool is designed to assist utilities in modeling the potential cash-flow impacts of a change to their water and/or wastewater rates. However, use of this tool by itself is not a substitute for a more detailed rates study, which should occur at least annually.

Download the latest version at <http://efc.sog.unc.edu>
Go to Resources / Tools, then scroll to find it.



The screenshot shows the website for the UNC Environmental Finance Center. The browser address bar displays www.efc.sog.unc.edu. The website header includes the UNC logo and a search bar. A navigation menu is visible with links for About, Services, Programs, Resources, Events, and Blog. The 'Resources' link is highlighted, and a dropdown menu is open, showing 'Publications', 'Tools', and 'Presentations'. A red arrow points to the 'Tools' link in the dropdown menu. Below the navigation menu, there is a large image of a water meter with the word 'WATER' painted on it. To the left of the main content area, there is a sidebar with sections for 'Content Editor Tools' (including My account, EFC content, Library tagging, Tag Usage, Add content, Export event data, Manage EFC files, Manage menus, EFC staff management, and Log out), '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.), and 'Upcoming Events' (Rate Setting Using the Water & Sewer Rates Analysis Model on Tuesday, September 9, 2014, and 2014 Arizona Water and Wastewater Rate). The main content area features a 'Featured Work' section with two items: 'Alabama Water and Wastewater Rates and Rate Structures' (with a small map of Alabama icon) and 'Smart Management for Small Water Systems' (with a small icon of a water drop and a plant). The 'Alabama Water and Wastewater Rates and Rate Structures' item describes a survey of over 450 utilities in Alabama and an interactive rates dashboard. The 'Smart Management for Small Water Systems' item describes a project to improve the financial and managerial capabilities of small water systems.

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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.

Upcoming Events

- Rate Setting Using the Water & Sewer Rates Analysis Model
Tuesday, September 9, 2014
- 2014 Arizona Water and Wastewater Rate

Featured Work

Alabama Water and Wastewater Rates and Rate Structures

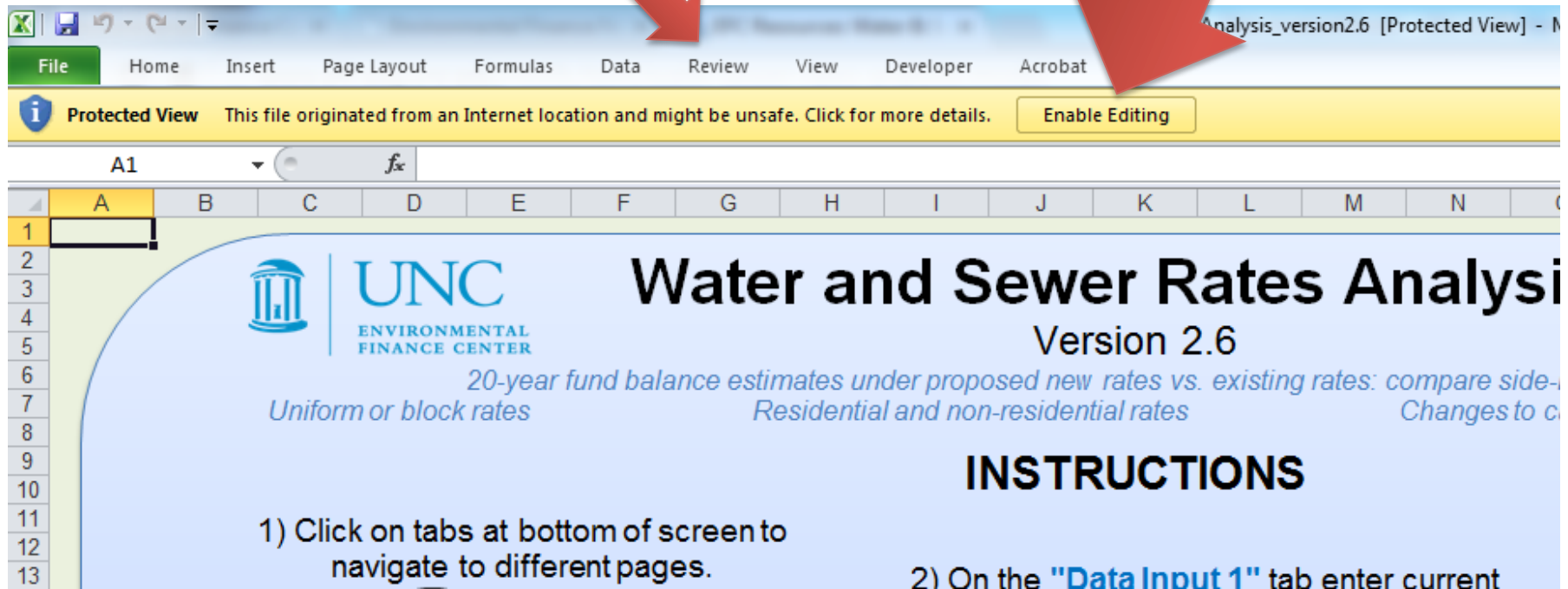
With support from the ADEM, the EFC surveyed the water and wastewater rates of over 450 utilities in Alabama. With this data, the EFC produced an interactive rates dashboard that allows utilities and their stakeholders to compare and benchmark rates, utility finances, and other characteristics. A summary report describes trends in rates and rate structures across Alabama and answers frequently asked questions about what utilities are charging.

Smart Management for Small Water Systems

Through the Smart Management for Small Water Systems project, the EFC works to improve the financial and managerial capabilities of the nation's smallest, most plentiful, and neediest public water systems - those serving fewer than 10,000 people.

1. When you first use this file after downloading from our website, click on “Enable Editing” at the top

2. Click on “Review” → and Hide Comments that may be in the way



The screenshot shows the Microsoft Excel interface. At the top, the ribbon includes tabs for File, Home, Insert, Page Layout, Formulas, Data, Review, View, Developer, and Acrobat. A yellow warning bar below the ribbon states: "Protected View This file originated from an Internet location and might be unsafe. Click for more details." with an "Enable Editing" button. A red arrow points to the "Review" tab, and another red arrow points to the "Enable Editing" button. The spreadsheet content features the UNC Environmental Finance Center logo, the title "Water and Sewer Rates Analysis Version 2.6", and a subtitle "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 current rates". Below this, the word "INSTRUCTIONS" is displayed in large bold letters. Two numbered instructions are listed: "1) Click on tabs at bottom of screen to navigate to different pages." and "2) On the 'Data Input 1' tab enter current rates".

File Home Insert Page Layout Formulas Data Review View Developer Acrobat

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A1

UNC ENVIRONMENTAL FINANCE CENTER

Water and Sewer Rates Analysis

Version 2.6

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 current rates

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Demo of the Water and Sewer Rates Analysis Model



Developed by the
Environmental Finance Center
at the University of North
Carolina, Chapel Hill



Development was funded
by the Public Water
Supply Section of the
North Carolina
Department of
Environment and Natural
Resources, and by the
U.S. Environmental
Protection Agency

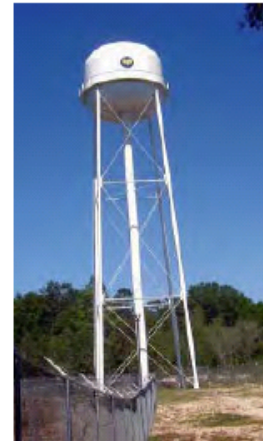
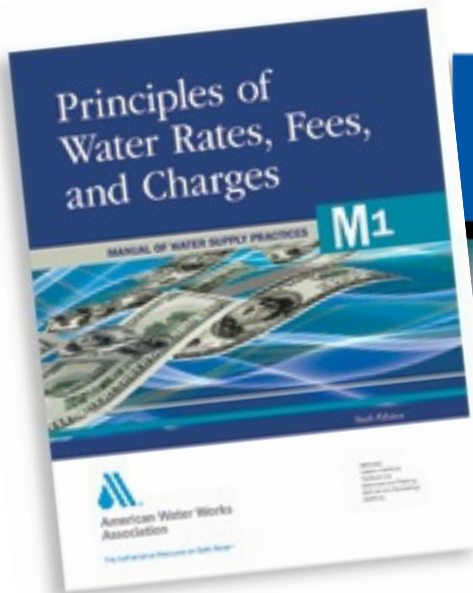


Rate Setting Resources



Setting Small Drinking Water System Rates for a Sustainable Future

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



<http://www.awwa.org>

<http://www.epa.gov/safewater/smallsystems>

Rate Setting Resource

Free guide written for utility managers. Also applies to non-NC utilities.

<http://efc.sog.unc.edu/>

Find it in Resources / Publications

Designing Rate Structures that Support Your Objectives: Guidelines for NC Water Systems

June 2009



Funding support for these guidelines provided by the Public Water Supply Section of the North Carolina Department of Environment and Natural Resources, and the United States Environmental Protection Agency

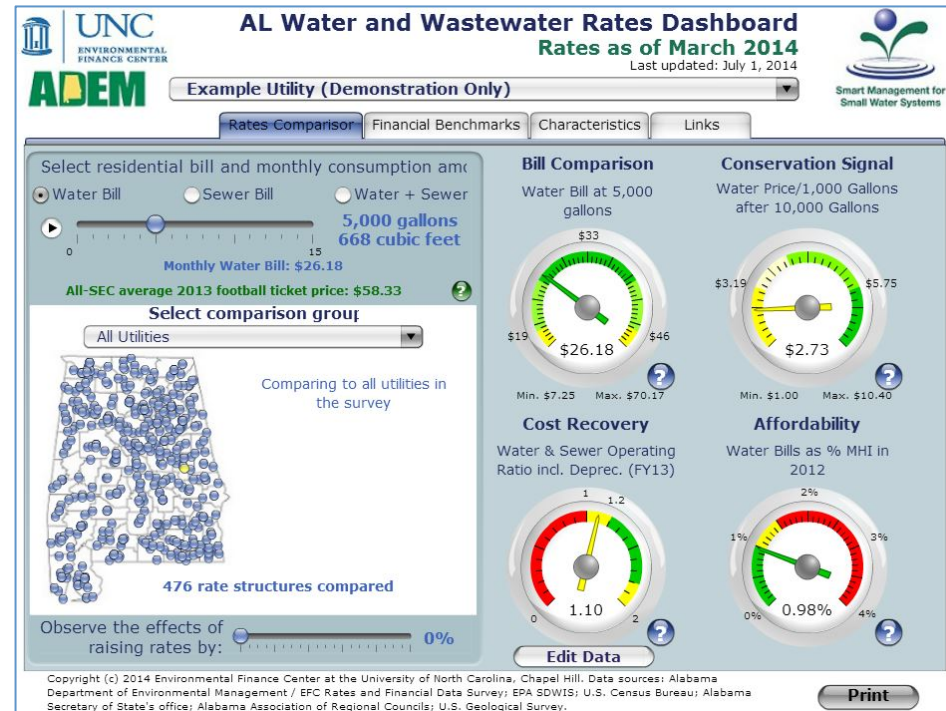
OTHER EFC FINANCIAL TOOLS



State Rates Dashboards

Go to the EFC Website:
<http://efc.sog.unc.edu> and
search for (example) “Alabama
Water and Wastewater Rates
Dashboard”

- [Arizona](#) (2014 Rates)
- [Virginia](#) (2014 Rates)
- [Alabama](#) (2014 Rates)
- [North Carolina](#) (2014 Rates)
- [Canada](#) (2014 Rates)
- [Georgia](#) (2013 Rates)
- [Texas](#) (2013 Rates)
- [Colorado](#) (2012 Rates)
- [South Carolina](#) (2008 Rates)



More EFC Financial Tools

All free. Find all tools in Resources / Tools: <http://efc.sog.unc.edu>



Water Utility Revenue Risk Assessment Tool

Shadi Eskaf

Tool; Calculator, 01/06/2014

As part the Defining a Resilient Business Model for Water Utilities project, the EFC developed this tool to allow utilities and technical assistance providers to quickly determine the proportion of residential revenues from water sales that may be at risk of loss when



Water & Wastewater Residential Rates Affordability Assessment Tool

Shadi Eskaf, Glenn Barnes

Tool; Calculator, 07/22/2014

An easy-to-use Excel tool that calculates several metrics that assess the relative affordability of a utility's water & wastewater rates on its residential customers. Affordability is assessed for the average customer, low-income customers and a full range

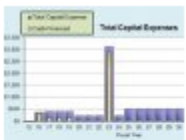


Dashboard for Using Capital Reserve Funds to Avoid Rate Shock

Andrew Westbrook

Tool; Dashboard, 08/22/2008

Establishing capital reserves represents a balance between saving for future capital and spending for current needs. A large capital reserve can be a great tool for mitigating the impact of large capital projects on utility rates, but it is not always clear whether it is better



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

Shadi Eskaf

Tool; Calculator, 03/20/2014

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!

Free Advising and One-on-One Assistance

Thanks to the US EPA, we can provide **free, in-depth one-on-one advising** to any water system serving up to 10,000 people on:

- Asset Management
- Water Loss Reduction
- Fiscal Planning and Rate Setting
- Energy Management



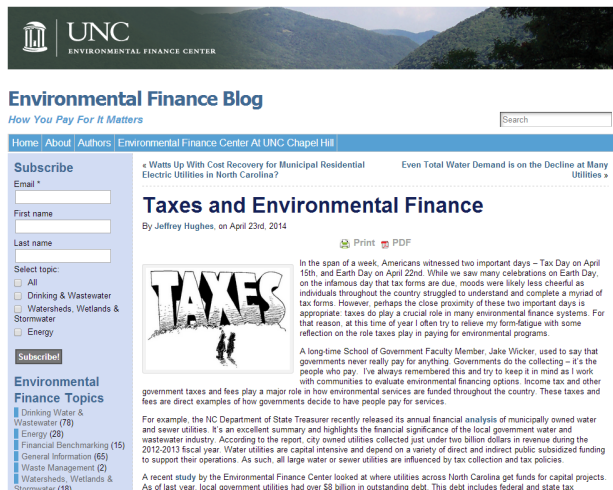
In-depth assistance includes several hours (~20?) of back and forth between the Environmental Finance Center Network and the water system staff or their consultants.

Sign up for direct assistance at <http://efcnetwork.org/one-on-one/> or indicate on the next poll.

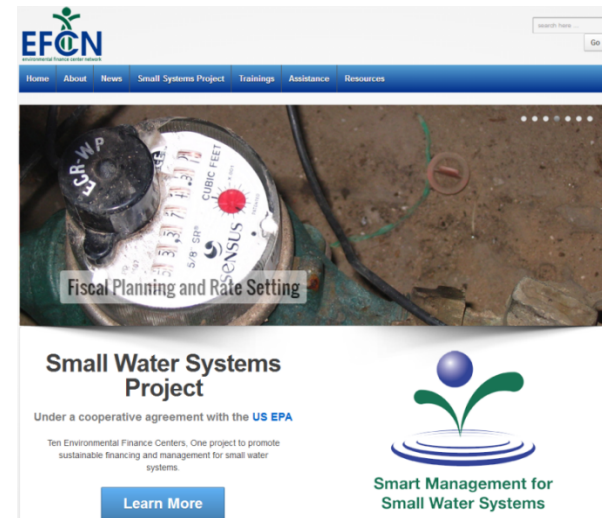
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Tools, trainings, assistance and
resources for small water
systems from the EFCN



<http://efc.web.unc.edu>




<http://www.efcnetwork.org>



Follow us on Twitter: @EFCatUNC

Q & A

- about the tool
- about rate-setting in general

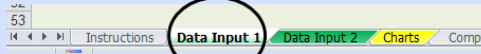


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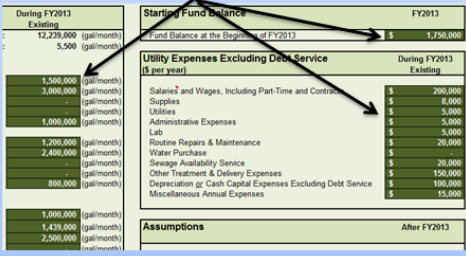
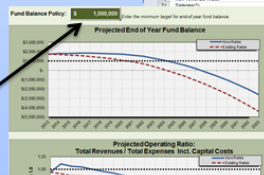
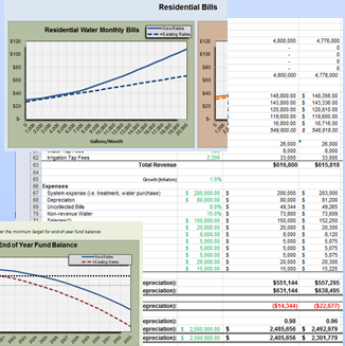
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Final Block Rate (\$/1,000 gal)				\$5.00

Sewer Base Rate

Block	Start	Block End	2012
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Block Rate 4 (\$/1,000 gal)	12,001	gal/mo	\$4.00
Final Block Rate (\$/1,000 gal)			\$5.00

Rate Structure

2012
- 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.

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 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 of this tool at http://efc.sog.unc.edu](http://efc.sog.unc.edu). Find it in [Resources / Tools](#).
 Provide feedback or ask questions by emailing Shadi Eskaf at eskaf@sog.unc.edu

Thank you!

Stacey Isaac Berahzer

berahzer@unc.edu

770-509-3887



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