



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



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



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



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

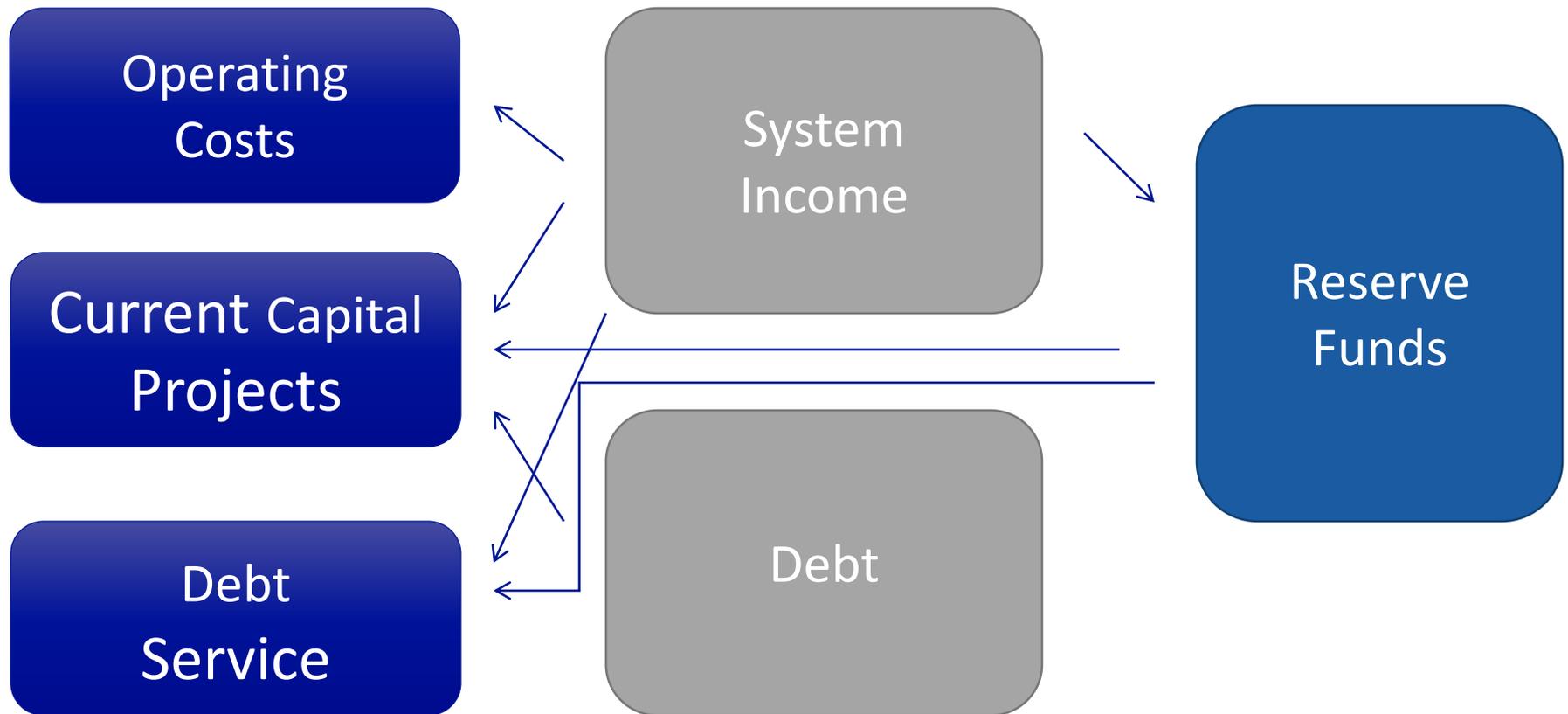


Guiding Principle for Enterprise Funds

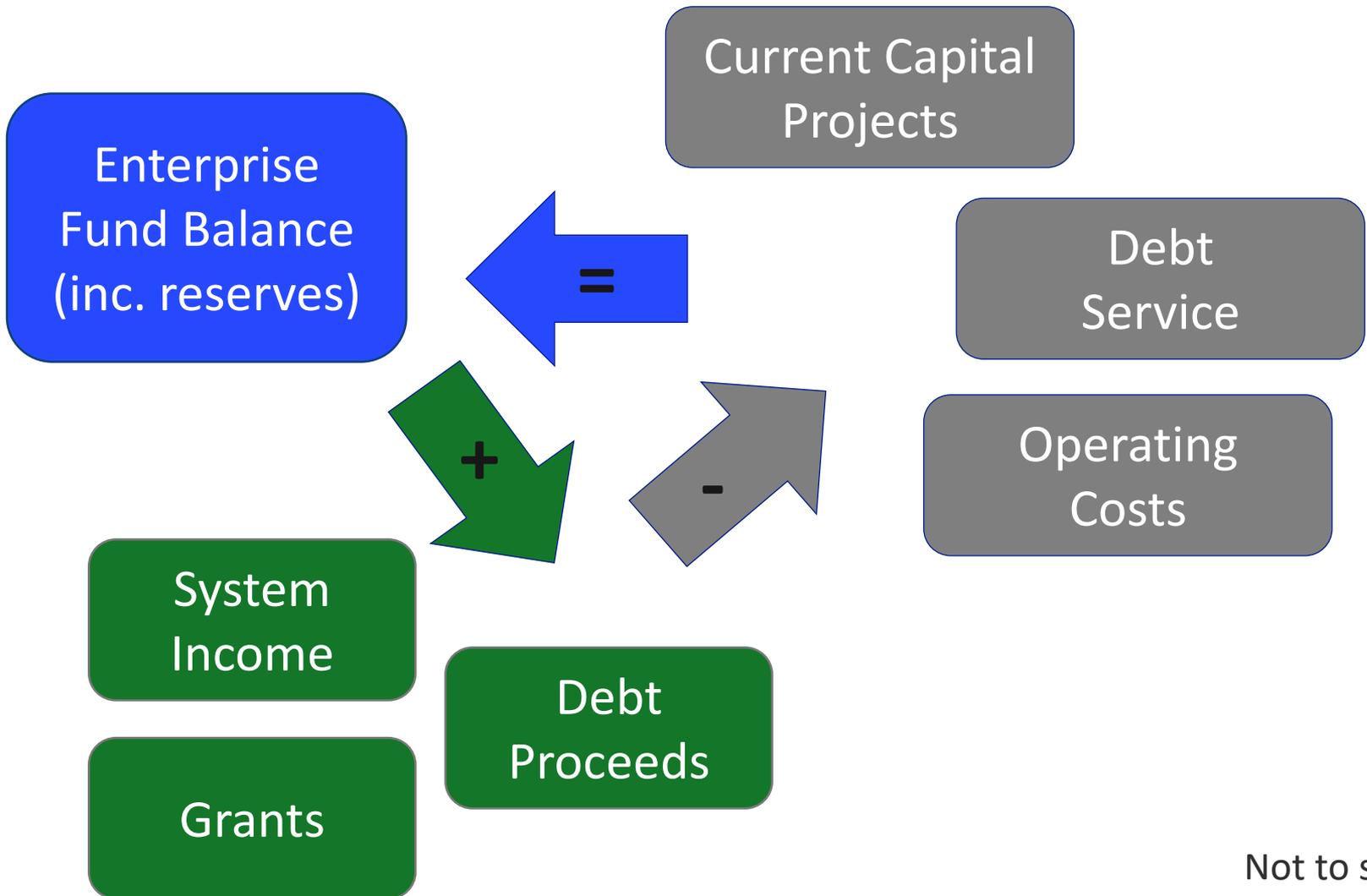
Self-sufficiency

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

Water System Finance Diagram



Water System Finance Diagram





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)?

BAVARIA	
STATEMENT OF NET ASSETS	
PROPRIETARY FUND	
JUNE 30, 2011	
	Water and Sewer Enterprise Fund
Assets	
Current Assets:	
Cash - operating	\$ 368,061
Accounts Receivable (Net)	60,246
Prepaid Insurance	5,856
Total Current Assets	440,263
Noncurrent Assets:	
Restricted cash	177,208
Capital assets	
Land	299,556
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	5,787,212
Total Assets	6,421,278
Liabilities	
Current Liabilities:	
Accounts Payable	21,090
Accrued Expenses	2,767
Due to Other Funds	8,176
Customer Deposits	62,625
Deferred Subsidy Revenue	460,005
Current Portion of Long Term Debt	343,811
Total Current Liabilities	899,474
Noncurrent Liabilities:	
Compensated Absences	15,605
Revenue Bonds (Net of Current portion)	233,357
Notes Payable (Net of current portion)	646,873
Total Noncurrent Liabilities	895,835
Total Liabilities	1,795,309
Fund Net assets	
Invested in capital assets, net of retained 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 and 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

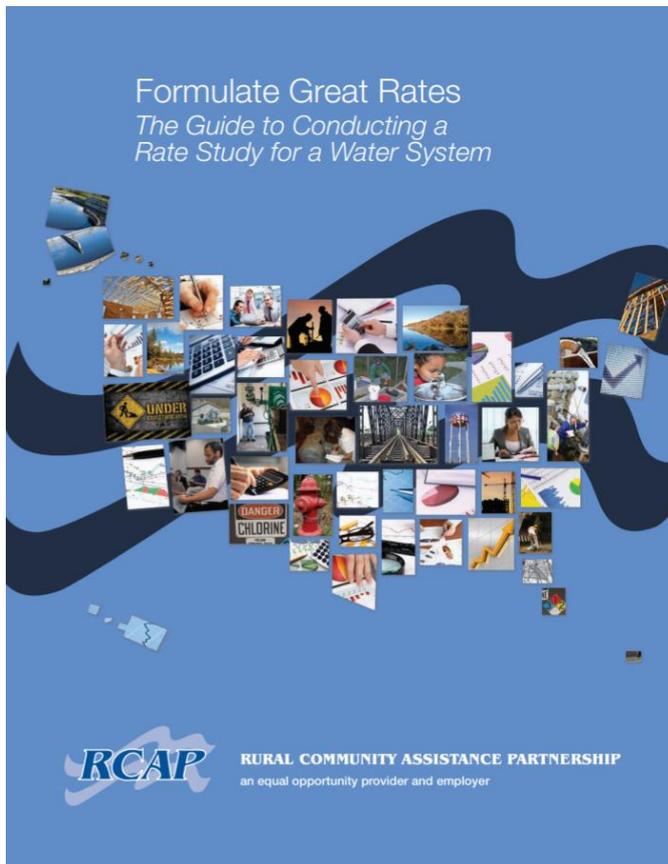
One of the Simple Tools for Effective Performance (STEP) Guide Series



- 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>

Another Version by RCAP



- When to review rates
- Spreading rate increases over customers
- Setting final base and flow rates
- Adjusting rates

With worksheets.

<http://www.map-inc.org/uploads/5/2/2/1/52214049/formulate-great-rates.pdf> or on the W2ASACT website.

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

Water & Wastewater Rates Analysis Model
Version 2.8.2 (last updated August 4, 2015)

Developed by the Environmental Finance Center at the University of North Carolina, Chapel Hill
<http://efc.sog.unc.edu>

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

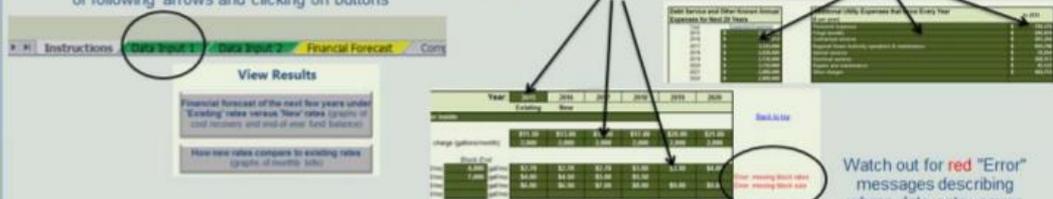
DESCRIPTION
A do-it-yourself, simplified financial model to assist utility managers and private system owners in setting water and wastewater rates.

FEATURES
Comparisons of annual fund balance projections (for up to 20 years) under proposed new rates vs. staying with existing rates
Adjust rates for the next 1-5 years
Up to 12 rate structures
Uniform or block rates (up to 10 blocks)
Model changes to accounts and water use
Customizable list of operating and capital expenses
Building up reserves through rates
Compare monthly bills under new rates vs. existing rates
Assess revenue sufficiency and fund balance
Error notifications

INSTRUCTIONS

1) Navigate using worksheet tabs at bottom of screen or following arrows and clicking on buttons

2) In the green "Data Input" worksheets, input data in the dark green cells



Financial forecast of the next five years under Existing rates versus New rates (graphs of cost recovery and end-of-year fund balances)

How new rates compare to existing rates (graphs of monthly bills)

Year	2015	2016	2017	2018	2019	2020
Revenue	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00
Charge (Water/WW)	1.00	1.00	1.00	1.00	1.00	1.00
Block Fee	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Water	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00
WW	\$6.00	\$6.00	\$6.00	\$6.00	\$6.00	\$6.00

Watch out for red "Error" messages describing where data entry errors

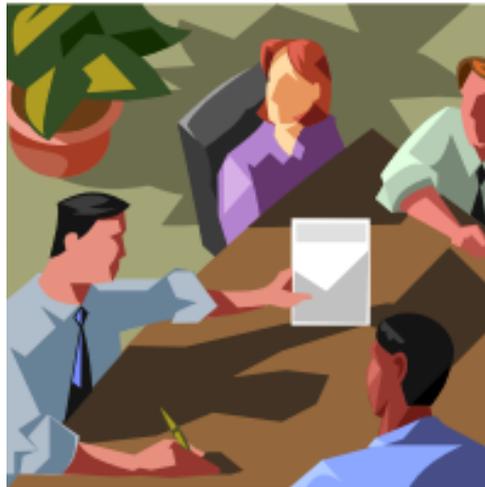
Revenue Generation Isn't the Only Objective

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?

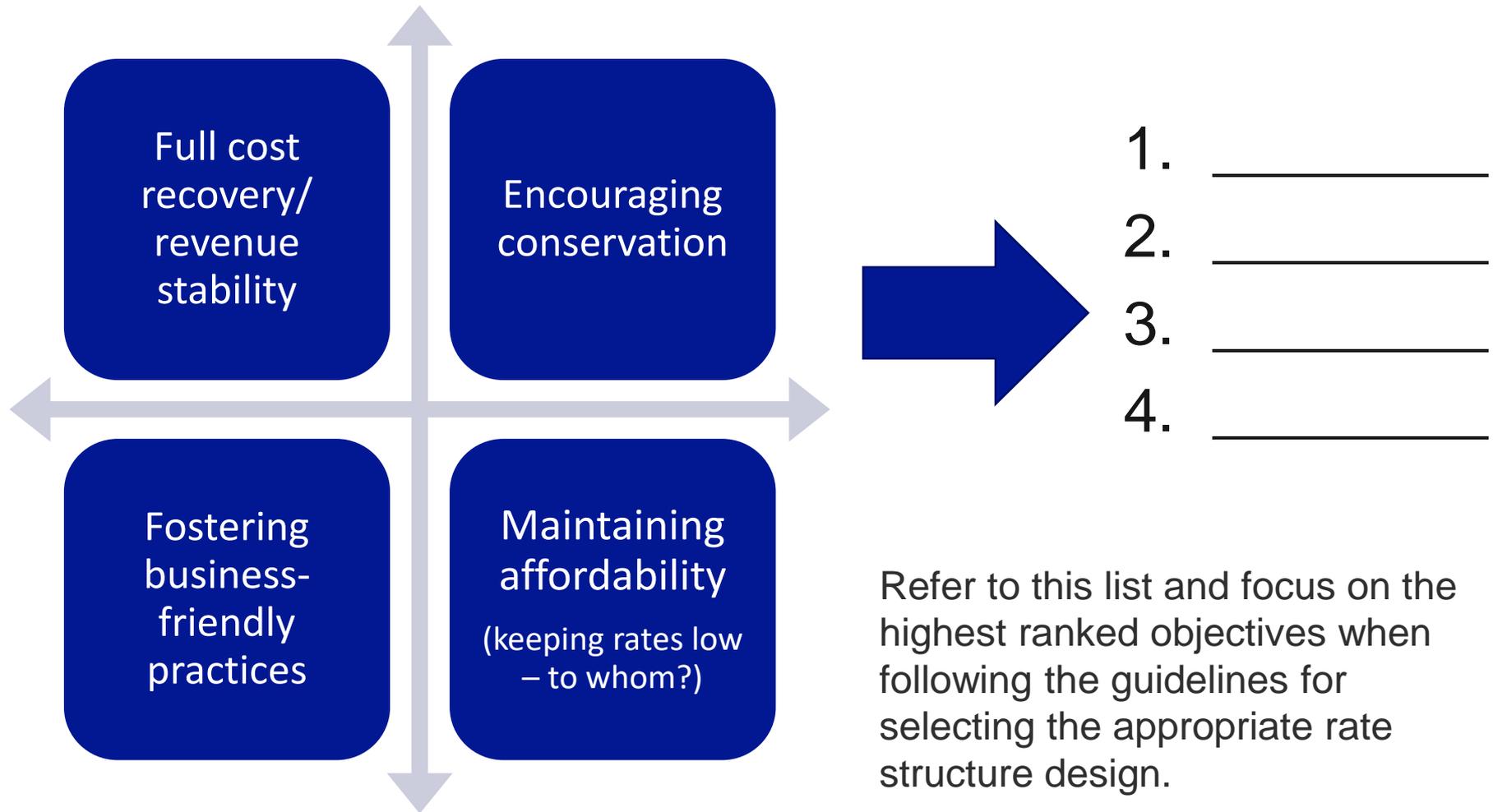


Will revenues be resilient to changing water demands?

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

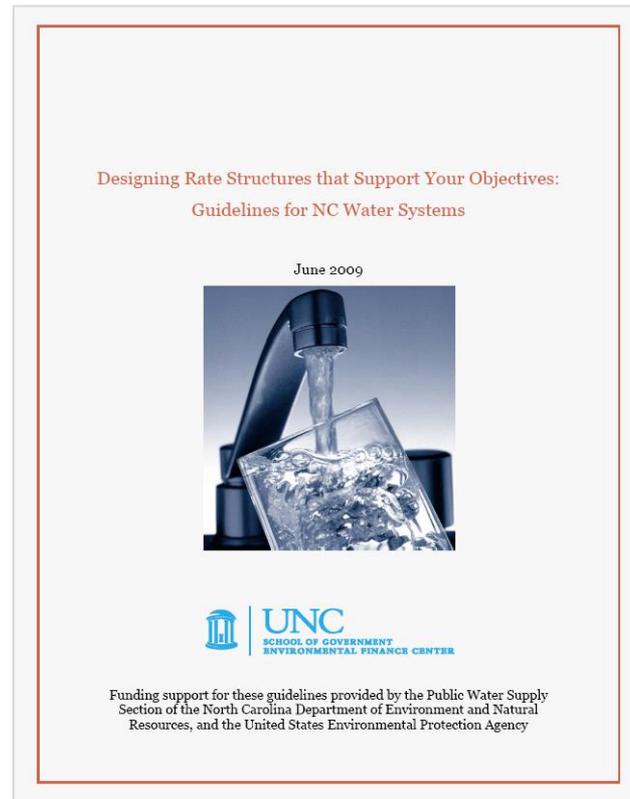
1. Customer classes/distinction
2. Billing period
3. Base charge
4. Consumption allowance included with base charge
5. Volumetric rate structure
6. (If applicable) Number of blocks, block sizes and rate differentials
7. (Optional) Drought Rates

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

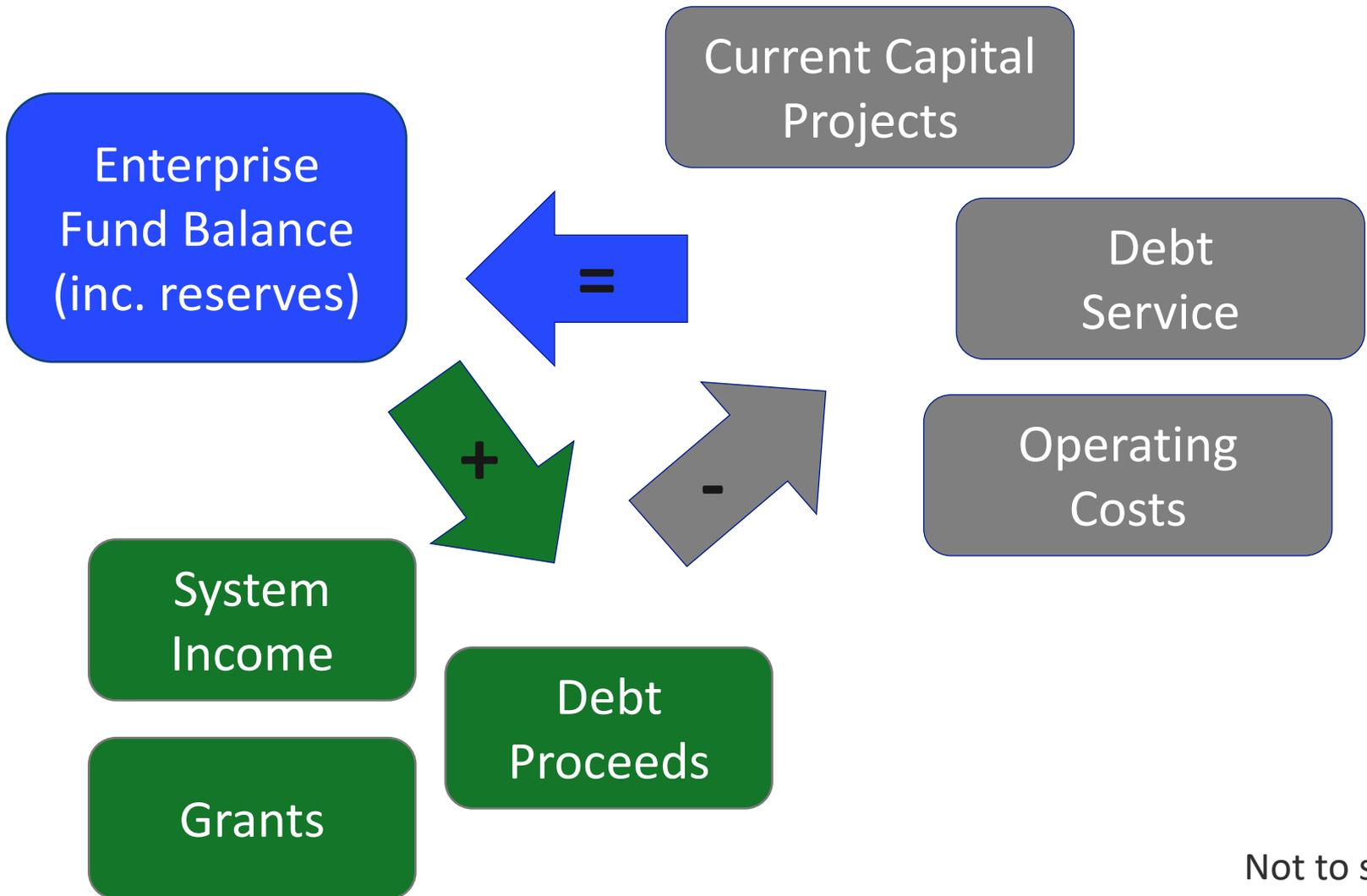
- Create and maintain a Capital Improvement Plan
- “Fund” your depreciation, with a little extra
- Estimate from past expenses, but adjust for the future

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

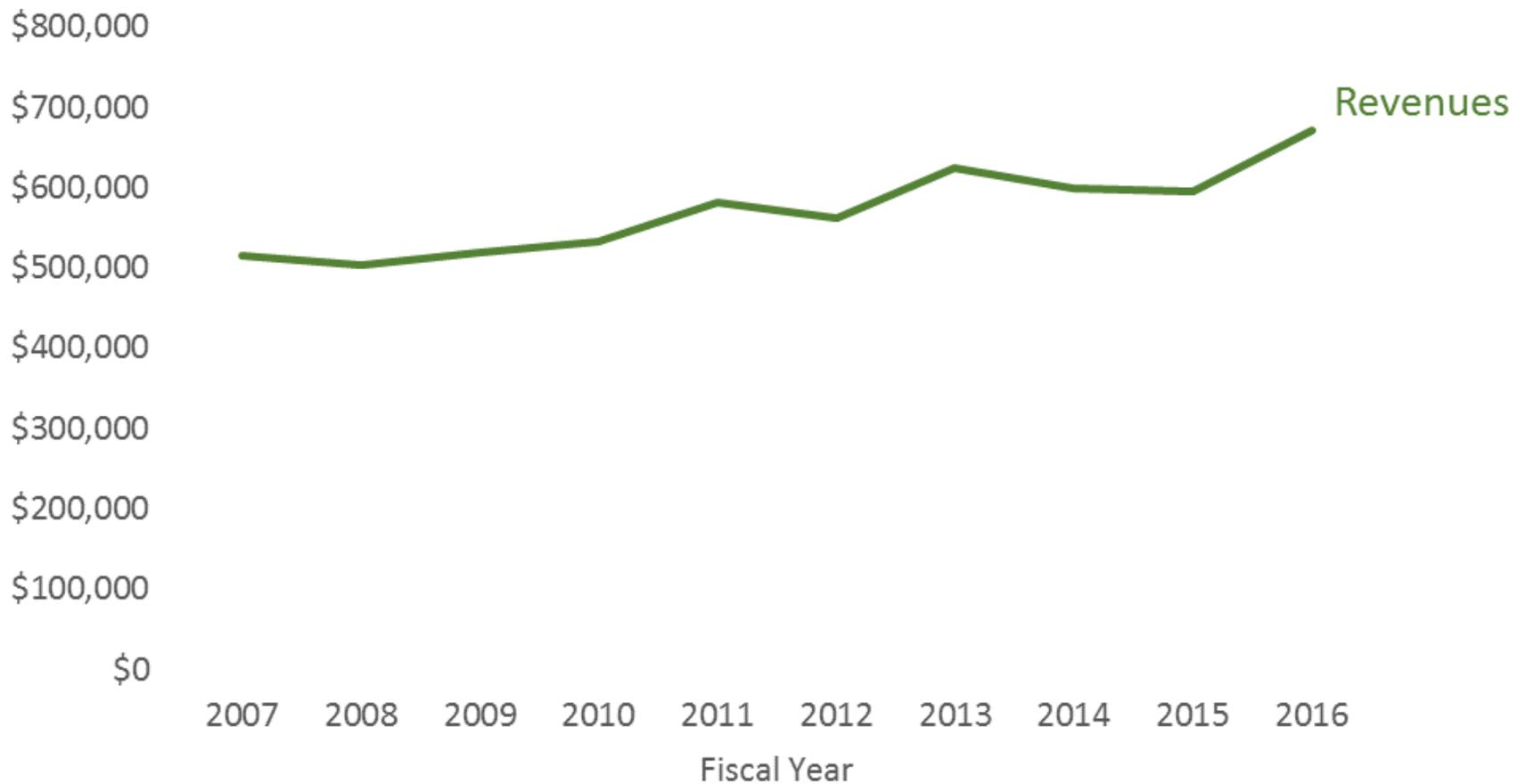
- **Capital Reserve Fund** — Infrastructure rehabilitation and replacement
- **Repair Fund** — Known, ongoing maintenance issues
- **Emergency Fund** — Unknown, unanticipated maintenance issues
- **Rainy Day Fund** — Unexpected revenue shortfalls



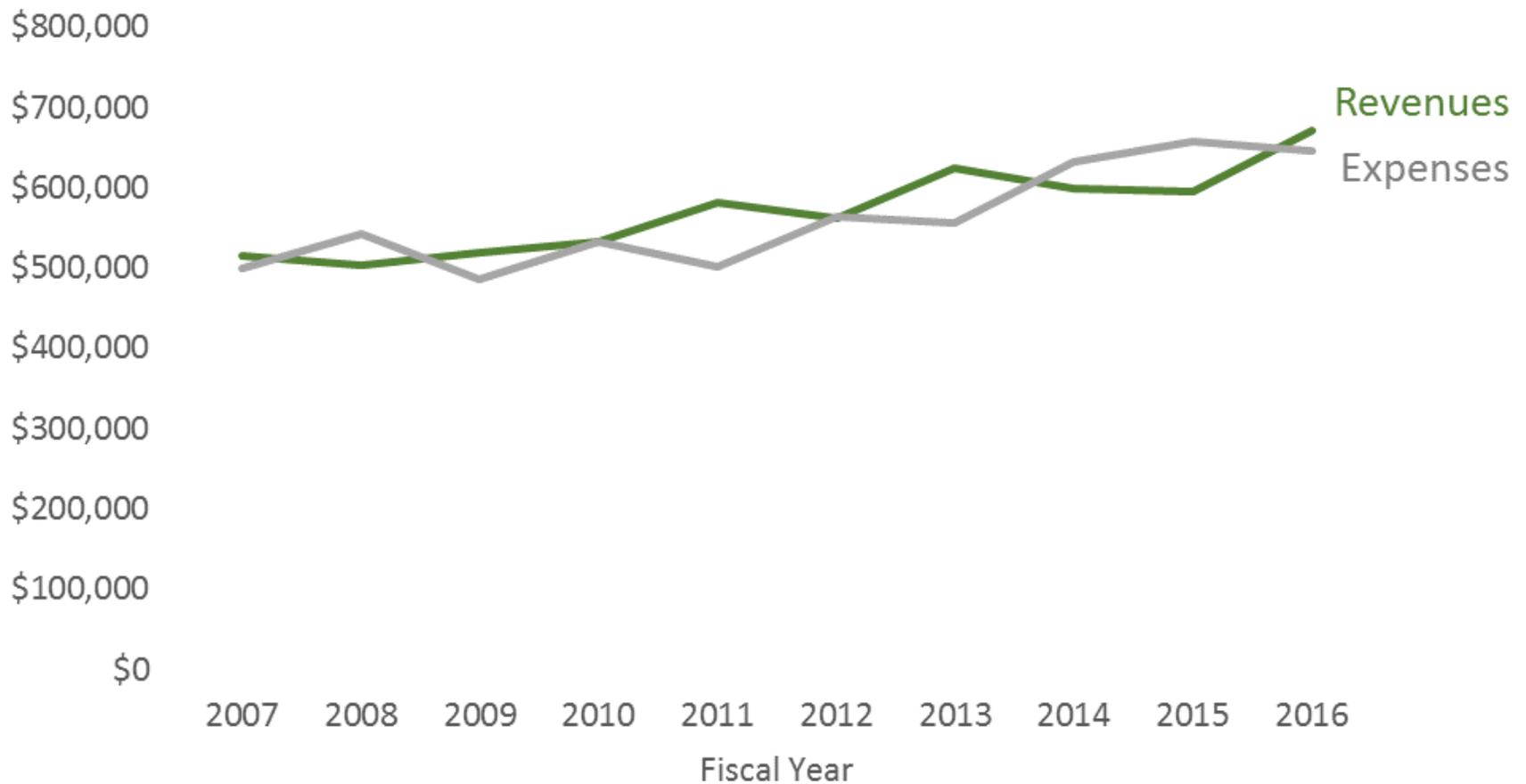
Budgeting for the Future

- 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?



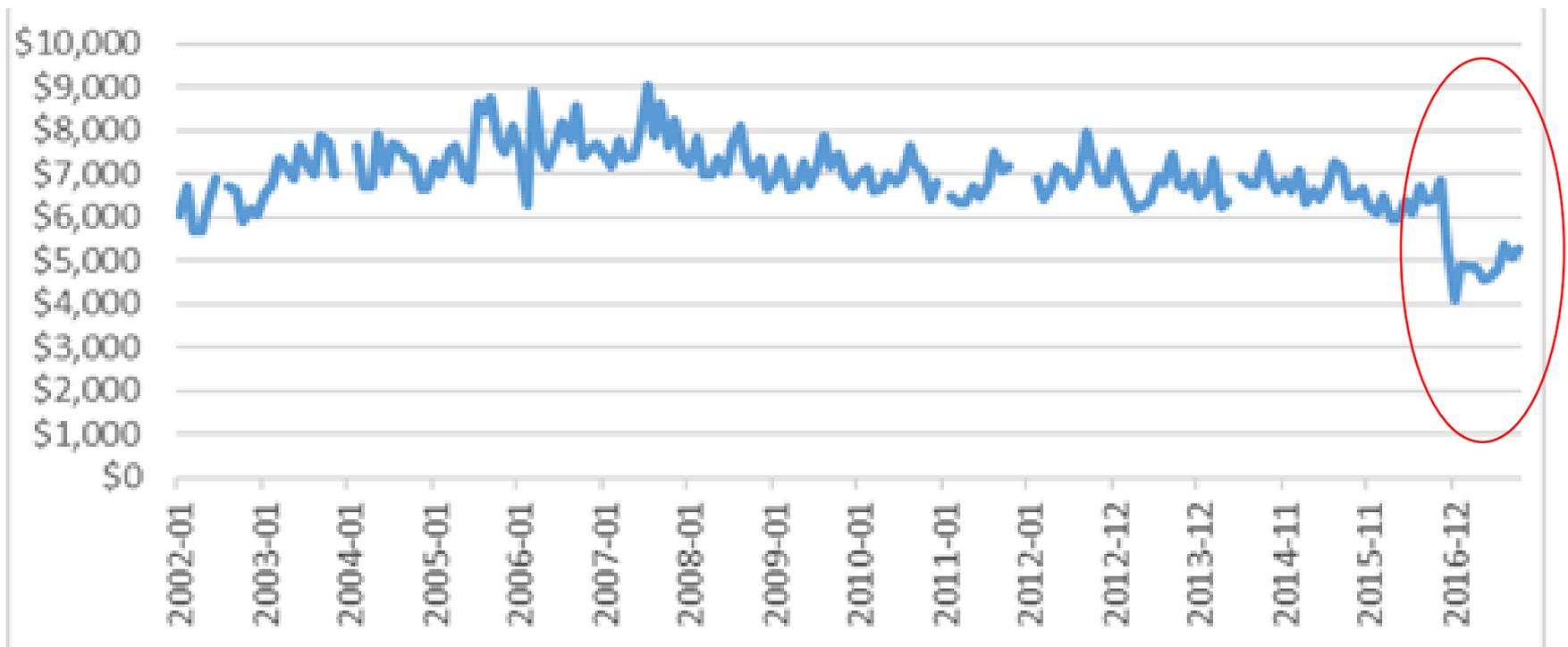
Why is Maintaining a Reserve Important?





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

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



The screenshot shows the EFCN website header and a main banner. The header includes the EFCN logo (Environmental Finance Center Network) and the tagline "Innovative Finance Solutions for Environmental Services". A navigation menu contains links for HOME, ABOUT, WORKSHOPS & WEBINARS, ASSISTANCE, RESOURCES, BLOG, ARCHIVES, and a search icon. The main banner has a dark blue background with yellow icons of a person thinking and a person working at a computer. The text in the banner reads: "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.'"

EFCN
environmental finance center network

Innovative Finance Solutions for Environmental Services

HOME ABOUT WORKSHOPS & WEBINARS ASSISTANCE RESOURCES BLOG ARCHIVES Q

Get Free Help Now!

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Upcoming Events Calendar

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



Upcoming Events





= In Person Event

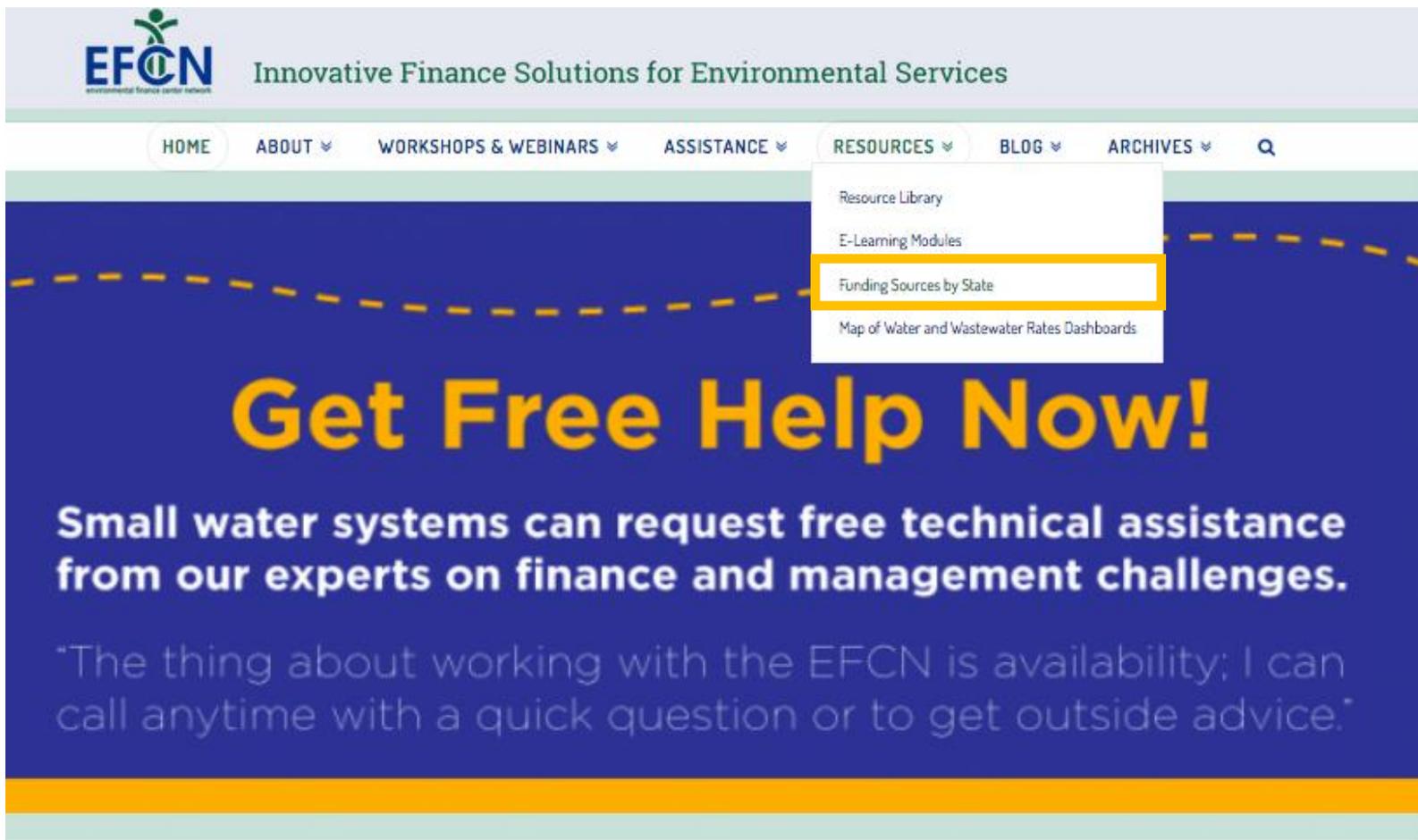


= Webinar

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 (Environmental Finance Center Network) website. The header features the EFCN logo and 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 border), 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." A testimonial quote is visible at the bottom of the banner.

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**
- Map of Water and Wastewater Rates Dashboards

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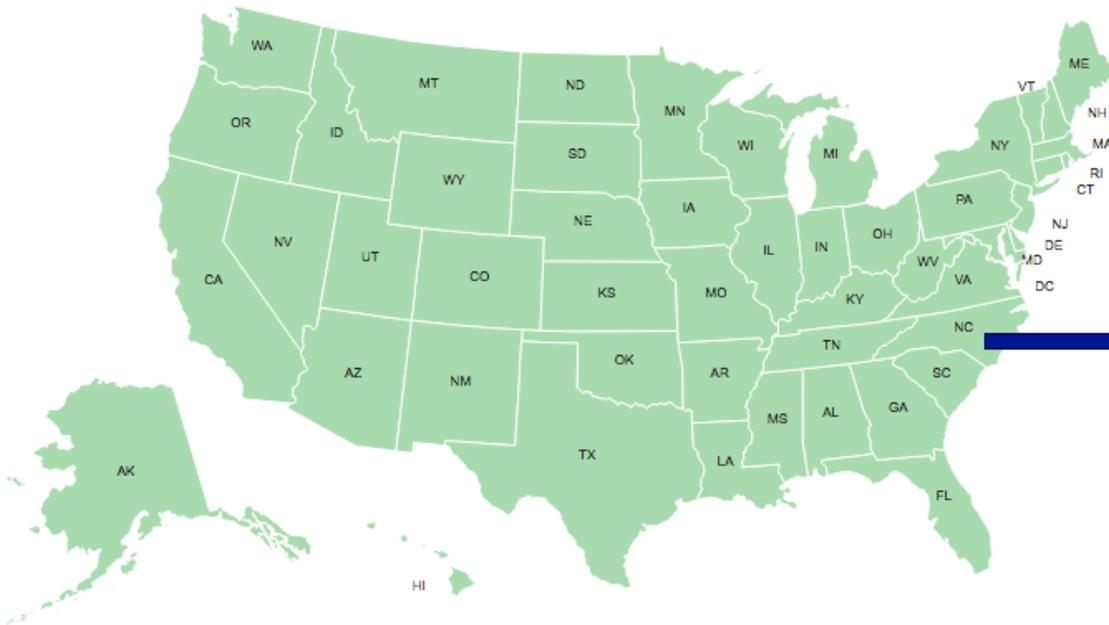
"The thing about working with the EFCN is availability; I can call anytime with a quick question or to get outside advice."



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.

Oregon Water and Wastewater Funding Sources
Compiled by the OWA, March 2014

Organization	Program	Purpose or Use of Funds	Application Dates	Website	Contact
Oregon Water Solutions	Water Infrastructure Financing Fund	Provide a guaranteed investment grade bond and non-refundable grant to help fund water infrastructure projects in Oregon, including water supply, water quality, and water conservation.	Open to all Oregon water utilities. Applications are accepted on a rolling basis.	www.oregonwatersolutions.com/infrastructure-funding	David Brown david.brown@oregonwatersolutions.com
	Water Infrastructure Financing Fund	Provide a guaranteed investment grade bond and non-refundable grant to help fund water infrastructure projects in Oregon, including water supply, water quality, and water conservation.	Open to all Oregon water utilities. Applications are accepted on a rolling basis.	www.oregonwatersolutions.com/infrastructure-funding	David Brown david.brown@oregonwatersolutions.com
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Oregon Department of Environmental Quality	Water Infrastructure Financing Fund	Provide a guaranteed investment grade bond and non-refundable grant to help fund water infrastructure projects in Oregon, including water supply, water quality, and water conservation.	Open to all Oregon water utilities. Applications are accepted on a rolling basis.	www.deq.state.or.us/water/infrastructure-funding	David Brown david.brown@deq.state.or.us
	Water Infrastructure Financing Fund	Provide a guaranteed investment grade bond and non-refundable grant to help fund water infrastructure projects in Oregon, including water supply, water quality, and water conservation.	Open to all Oregon water utilities. Applications are accepted on a rolling basis.	www.deq.state.or.us/water/infrastructure-funding	David Brown david.brown@deq.state.or.us
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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 water pipes. The main heading is "Technical Assistance Request Form". Below this, 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 bulleted 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.



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

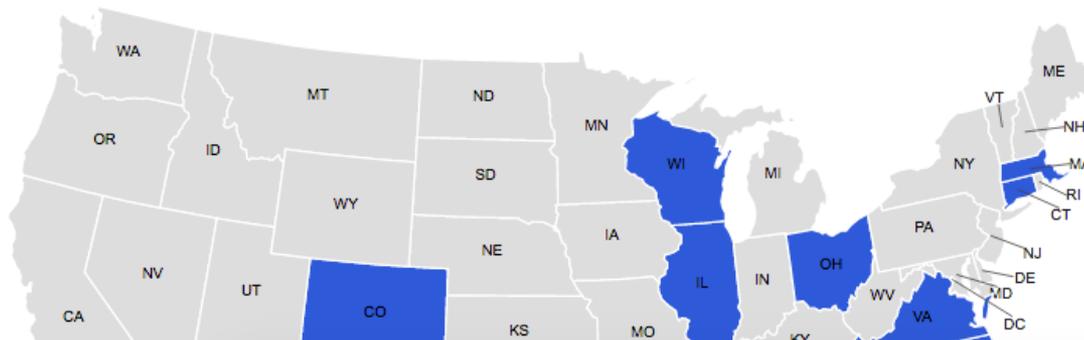
🏠 > MAP OF WATER AND WASTEWATER RATES DASHBOARDS

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

Map of Water and Wastewater

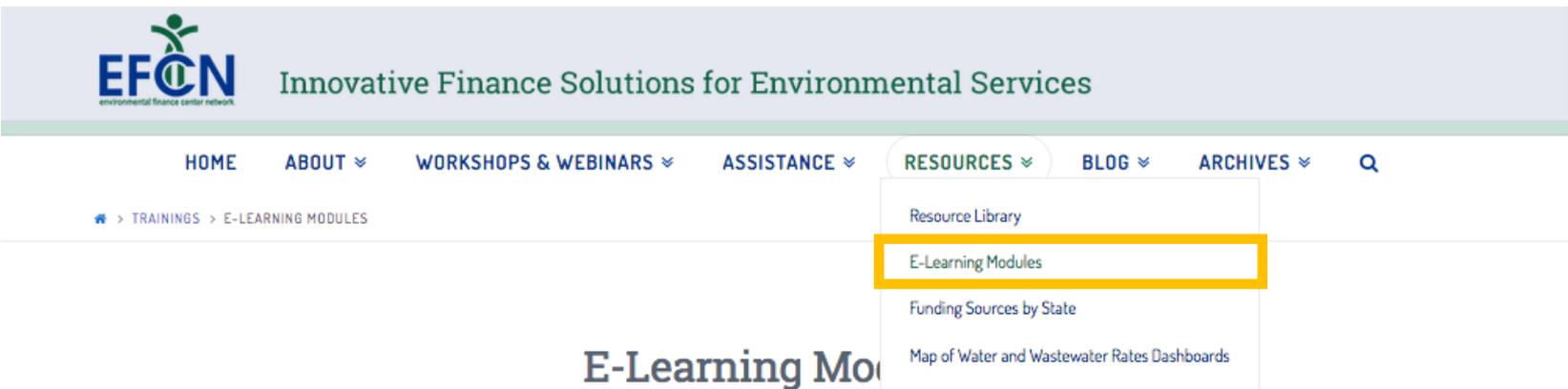
This map shows Water and Wastewater Rates Dashboards created by the EFCN:

Click a state in blue to view its dashboard



E-Learning Modules

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



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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/

[Sign Me Up](#)

**EFCN**
Environmental Finance Center Network

Innovative Finance Solutions for Environmental Services

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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 "HOME", "ABOUT", "WORKSHOPS & WEBINARS", "ASSISTANCE", "RESOURCES", "BLOG", and "ARCHIVES". The "RESOURCES" menu is open, and "Resource Library" 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

[Online Water Rate Checkup Tool](#)

February 17, 2016

[Water Utility Customer Assistance Program Cost Estimation Tool](#)

September 3, 2014

[Water & Wastewater Residential Rates Affordability Assessment Tool](#)

December 16, 2012

[Plan to Pay: Scenarios to Fund your C.I.P.](#)

November 15, 2012

[Dashboard for Using Capital Reserve Fund to Avoid Rate Shock](#)

November 7, 2016

[Modelo de Análisis para las Tarifas de Agua y Aguas Residuale](#)

January 26, 2016

[Financial Health Checkup for Water Utilities](#)

August 15, 2013

[Rates and Financial Benchmarking Dashboards](#)

November 20, 2012

[Water & Wastewater Rates Analysis Model](#)

November 4, 2012

[Loan Analysis Tool](#)

Publications

April 14, 2014

[Rural and Small Systems Guidebook to Sustainable Utility Management](#)

August 29, 2013

[Asset Management: A Handbook for Small Water Systems](#)

August 29, 2013

[Setting Small Drinking Water System Rates for a Sustainable Future](#)

August 27, 2013

[Designing Rate Structures that Support Your Objectives](#)



Smart Management for
Small Water Systems

Thank you.

Shadi Eskaf

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