



Smart Management for  
Small Water Systems

# Rates and the Importance of Reserves for Your Water System

September 28, 2017 | Great Falls, MT

Montana League of Cities and Towns Annual Conference

*[www.efcnetwork.org](http://www.efcnetwork.org)*



UNC  
ENVIRONMENTAL  
FINANCE CENTER



American Water Works  
Association

This presentation is made possible under a cooperative agreement with the U.S. EPA.



## **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**

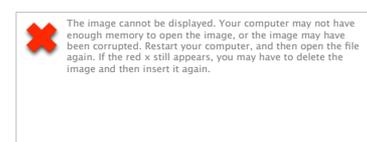
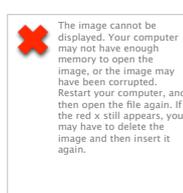
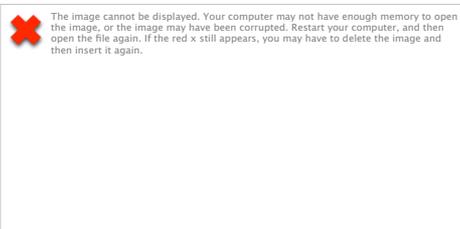
Individualized technical assistance, workshops, small group support, webinars, eLearning, online tools & resources, blogs.

# 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)



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# Areas of Expertise

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Asset Management

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Rate Setting and Fiscal Planning

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Leadership Through Decision-making and Communication

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Water Loss Reduction

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Energy Management Planning

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Accessing Infrastructure Financing Programs

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Workforce Development

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Water Conservation Finance and Management

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Collaborating with Other Water Systems

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Resiliency Planning

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Managing Drought



# Two Sessions Today

Rates and the Importance of Reserves

1:30pm – 2:30pm, Britain Room

Capital Planning and the Drinking Water SRF

4:45pm – 5:30pm, Britain Room



# Outline

- The basic financial model for most water systems
- Rate setting objectives and rate structure design
- Reserves



# Enterprise Fund

Governmental water systems are typically managed as **enterprise funds**.

An enterprise fund is a self-sustaining fund, where the revenues and expenses for that business unit are not commingled with others from other governmental activities.



# Characteristics of Water System Enterprises

- Capital intensive
- Diverse use charges, fees and pricing strategies
- Financial structure varies from operational structure
- Self-regulated monopolies
- Impacts public health and environmental protection

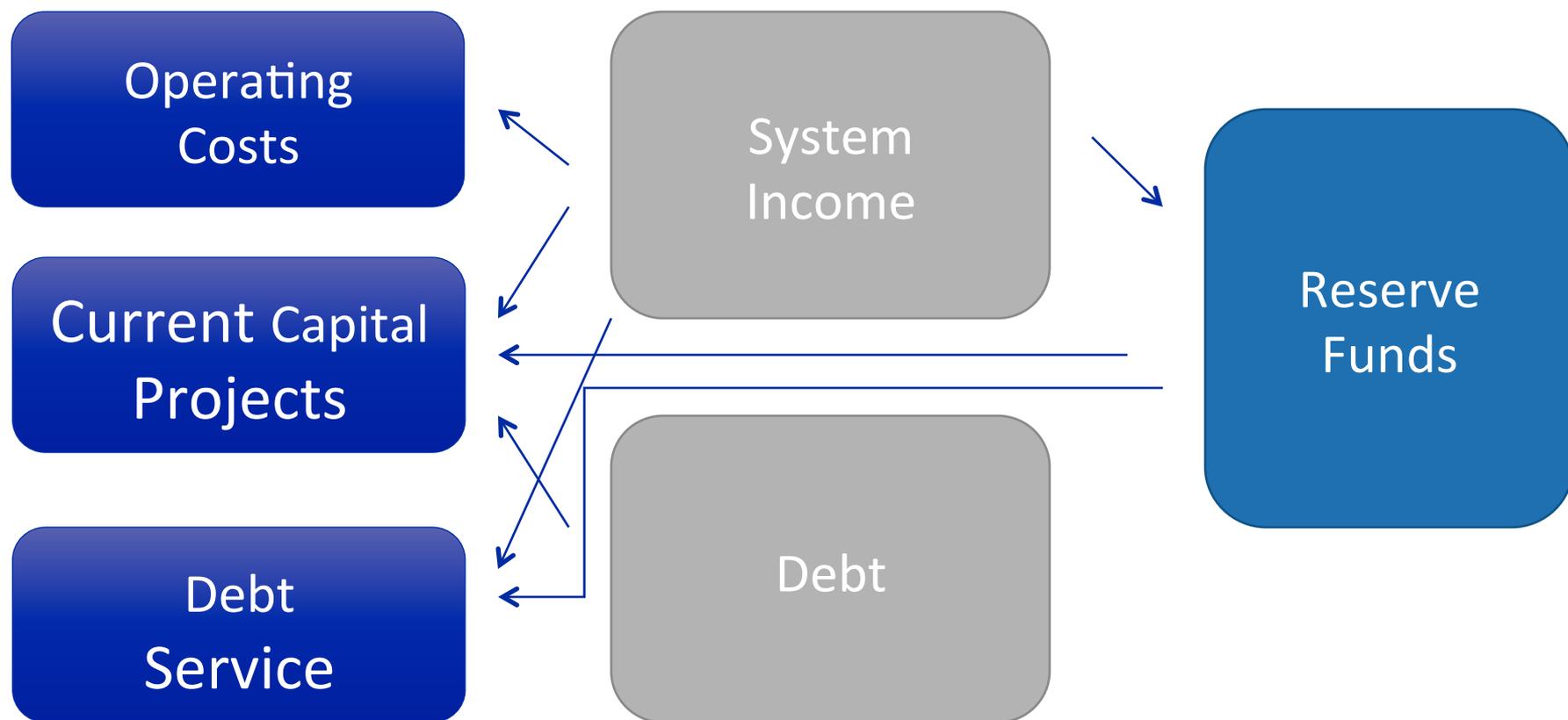


# Guiding Principle for Enterprise Funds

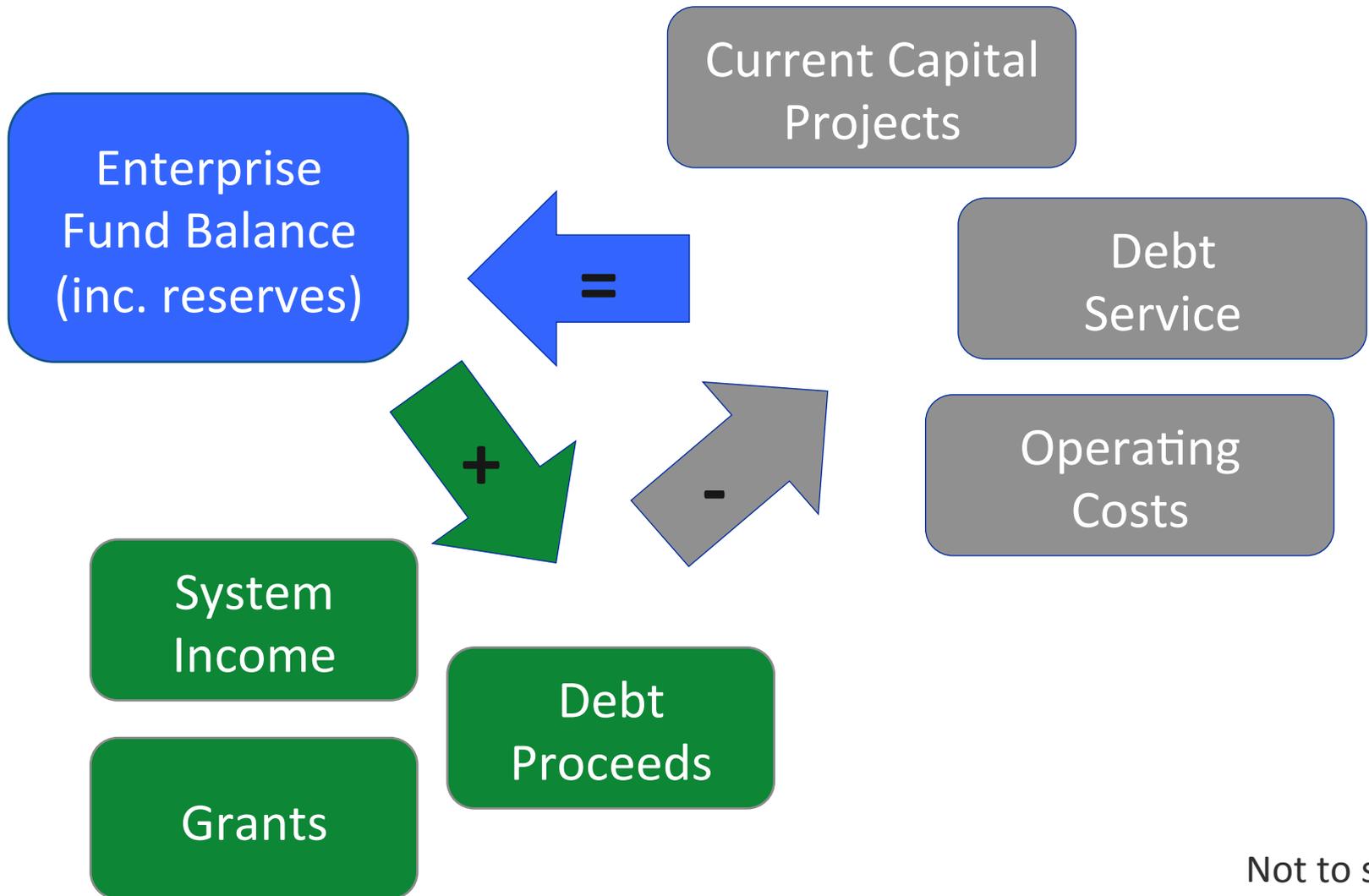
## Self-sufficiency

Revenues collected = Costs expended  
(in a given year or over time)

# Water System Finance Diagram



# Water System Finance Diagram



Not to scale



# Three Types of Costs

- Operating Costs — what you need to run the system day in and day out
- Debt Service — what you owe on loans and bonds
- Capital Costs — rehabilitation and replacement of existing infrastructure and new infrastructure



# Understanding Operating Costs

- What you need to run your business day in and day out
- What are your operating cost categories?
  - Personnel
  - Water bulk purchases
  - Chemicals
  - Office equipment
  - Energy
  - Supplies
  - Lab tests
  - Etc.



# Understanding Capital Costs

- The “big stuff”
- Rehabilitation & replacement of existing infrastructure
- New infrastructure as needed to serve your customers



# Understanding Debt Service

- What you owe on loans and bonds, paid back on a regular schedule



# Three Types of Revenues

- **System Income** — Money from rates, tap fees, impact fees, assessments, penalties, periodic charges, grants, other sources
  - Note: To be a true enterprise fund, not taxes or transfers from the General Fund.
- **Debt Proceeds** — Money from bonds and loans
- **Grants** — Highly competitive and limited



# System Income

For most water systems, revenue from **rates** account for ~80-90% of total revenues (often more).



# Trivia

How much revenue did local governments in Montana collect in FY2015 from water systems (excluding wastewater)?

**\$128 million**

Source: U.S. Census Bureau's "State and Local Government Finances by Level of Government and by State: 2014-15"

This is a little less than \$19/month for each person served by a local government community water system  
(with lots of assumptions)

# How to Tell if Revenues > Expenditures?

Look at the (past few) audited annual financial statements.

Did **Total Operating Revenues** exceed **Total Operating Expenses** (with or without depreciation)?

BAYARIA	
STATEMENT OF NET ASSETS	
PROPRIETARY FUND	
JUNE 30, 2011	
	Water and Sewer Enterprise Fund
<b>Assets</b>	
Current Assets:	
Cash - operating	\$ 368,061
Accounts Receivable (Net)	60,346
Prepaid Insurance	5,856
Total Current Assets	440,263
Noncurrent Assets:	
Restricted cash	177,208
Capital assets:	
Land	209,556
Buildings	22,982
Improvements other than buildings	5,873,769
Machinery and equipment	896,073
Construction in progress	1,454,079
Less: Accumulated depreciation	(2,883,225)
Deferred Charge	39,833
Total noncurrent assets	5,782,212
Total Assets	6,421,278
<b>Liabilities</b>	
Current Liabilities:	
Accounts Payable	21,090
Accrued Expenses	2,767
Due to Other Funds	8,176
Customer Deposits	62,625
Deferred Subsidy Revenue	440,005
Current Portion of Long Term Debt	343,811
Total Current Liabilities	899,474
Noncurrent Liabilities:	
Compensated Absences	15,695
Revenue Bonds (Net of current portion)	233,357
Notes Payable (Net of current portion)	546,873
Total Noncurrent Liabilities	895,925
Total Liabilities	1,795,399
Fund Net assets:	
Invested in capital assets, net of related debt	4,355,133
Restricted for debt service	114,583
Unrestricted	163,361
Total fund net assets	\$ 4,633,077



# How did Montana do?

In 2015, Montana local governments spent \$148 million on their water systems, which exceeds the \$128 million in revenue.

There may be good explanations for this that are not apparent from the Census Bureau survey.

Source: U.S. Census Bureau's "State and Local Government Finances by Level of Government and by State: 2014-15"



# Rate Setting



# Ideal Pricing

- Prices cover full “costs” of service
- Prices send and reinforce strategic messages
- Prices follow State’s laws and policies
- Beneficiaries pay for their benefits
- Polluters pay for their pollution
- Ability to pay is recognized and addressed
- Simple



# How Much Does “Full Cost Pricing” Cover?

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



# Cost-of-Service Pricing

Proportionally allocates costs of service to different customer groups, and prices rates to generate an equitable share of revenues from each customer group.

See AWWA's M1 Manual for details.

# A Simpler Version



## Setting Small Drinking Water System Rates for a Sustainable Future

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



- Determining Costs
- Determining Current Revenues
- Setting Aside a Reserve
- Determining Revenues Required
- Designing Rate to Cover Costs
- Implementing the Rate
- Reviewing the Rate

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

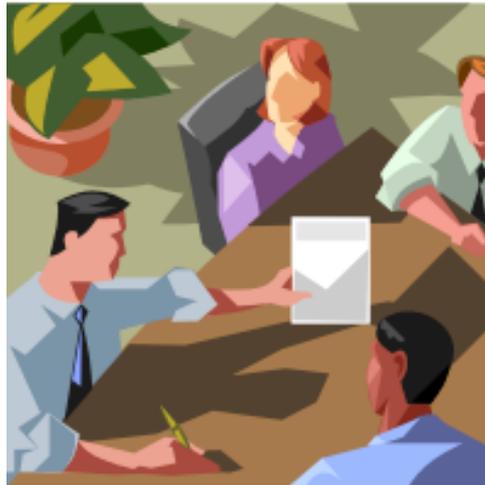
# Revenue Generation Isn't the Only Objective

Will our rates provide sufficient cost recovery?

Are we following the applicable laws?

Are we allocating the costs to the right customers?

Will our customers understand these rates?

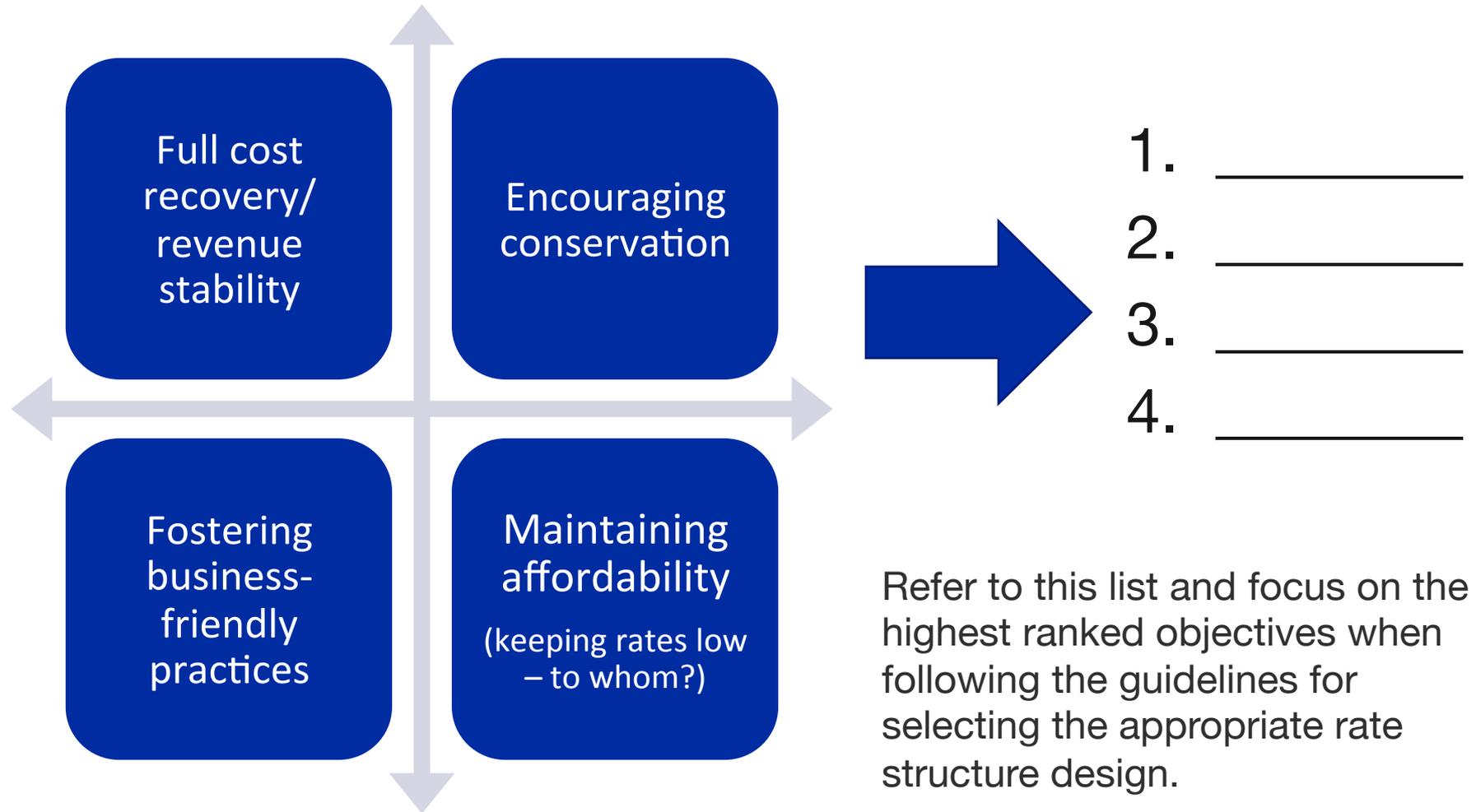


Will revenues be resilient to changing water demands?

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

Will our customers be able to pay these rates?

# Rank Your Rate Setting Objectives





# Elements of Rate Structure Designs

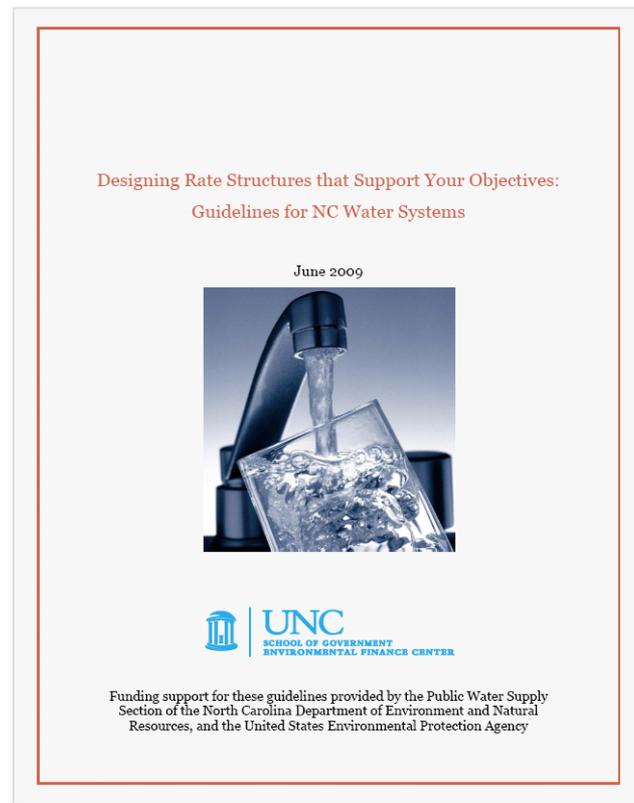
1. Customer classes/distinction
2. Billing period
3. Base charge
4. Consumption allowance included with base charge
5. Volumetric rate structure
6. (If applicable) Number of blocks, block sizes and rate differentials
7. (Optional) Drought Rates

# Designing Rate Structures That Support Your Objectives

Free guide  
written for  
system  
managers

Available at:

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





# Typical Rate Structure

Fixed Base Charge (Minimum Charge)

with or without a consumption allowance

+

Variable Volumetric Charge (determined by the  
water volume billed)

Can be structured in many ways



# Example: City of Great Falls' water rates for regular residential customers (June 2017)

\$7.56/month

Based on meter size.

Does not include consumption allowance.

+

+\$1.47/ccf between 1-300 cubic feet

+\$2.46/ccf for above 300 cubic feet

Increasing block rates.

Source: City of Great Falls' website:

<https://greatfallsmt.net/fiscalservices/2016-water-sewer-and-storm-drain-service-rates>



# Methods to Budget for Capital Costs

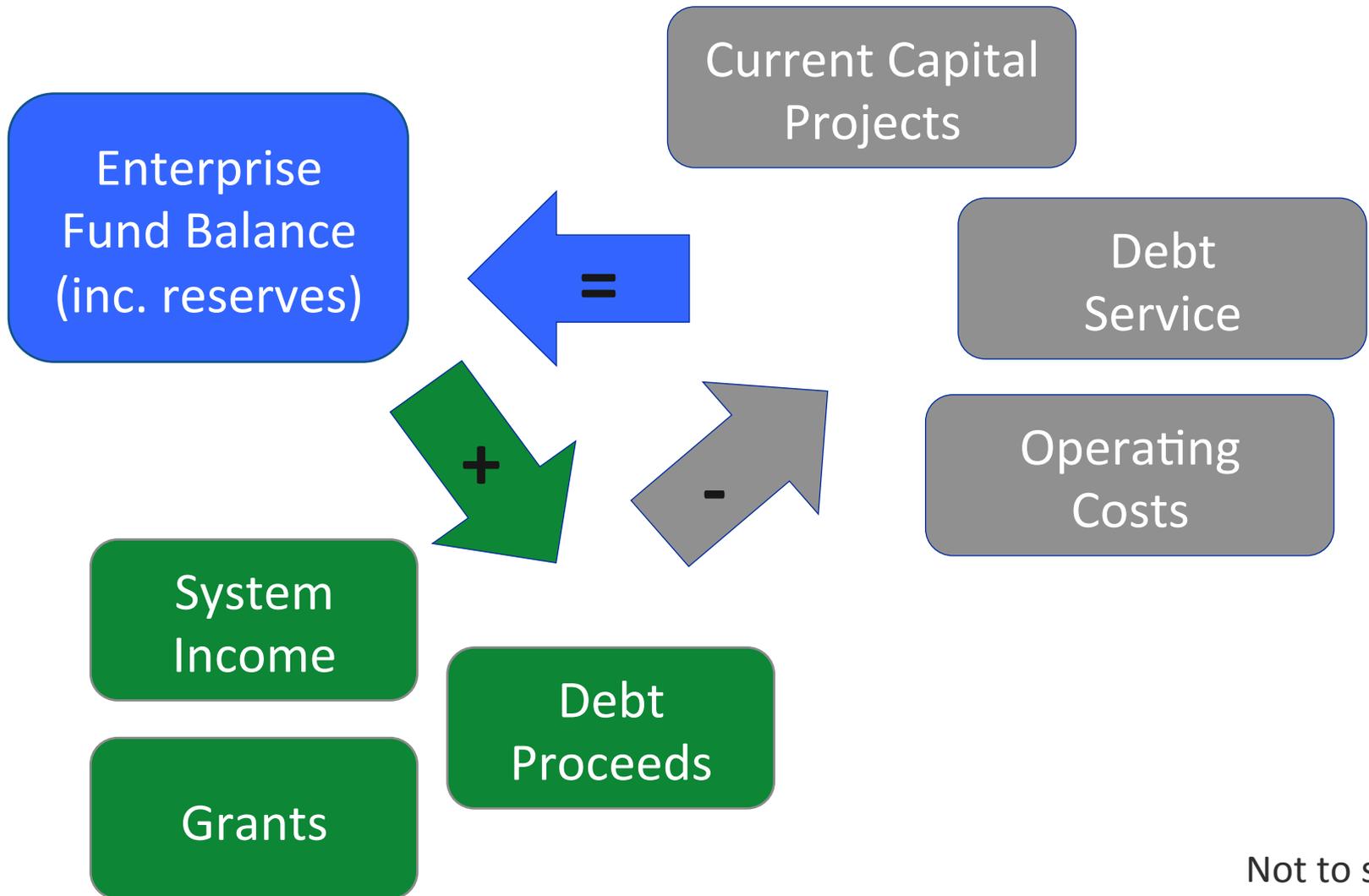
- Create and maintain a Capital Improvement Plan
- “Fund” your depreciation, with a little extra
- Estimate from past expenses, but adjust for the future

Do NOT ignore capital costs and only budget for O&M. Every utility has capital costs.



# Reserves

# Water System Finance Diagram



Not to scale



# Reserve Account(s)

- If revenues exceed costs, the extra money can go into one or more reserve account(s) specifically for the water system
- Can set up specific reserves for narrower purposes (designated reserves)
- Examples: unrestricted, rate stabilization, rainy day, capital reserve, etc.
- If you include depreciation as a cost, this is where that money would go



# Many Types of Reserve Funds

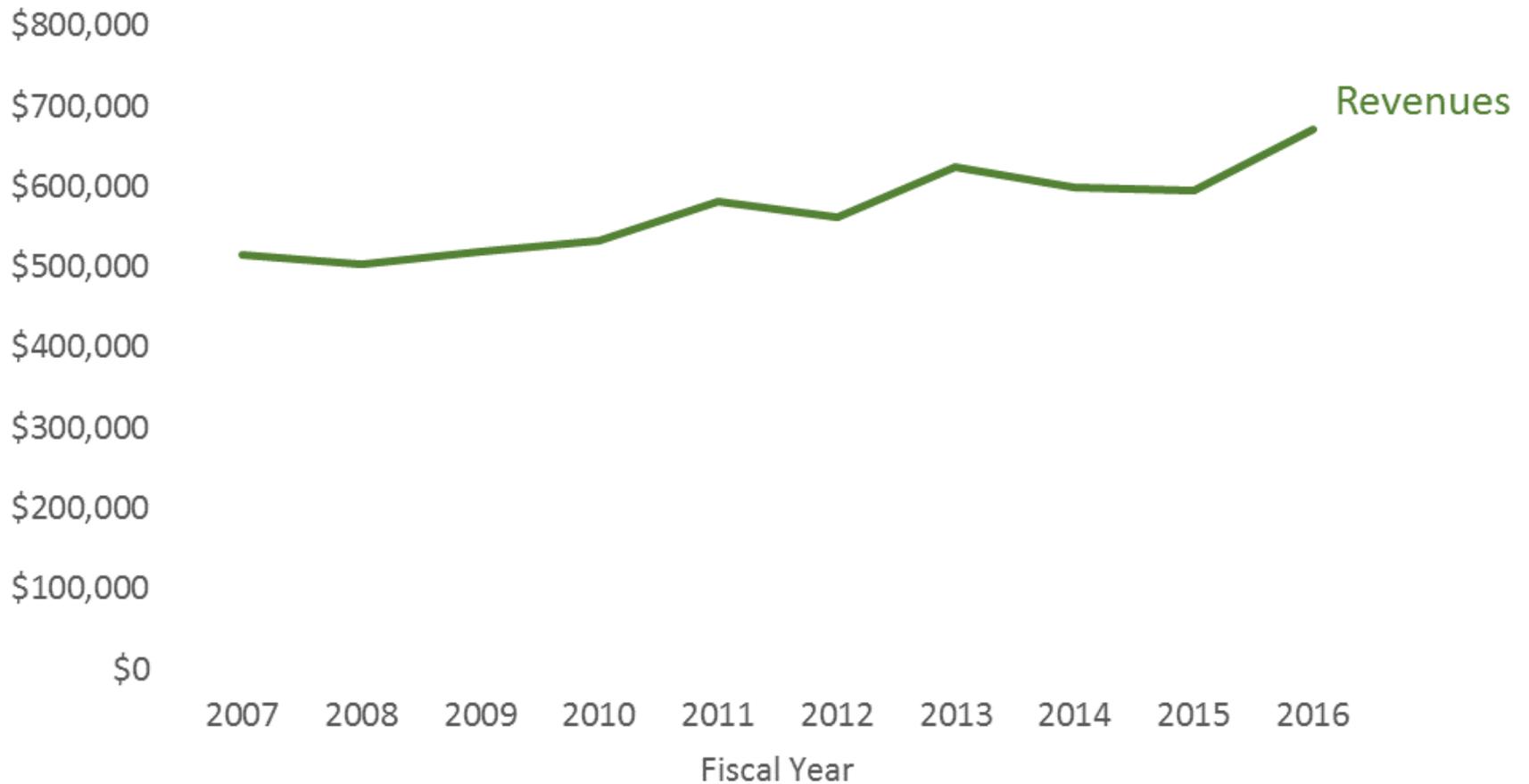
- **Capital Reserve Fund** — Infrastructure rehabilitation and replacement
- **Repair Fund** — Known, ongoing maintenance issues
- **Emergency Fund** — Unknown, unanticipated maintenance issues
- **Rainy Day Fund** — Unexpected revenue shortfalls



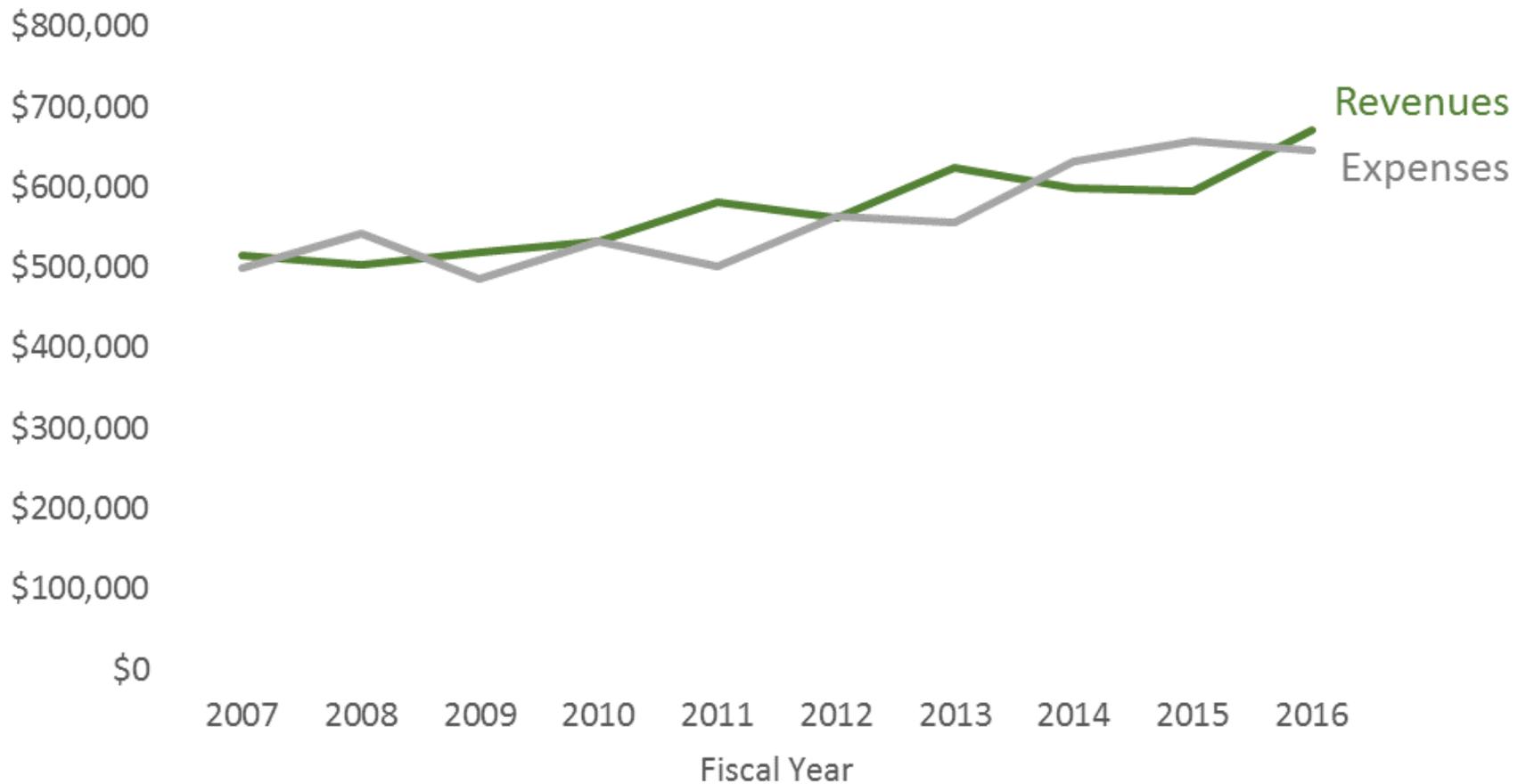
# Budgeting for the Future

- Capital rehab or replacement
- System expansion
- Costs always going up
- Changes to revenue, expected or not
- Think 5-10 years out

# Why is Maintaining a Reserve Important?

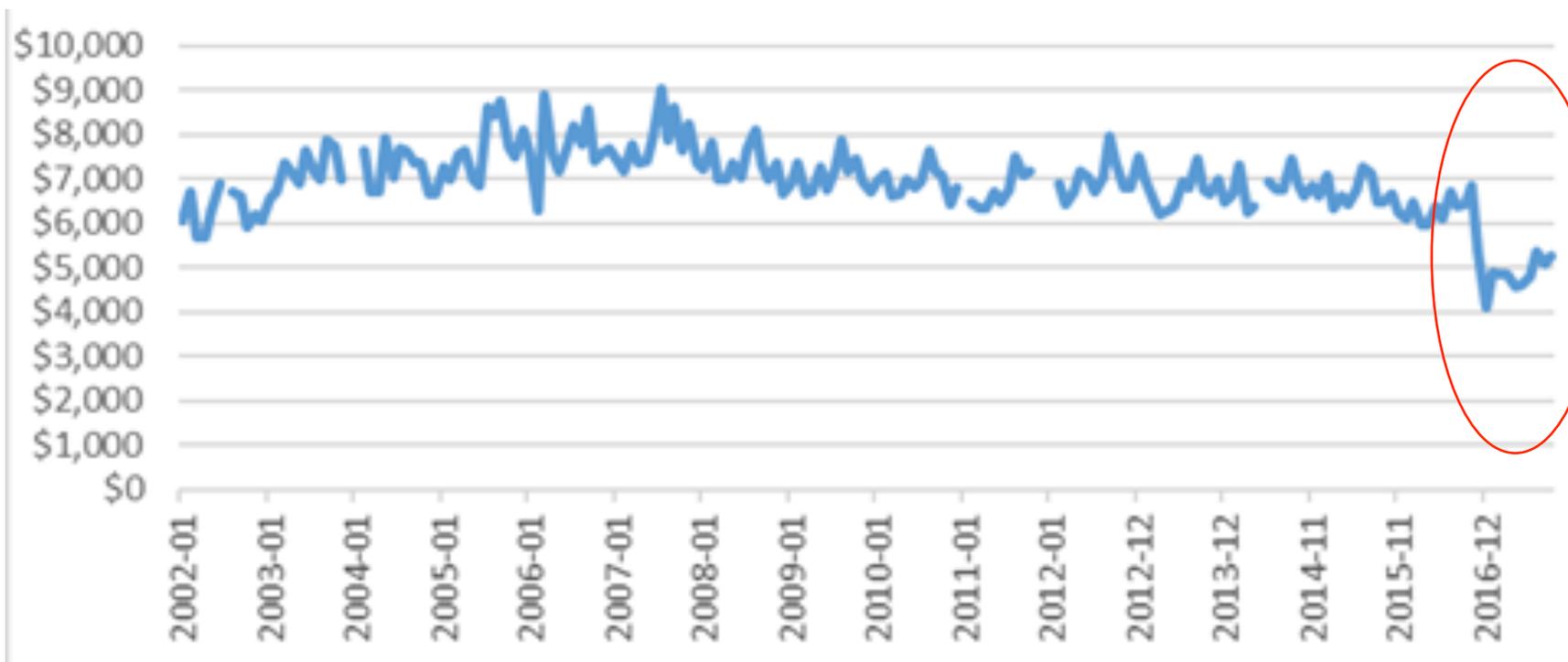


# Why is Maintaining a Reserve Important?



# Another Situation

Monthly Water Charges (Revenues)





# The Importance of Reserves

- Manage short-term cash flow
- Manage longer-term revenue fluctuations
- Smooth out rate increases
- Save for emergencies/unexpected situations
- Save for future capital expenses
- Satisfy funders' requirements
- Better credit rating / ability to borrow
- Piece of mind



# How Much Do You Need In Your Reserves?

- It depends

(see

<http://efc.web.unc.edu/2013/02/12/right-sizing-reserve-funds/>)

- Enough to pay for your most expensive piece of equipment?
- Enough to cover your costs if you had no revenue for two months?
- Enough to cover the projects in your capital improvement plan?

<http://efc.web.unc.edu/2015/06/24/days-cash-on-hand/>



# Key Financial Indicators for Water and Wastewater Systems: Days of Cash on Hand

JUNE 24, 2015 / GLENN BARNES / COMMENTS OFF ON KEY FINANCIAL INDICATORS FOR WATER AND WASTEWATER SYSTEMS: DAYS OF CASH ON HAND

 Print  PDF

In previous posts, we outlined how to use the financial statements of a water or wastewater system to calculate the [key financial indicators](#) of [operating ratio](#) (a measure of self-sufficiency) and [debt service coverage ratio](#) (a measure of a



# Days of Cash on Hand

$$= \frac{\text{Unrestricted cash and cash equivalents}}{(\text{Operating Expenses} - \text{Depreciation}) / 365}$$

Utilities often want at least 180 days cash on hand.

Some utilities want at least 365 days (some have as high as 2 years).



# Transfers between General Fund and Enterprise Fund

- OK if paying for services rendered or payment in lieu of taxes (should not be recorded as a “transfer”)
- Maybe OK if loaning money that *gets paid back*
- Generally not OK if just moving money between the two funds when one falls short (i.e. subsidizing)

# Visit the EFCN Website – *[www.efcnetwork.org](http://www.efcnetwork.org)*

for more information on upcoming events, funding, and resources.



Innovative Finance Solutions for Environmental Services

[HOME](#) [ABOUT](#) [WORKSHOPS & WEBINARS](#) [ASSISTANCE](#) [RESOURCES](#) [BLOG](#) [ARCHIVES](#) [Q](#)



## Get Free Help Now!

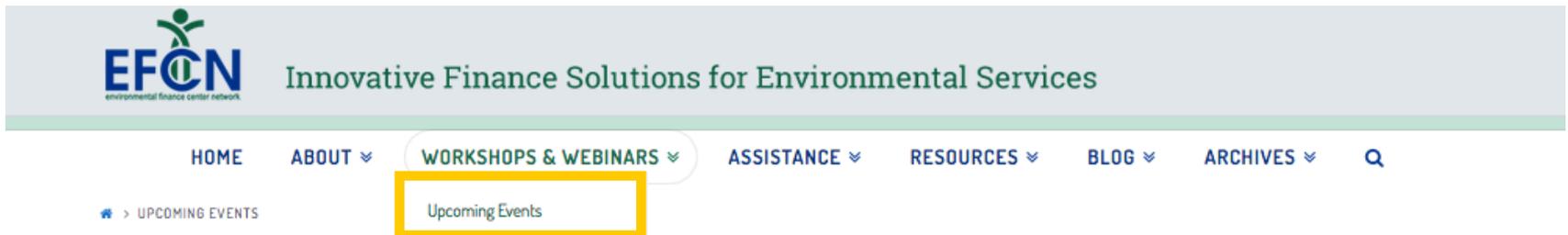
Small water systems can request free technical assistance from our experts on finance and management challenges.

"The thing about working with the EFCN is availability; I can call anytime with a quick question or to get outside advice."



# Upcoming Events Calendar

Select “Upcoming Events” under the Workshops & Webinars Tab.



## Upcoming Events





= In Person Event

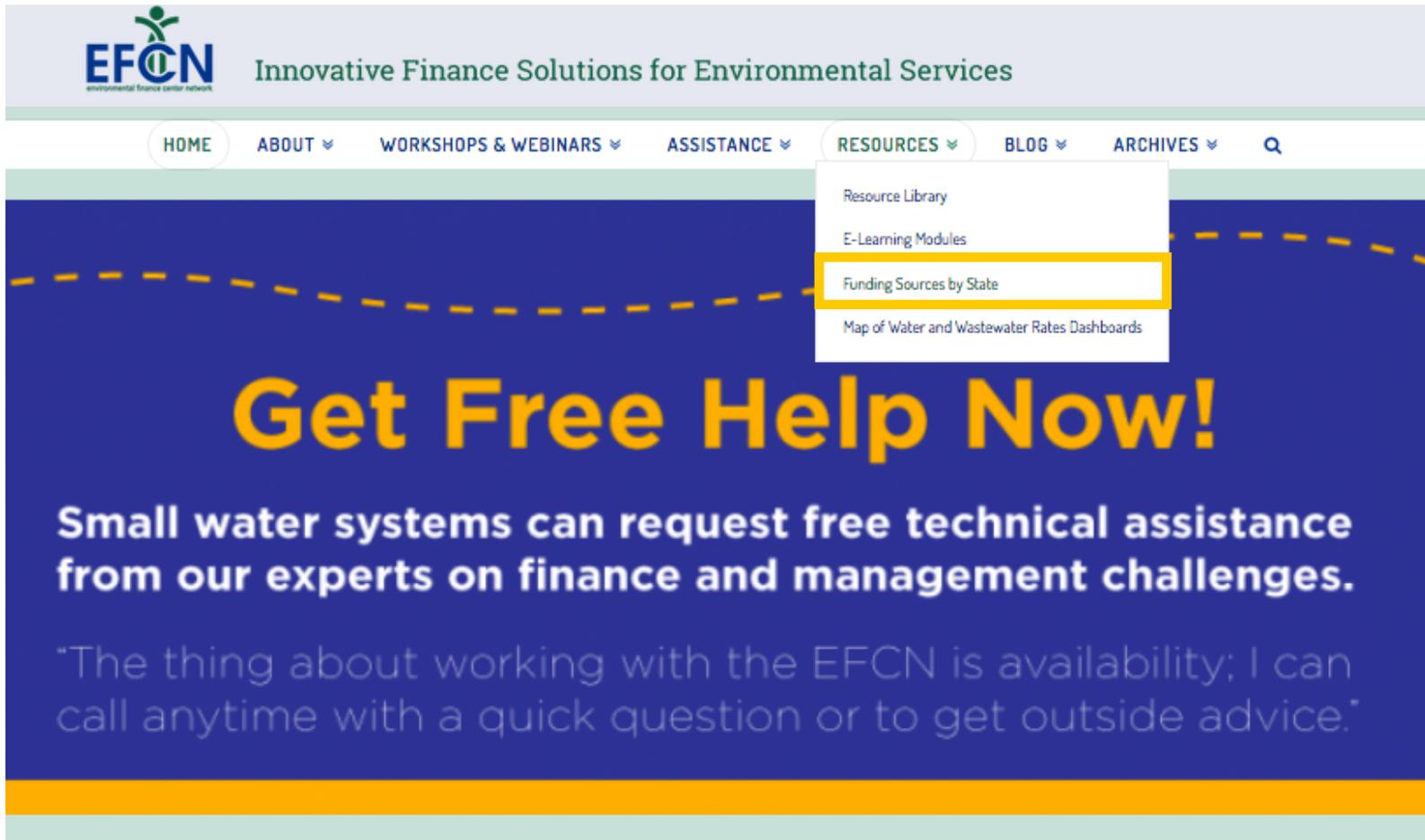


= Webinar

Type	Date/Time	Event
	03/09/2017 2:00 pm - 3:00 pm	WEBINAR   Preparing Winning Financing Applications for Water Infrastructure Projects
	03/22/2017 2:00 pm - 3:00 pm	WEBINAR   Water Audits and Water Loss Control: Entering Your Data into the Spreadsheet
	03/30/2017 9:00 am - 4:30 pm	Maryland   Rates and Finance Workshop for Small Water Systems <i>Easton Utilities, Easton MD</i>
	04/04/2017 1:00 pm - 2:00 pm	WEBINAR: Workforce Development: An Overview of Key Components
	05/11/2017 9:00 am - 4:30 pm	Virginia   Rates and Finance Workshop for Small Systems <i>The Institute for Advanced Learning and Research, Danville Virginia</i>
	05/25/2017 9:00 am - 4:30 pm	Arkansas   Rates and Finance Workshop for Small Water Systems <i>Beaver Water District, Lowell AR</i>
	09/13/2017 9:00 am - 4:30 pm	Pennsylvania   Rates and Finance Workshop for Small Water Systems <i>Pennsylvania American Water Co, New Castle PA</i>

# Funding Tables By State

Select “Funding Sources by State” under the Resources Tab.



The image shows a screenshot of the EFCN website. At the top left is the EFCN logo with the tagline "Innovative Finance Solutions for Environmental Services". The navigation menu includes "HOME", "ABOUT", "WORKSHOPS & WEBINARS", "ASSISTANCE", "RESOURCES", "BLOG", and "ARCHIVES". The "RESOURCES" dropdown menu is open, showing options: "Resource Library", "E-Learning Modules", "Funding Sources by State" (highlighted with a yellow box), and "Map of Water and Wastewater Rates Dashboards". Below the navigation is a large blue banner with the text "Get Free Help Now!" and "Small water systems can request free technical assistance from our experts on finance and management challenges." followed by a testimonial quote.

**EFCN** Innovative Finance Solutions for Environmental Services  
environmental finance center network

HOME ABOUT WORKSHOPS & WEBINARS ASSISTANCE RESOURCES BLOG ARCHIVES

- Resource Library
- E-Learning Modules
- Funding Sources by State**
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# Request Technical Assistance

Select “Request Assistance” under the Assistance Tab off the EFCN homepage to access and submit the TA request form electronically.

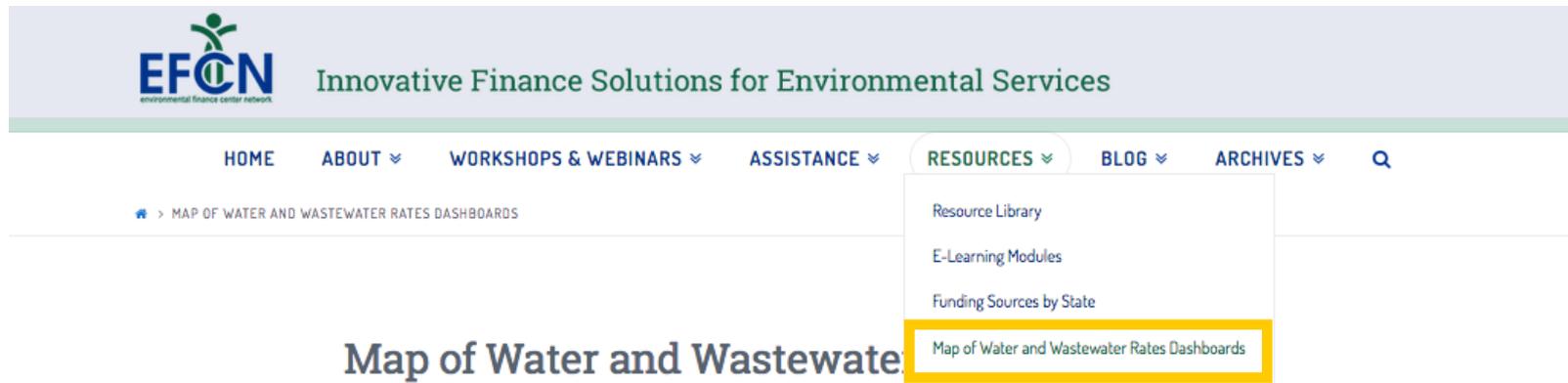


## REQUEST ASSISTANCE

A screenshot of the "Technical Assistance Request Form" page. The page features a header with a collage of images including hands, a calculator, the EFCN logo, and red pipes. The main heading is "Technical Assistance Request Form". Below it, a paragraph states: "The EFCN offers free help on financial and managerial topics to systems serving 10,000 or fewer people. Examples of assistance we can provide include:". This is followed by a list of services: "Creating an Asset management plan", "Near-term financial planning and rate setting", "Analyzing your revenues and expenses", "Offering ideas on how to effectively budget", "Long-term capital planning", "Assessing options for lowering energy use and/or water loss", "Identifying sources of outside funding", "Collaborating with other water systems", and "Resiliency Planning". At the bottom, a paragraph begins: "If you are interested in requesting assistance from our experts, please fill out the form below. You will be asked a few questions to help us understand your water system and what kind of assistance you need."

# Rates Dashboards

Select “Map of Water and Wastewater Rates Dashboards” under the Resources Tab, and click on any state in blue to view its dashboard.



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HOME ABOUT ▾ WORKSHOPS & WEBINARS ▾ ASSISTANCE ▾ RESOURCES ▾ BLOG ▾ ARCHIVES ▾ Q

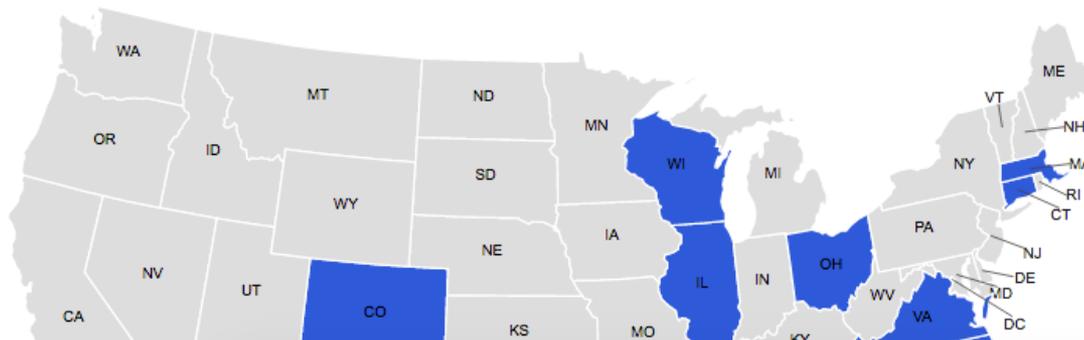
MAP OF WATER AND WASTEWATER RATES DASHBOARDS

- Resource Library
- E-Learning Modules
- Funding Sources by State
- Map of Water and Wastewater Rates Dashboards

## Map of Water and Wastewater

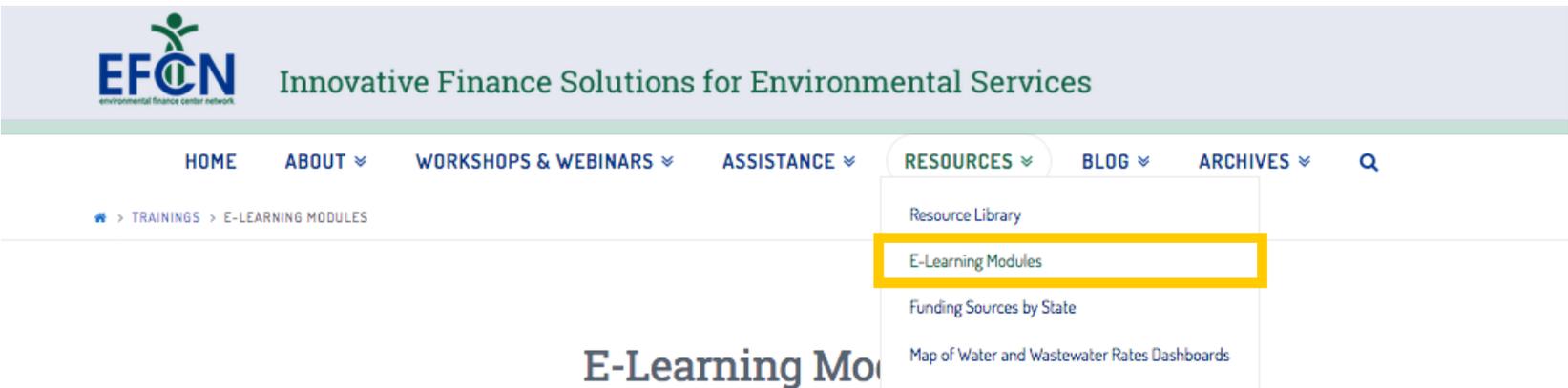
This map shows Water and Wastewater Rates Dashboards created by the EFCN:

Click a state in blue to view its dashboard



# E-Learning Modules

Select “E-Learning Modules” under the Resources Tab off the EFCN homepage.



The screenshot shows the EFCN website homepage. The header features the EFCN logo (environmental finance center network) and the tagline "Innovative Finance Solutions for Environmental Services". The navigation menu includes: HOME, ABOUT, WORKSHOPS & WEBINARS, ASSISTANCE, RESOURCES, BLOG, ARCHIVES, and a search icon. The "RESOURCES" dropdown menu is open, with "E-Learning Modules" highlighted in a yellow box. Below the navigation, the breadcrumb trail reads: > TRAININGS > E-LEARNING MODULES. The main heading "E-Learning Modules" is partially visible.

As part of its continued effort to provide resources and training to small water systems, the Environmental Finance Network is creating E-Learning modules on finance and management topics for system managers.

E-Learning modules provide training through pre-recorded content. You will be able to access the content, watch presentations, complete quizzes and exercises, and access tools and resources at your own pace.

## Financial Sustainability for Small Systems

[Click Here to Access the Course on AWWA's website](#)

This eLearning course is made possible through a USEPA grant for small systems training in conjunction with the EFCN's training partner, AWWA.

# 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/](http://efcnetwork.org/small_systems_blog/)



## Blog



### Magdalena, New Mexico: A Success Story from the Smart Management for Small Water Systems Project

Written by: Allison Perch Allison Perch is a Program Coordinator with the Environmental Finance Center at the University of North Carolina. What can a small town do when the financial health of its water system is at risk? This is the question that Stephanie Finch, the town clerk and treasurer for the ...



### The Virtuous Cycle: Internal Energy Revolving Funds for Small Water Systems

Written by: David Tucker David Tucker is a Project Director with the Environmental Finance Center at the University of North Carolina. How can small (and large) water systems pay for energy efficiency and renewable energy, helping cut utility costs? As energy is often the largest variable expense in a water system's operating ...



### Smart Management for Small Water Systems Program Newsletter | Fall 2015

View Full Issue The Environmental Finance Center Network has published the third issue in a series of quarterly newsletters. The Fall 2015 Program Newsletter announces

# Resource Library

Select “Resource Library” under the Resources Tab off the EFCN homepage.



The screenshot shows the EFCN website header with the logo and tagline "Innovative Finance Solutions for Environmental Services". The navigation menu includes links for HOME, ABOUT, WORKSHOPS & WEBINARS, ASSISTANCE, RESOURCES, BLOG, and ARCHIVES. The RESOURCES dropdown menu is open, and the "Resource Library" option is highlighted with a yellow box. Below the navigation, a breadcrumb trail shows "RESOURCE LIBRARY". The main heading "Resource Libr" is partially visible.

[View All Tools](#) | [View All Publications](#) | [View All Posts](#)

For an overview of some of the tools and resources available in our Resource Library, please view our [Tools and Resources flyer](#).

## What does your system need help with?

+ We treat more water than we sell.



# Resource Library Continued...

Click on a what your system needs help with to reveal tools and publications related to that topic.

✖ We have insufficient revenue to cover our costs.

## Tools

February 16, 2017 <a href="#">Online Water Rate Checkup Tool</a>	November 7, 2016 <a href="#">Modelo de Análisis para las Tarifas de Agua y Aguas Residuale</a>
February 17, 2016 <a href="#">Water Utility Customer Assistance Program Cost Estimation Tool</a>	January 26, 2016 <a href="#">Financial Health Checkup for Water Utilities</a>
September 3, 2014 <a href="#">Water &amp; Wastewater Residential Rates Affordability Assessment Tool</a>	August 15, 2013 <a href="#">Rates and Financial Benchmarking Dashboards</a>
December 16, 2012 <a href="#">Plan to Pay: Scenarios to Fund your C.I.P.</a>	November 20, 2012 <a href="#">Water &amp; Wastewater Rates Analysis Model</a>
November 15, 2012 <a href="#">Dashboard for Using Capital Reserve Fund to Avoid Rate Shock</a>	November 4, 2012 <a href="#">Loan Analysis Tool</a>

## Publications

April 14, 2014 <a href="#">Rural and Small Systems Guidebook to Sustainable Utility Management</a>	August 29, 2013 <a href="#">Setting Small Drinking Water System Rates for a Sustainable Future</a>
August 29, 2013 <a href="#">Asset Management: A Handbook for Small Water Systems</a>	August 27, 2013 <a href="#">Designing Rate Structures that Support Your Objectives</a>



Smart Management for  
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**Thank you.**

Shadi Eskaf

Environmental Finance Center at the University of North Carolina at Chapel Hill

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and *efcnetwork.org*



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