

LONG-TERM SYSTEM PLANNING: THINKING OUTSIDE THE PIPES

EFCN Webinar
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TRAINING OBJECTIVES

- Review basics of water & wastewater system finances
- Understand the importance of a realistic revenue requirement
- Learn key measures of financial performance benchmarks
- Introduce rate setting philosophies and considerations for designing appropriate rate structures
 - Calculate base and volumetric charges to cover the full cost of providing services

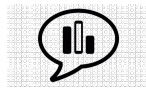
A FEW QUESTIONS ABOUT YOU

IN WHAT TYPE OF ROLE ARE YOU?

1. Manager, Owner, or Operator of a water/wastewater system
2. Public works, water/nature resources director
3. Finance officer, Clerk
4. Mayor, City/town/tribal council member or Board member
5. Consultant or Technical assistance provider

WHEN WAS THE LAST TIME YOUR UTILITY RAISED THEIR RATES? (IN THE LAST X YEARS)

1. 1 year or less
2. 2-5 years
3. 6-10 years
4. >10 years
5. Unknown



WATER SYSTEMS SERVE MULTIPLE PURPOSES

Protecting water resources and supplying highest quality drinking water

Environmental & Health

1

2

3

WATER SYSTEMS SERVE MULTIPLE PURPOSES

Protecting water resources and supplying highest quality drinking water

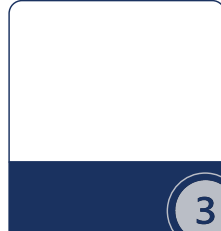
Environmental & Health

1

Providing basic services that everyone in the community can afford

Public Service

2



3

WATER SYSTEMS SERVE MULTIPLE PURPOSES

Protecting water resources and supplying highest quality drinking water

Environmental & Health

1

Providing basic services that everyone in the community can afford

Public Service

2

Putting sustainable business practices into action

Public Enterprise

3

WATER SYSTEMS SERVE MULTIPLE PURPOSES

To serve all these purposes, water/wastewater systems need to be sustainably financed – *how you pay for it matters!*

Environmental Health

1

Public Service

2

Public Enterprise

3

BASICS OF UTILITY FINANCE

WATER AND WASTEWATER AS ENTERPRISE FUNDS



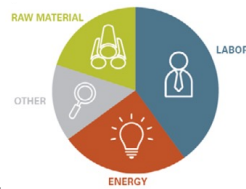
- Self-sufficiency
- Separated from other funds
- REVENUES collected = COSTS expended
- Avoid or minimize transfers

REVENUE REQUIREMENT

- This is the “science” part of the rate making process
- Sets the bar for how much you need to operate a financially sustainable utility

THREE TYPES OF COSTS

- **Operating Costs**—what you need to run the system day in and day out (O&M), etc.)
 - Look at *trends* from previous years and challenge your operators to look for cost savings
 - Look to the *future*
 - Don't forget *indirect costs* of running the system
 - shared management costs, shared facility costs, etc.



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THREE TYPES OF COSTS

- **Operating Costs**—what you need to run the system day in and day out
- **Capital Costs**—rehabilitation and replacement of existing infrastructure and new infrastructure
 - Asset management and capital improvement plans are key
 - Be flexible in your spending but do not manage to failure



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THREE TYPES OF COSTS

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

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TWO TYPES OF REVENUES

- **System Income**—Money from rates, tap fees, system development charges, grants, penalties, other sources
 - Note: To be a pure enterprise fund, not taxes (unless explicitly permitted).

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TWO TYPES OF REVENUES

- **System Income**—Money from rates, tap fees, system development charges, grants, penalties, other sources
 - Note: To be a pure enterprise fund, not taxes (unless explicitly permitted).
- **Debt**—Money from bonds and loans

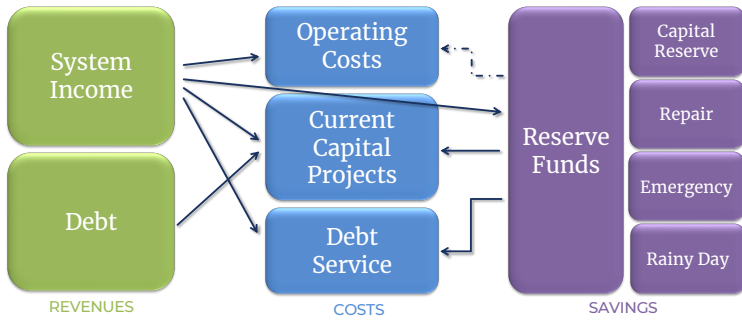
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MANY TYPES OF RESERVE FUNDS

- **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.

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WATER SYSTEM FINANCE DIAGRAM



FOUR APPROACHES TO PAYING FOR CAPITAL IMPROVEMENTS

- Pay-as-You-Go
 - Rates sufficient for emergencies?
- Save in Advance
 - Reserve funds
- Borrow and Pay Later
 - Subsidized loans (e.g., SRF, USDA, BRIC)
- Get a Grant



Don't discount any funding

CONSEQUENCES OF NOT UNDERSTANDING REVENUE REQUIREMENT

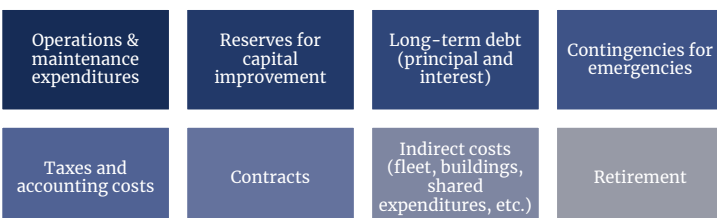
- Financially unsustainable
- Collect too **much**
- Collect too **little**
- Sending the wrong message to your customers

BUDGETS SHOULD REFLECT THE GOALS OF THE GOVERNING BODY

- Appropriation of funds
- Measuring and promoting financial and operational performance
- Setting rates and fees
- Public education

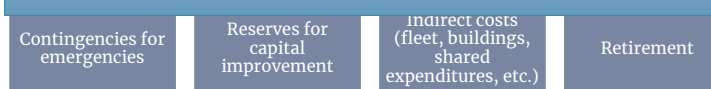


BUDGETING FOR THE FULL COST

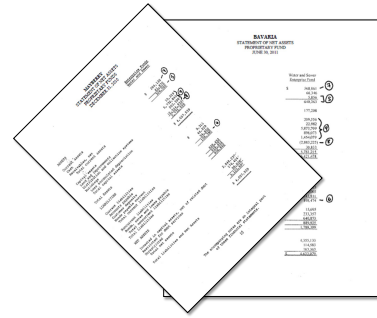


BUDGETING FOR THE FULL COST

Knowing all about the costs informs how much is needed in *revenues*



QUICK OVERVIEW OF FINANCIAL STATEMENTS



ASSESSING FINANCIAL CONDITION

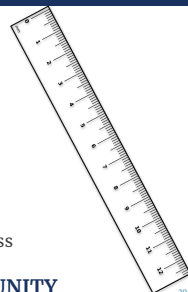
QUICK OVERVIEW OF FINANCIAL STATEMENTS

- Audited financial statements are produced at the end of each fiscal year and reflect only that fiscal year.
 - Ex post – based on what actually happened
- Performed by a third-party
- Primarily interested in *enterprise funds or proprietary funds*
- Varying degrees of complexity, like budgets
- Alternatives:
 - balance sheets
 - shareholder reports
 - annual reports

WHAT ARE FINANCIAL BENCHMARKS?

WHAT ARE FINANCIAL BENCHMARKS?

- **QUANTIFIABLE MEASURES OF PERFORMANCE**
 - Things we can measure
 - Things that people care about
 - Data is helpful
- **MEASURE PROGRESS**
 - Assess operational performance
 - Set goals and understand growth
- **IMPACTS INVESTMENT CAPACITY**
 - Investors, particularly institutional investors, use to assess financial health
- **INDICATIVE OF FINANCIAL HEALTH OF A COMMUNITY**



WHY CARE ABOUT FINANCIAL BENCHMARKS?

- Get a holistic picture of utility performance and needs
- Set future goals and understand growth
- Inform capital planning
- Understand affordability
- Financing options

FINANCIAL PERFORMANCE METRICS

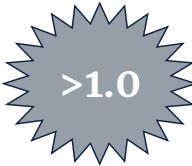
Is your system self-sufficient?	Operating Ratio
Are you able to cover your debt service after paying for your day-to-day operations?	Debt Service Coverage Ratio
If your customers stop paying their bills, how long can you maintain operations?	Days Cash on Hand
Can your system meet its short-term obligations?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

OPERATING RATIO

- A measure of self-sufficiency
- The revenue you get from daily operations, divided by the expenditures or expenses you make to keep operations running

$$= \frac{\text{Operating Revenues}}{\text{Operating Expenses}}$$

including (or excluding) depreciation



OPERATING RATIO

Operating Revenues

- Income from:
- Rates
 - Late Fees
 - Penalties
 - Connection Fees
 - Tap Fees

Operating Expenses

- O&M Costs:
- Supplies
 - Salaries and Benefits
 - Overtime
 - Taxes
 - Insurance
 - Depreciation
 - **DOES NOT** include debt service or reserves

THIS FUNNY THING CALLED DEPRECIATION

- An accounting solution for a physical problem: aging infrastructure
- You have a “cost” every year of your infrastructure wearing out, a percentage of its value



What is Depreciation?

Loss of value over time of an asset not restored by current maintenance

An economic fact for any water or wastewater system

Value lost from both declining physical factors and functional or non-physical factors (obsolescence)

OPERATING RATIO AND DEPRECIATION

- Including depreciation in your operating ratio
 - “Fully funding” depreciation allows you to have saved for replacement at the time replacement is needed
 - (This isn't as good as doing asset management and capital planning, but it is better than nothing)
- Less necessary if you have a comprehensive capital improvement plan and are actively budgeting for future infrastructure

DEBT SERVICE COVERAGE RATIO

- A measure of the ability to pay debt service
- Often calculated by funders and debtors

$$= \frac{\text{Operating Revenues} - \text{Operating Expenditures (excludes depreciation)}}{\text{Principal} + \text{Interest Payments on Long Term Debt}}$$

>1.2

DAYS CASH ON HAND

- How long you can continue to pay for O&M without any additional revenues?
- Unrestricted Cash and cash equivalents are monies can be used for anything

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

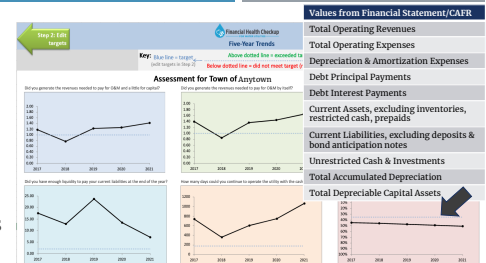
>180 days

WHAT'S NEXT?

- Once we figure out where we are, how do we know where we are going?
- How do we estimate the future costs and revenues?

FINANCIAL HEALTH CHECKUP TOOL

5 years of Financial Audits



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

<http://efc.sog.unc.edu> or <http://efcnetwork.org>
Find the most up-to-date version in Resources / Tools

(THE ART OF) RATE SETTING



- Simple
- Based on expenses
- Cover full costs
- Fair, affordable & equitable

RATES & RATE SETTING



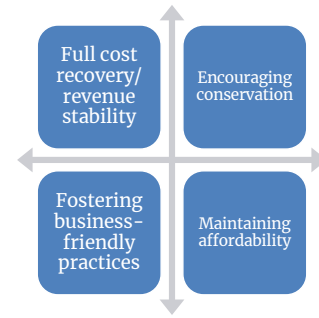
- Simple
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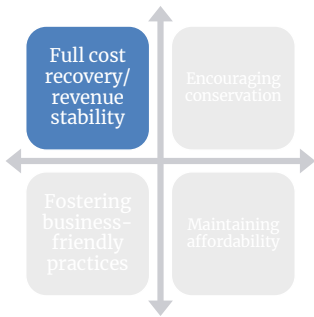
- Super-complicated
- Frozen in time
- Based on political desires
- Based upon neighbors

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WATER SYSTEM OBJECTIVES



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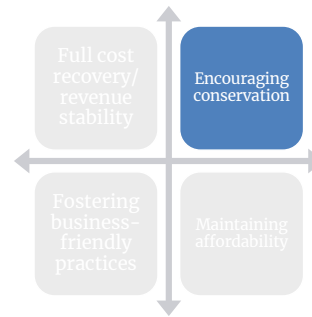


Bring in enough revenue to cover the full cost of running the water system:

- O&M
- Capital needs
- Debt service

Why do this?

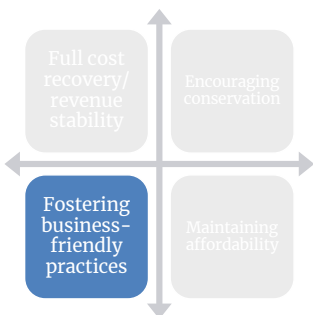
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Use pricing to encourage customers to reduce their water consumption

Why do this? What challenges does this create?

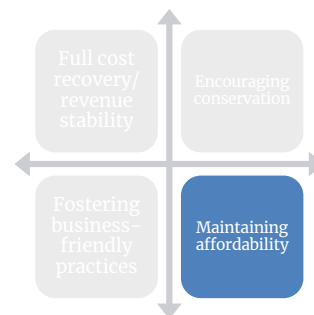
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Use pricing to encourage businesses and agriculture to locate to your community or stay in your community

Why do this?

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Ensure that all customers in your water system are able to afford enough water to live on

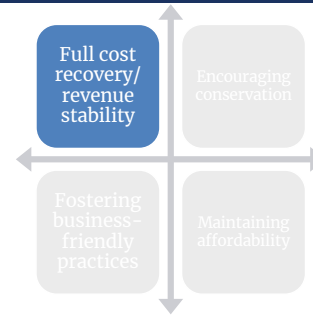
Why do this?

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AFFORDABILITY IS BEST ASSESSED LOCALLY

- There is no nationally-accepted standard for affordability of water and wastewater service.
- You know your own community the best. You should set the threshold for affordability.

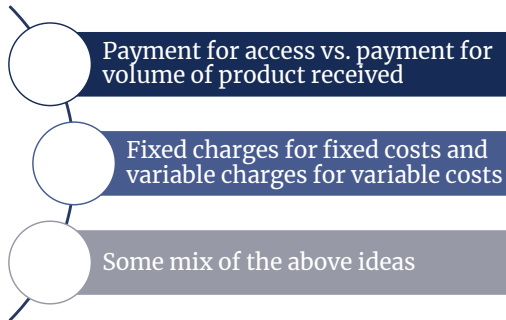
FULL COST PRICING



- **Goal:** charges for water/sewer cover the **entire cost** of running the system today and into the future
- Many ways to calculate
- Rate setting philosophy

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RATE SETTING PHILOSOPHIES

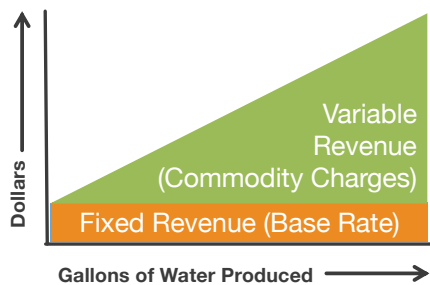


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EXAMPLES OF RATE DESIGN



BASE RATE + VOLUMETRIC CHARGES

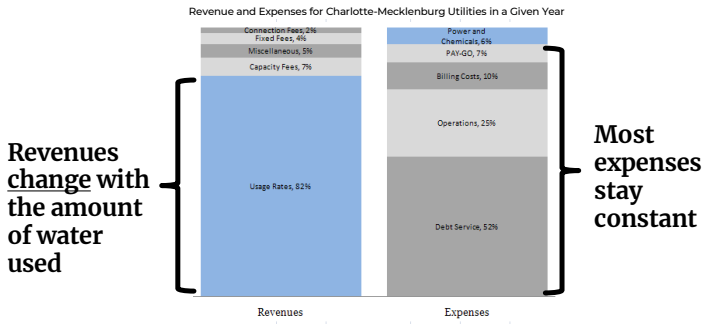


BASE CHARGE FOR **FIXED COSTS**; VOLUMETRIC CHARGE FOR **VARIABLE COSTS**

- In its pure form,
 - all of the **fixed costs** of the water system would be covered by the **base charge**, and
 - all of the **variable costs** would be covered by the **volumetric rate**

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FIXED VS. VARIABLE REVENUES & EXPENSES



FIXED VS. VARIABLE REVENUES & EXPENSES

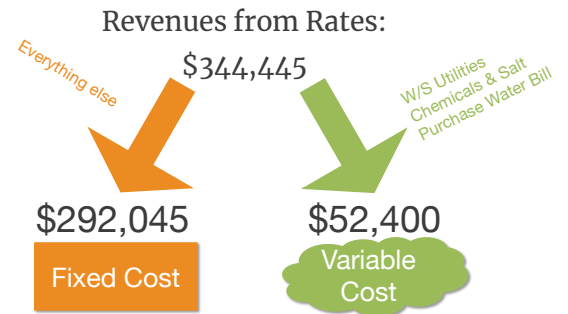
Revenues decrease when you sell less – often resulting in higher bills to continue to cover costs

Rate structures can be designed to better cover fixed costs including administrative and capital needs

BASE CHARGE FOR FIXED COSTS; VOLUMETRIC CHARGE FOR VARIABLE COSTS

- Information needed for this calculation
 - Total revenue needed to cover fixed costs
 - Total Accounts
 - Total revenue needed to cover variable costs
 - Total gallons sold

FOR EXAMPLE CALCULATION



BASE CHARGE FOR FIXED COSTS; VOLUMETRIC CHARGE FOR VARIABLE COSTS

$$\frac{\$292,045 \text{ (Fixed Annual Costs)}}{450 \text{ (Total Accounts)}} = \frac{\$648.99 \text{ (Total Annual Bill)}}{12 \text{ (Months)}} = \$54.08 \text{ (Monthly Base Bill)}$$

$$\frac{\$52,400 \text{ (Variable Annual Costs)}}{32,877,590 \text{ (Total Gallons Sold)}} \times 1,000 = \$1.59 \text{ (Price per 1,000 Gallons)}$$

BASE CHARGE FOR FIXED COSTS; VOLUMETRIC CHARGE FOR VARIABLE COSTS

- In its pure form:
 - all the fixed costs of the water system would be covered by the base charge, and
 - all the variable costs would be covered by the volumetric rate
- Conservation-oriented
- Allows for consideration of a “lifeline” rate for small users
- Gives the opportunity to customers who manage their use an opportunity to control their costs

INCREASING BLOCK RATE DESIGN CONSIDERATIONS

- For block rate structure designs, decide on:
 - the correct **number** of blocks
 - where the blocks should **end/start**
- Remember your larger users
- Keep in mind your base charge and consumption allowance
- Set significant rate differentials between blocks
- Meter reading must be punctual, and meters must be replaced frequently

SPECIAL RATES AND RIDERS

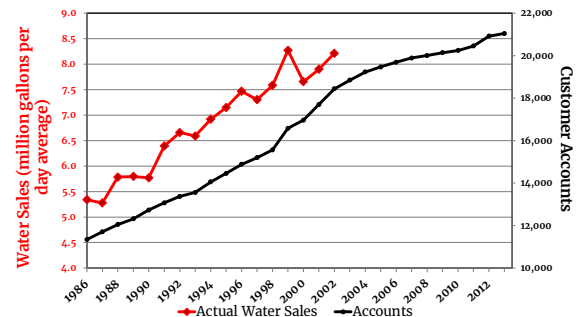
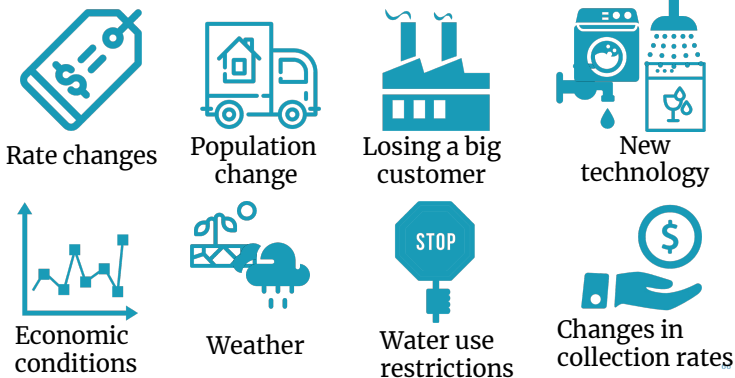
- Irrigation rates
 - Meter and charge separately for outdoor water use and price that water higher than for regular water use
- Seasonal rates
 - Prices are higher during high-use times of year, encouraging conservation
 - For many systems, this is the summer unless you are a winter holiday area or get a lot of snowbirds
- Drought riders
 - Surcharge when supplies are most stressed (forced conservation)



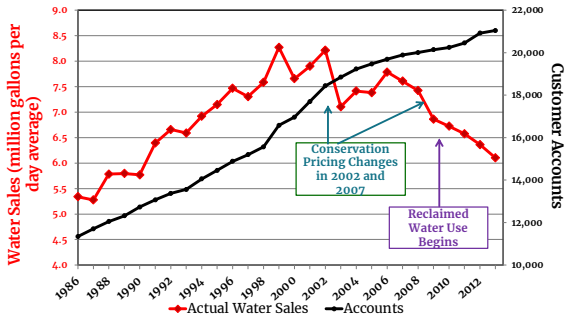
CUSTOMER CLASSES

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

WHAT CAUSES REVENUE VARIATION?

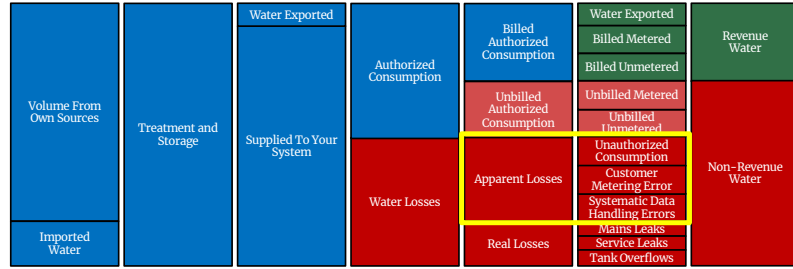


Source: Orange Water and Sewer Authority, North Carolina

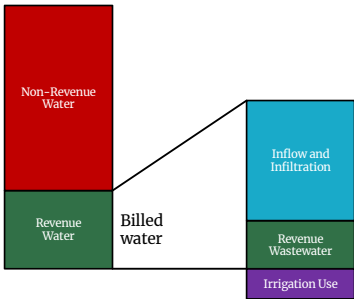


Source: Orange Water and Sewer Authority, North Carolina

BILL CORRECTLY - WATER



BILL CORRECTLY - WASTEWATER



Consider:

- Is the wastewater treatment of all your customers the same?
- Do you have any industrial wastewater users whose waste is more costly to treat?

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WHAT NOT TO DO? POTENTIAL PITFALLS IN RATE MAKING

- Making your design too complex
- Not understanding your revenue requirement
- Not considering risk
- Counting on growth that never comes
 - "Build it and they will come"
 - Declining population or loss of large customer(s)
- Saving up your rate increases for one big increase
 - Incremental increases are key
- Lack of communication before, during, and after the rate making process
 - Tell your story or someone else will

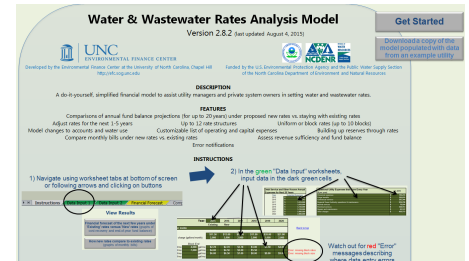


WHAT TO DO?

- Make multiple forecasts based on different assumptions
- Ideally, be conservative
- Don't forget price elasticity!
- Use tools to stress test projections
- Give decision-makers options to consider
- Make incremental rate increases
- Communicate early and often!

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WATER AND WASTEWATER RATES ANALYSIS MODEL



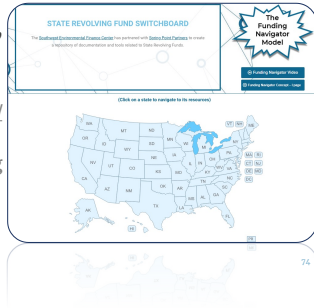
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<http://efc.sog.unc.edu> or <http://efcnetwork.org>
Find the most up-to-date version in Resources / Tools

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RESOURCES

- Financial Health Checkup Tool and Water & Wastewater Rates Analysis Model (free), plus other tools: <http://efc.sog.unc.edu> & <http://efcnetwork.org>
- SW EFC SRF Switchboard: <https://swefcsrfsfswitchboard.unm.edu/srf/>
- EFC Network Funding Tables: <https://efcnetwork.org/resources/funding-tables/>



NEED HELP? REQUEST EFC NETWORK TECHNICAL ASSISTANCE

- Technical assistance available for small water and wastewater systems
 - Particularly for **small wastewater systems (<1 MGD)**
- Contact **UNC** or the **EFCN**: <https://efcnetwork.org/get-help/>



CONTACT US

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