SCHOOL OF GOVERNMENT
Environmental Finance Center

Managing Your Utility into the Future

Tribal Utility Summit 2024

Hope Thomson
UNC Chapel Hill Environmental Finance Center

UNC | SCHOOL OF GOVERNMENT
Environmental Finance Center

Supporting fair, effective, and financially sustainable delivery of environmental programs through:

- Applied Research
- Program Design and Evaluation
- Teaching and Outreach
- Advising
- Policy Analysis

Hi! I'm Hope.

- Project Director at the UNC EFC
- Focused on technical assistance, training and financial analysis for utilities
- Trained in public health and environmental financial risk; background in science communication & chemistry
- Based in Durham, North Carolina

Introductions

- Name
- Organization
- Role & relation to utility
- Favorite summer activity

Agenda

- 10:30am – 12:00pm: Intro to environmental finance & financial benchmarks (KPIs)
- 12:00pm-1:00pm: Lunch
- 1:00pm – 3:00pm: Practice KPIs & Introduce rate setting goals
- 3:00pm – 3:30pm: Networking break
- 3:30pm – 5:00pm: Practice rates math & asset management review

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

Characteristics of Enterprise funds

- Service industries, users
- Production industries
- Can be capital intensive
- Diverse user charges, fees and pricing strategies
- Self-regulated monopolies
- Often impact public health and environmental protection; have regulated requirements

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.

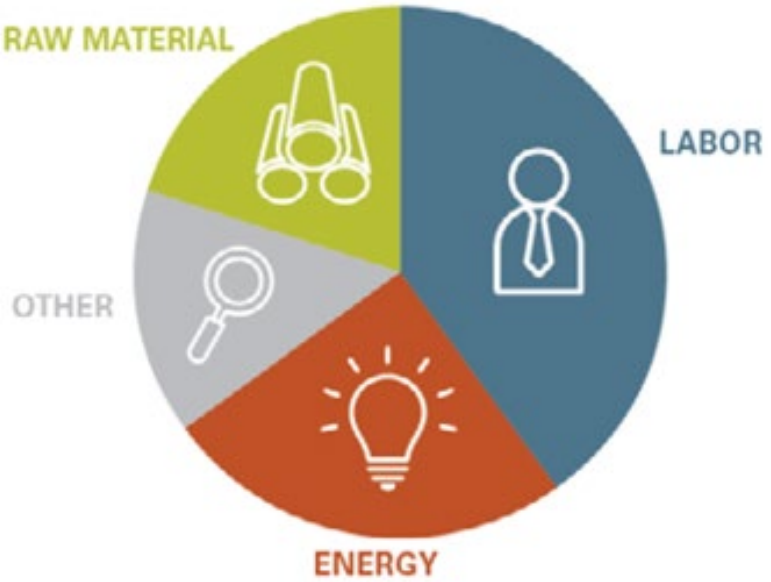


Image: https://ebaengineering.com/how-to-leverage-p2e2-to-dramatically-cut-operating-costs-for-water-wastewater-treatment/

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

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

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).

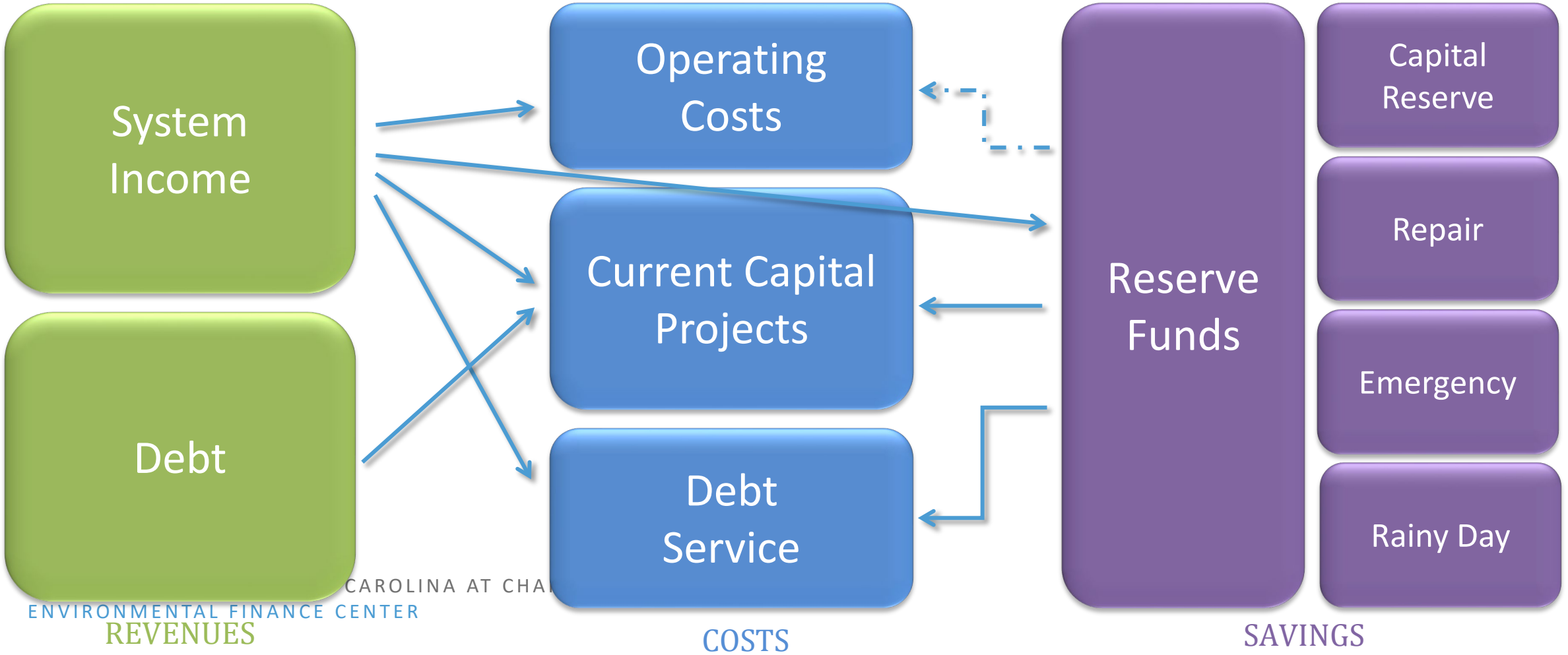
Two Types of Revenues

- 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

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

Water System Finance Diagram



Approaches to paying for Capital improvements

- Pay-Go/Saving Up
  - Rates sufficient for emergencies?
- Pay-Use/Borrow
  - Subsidized loans (e.g., SRF, USDA, BRIC)
  - Bonds
- Get a Grant

Don't discount any funding opportunities

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 and communication

Budgeting for the full cost

Operations & maintenance expenditures	Reserves for capital improvement	Long-term debt (principal and interest)	Contingencies for emergencies
Taxes and accounting costs	Contracts	Indirect costs (fleet, buildings, shared expenditures, etc.)	Retirement

Budgeting for the full cost

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

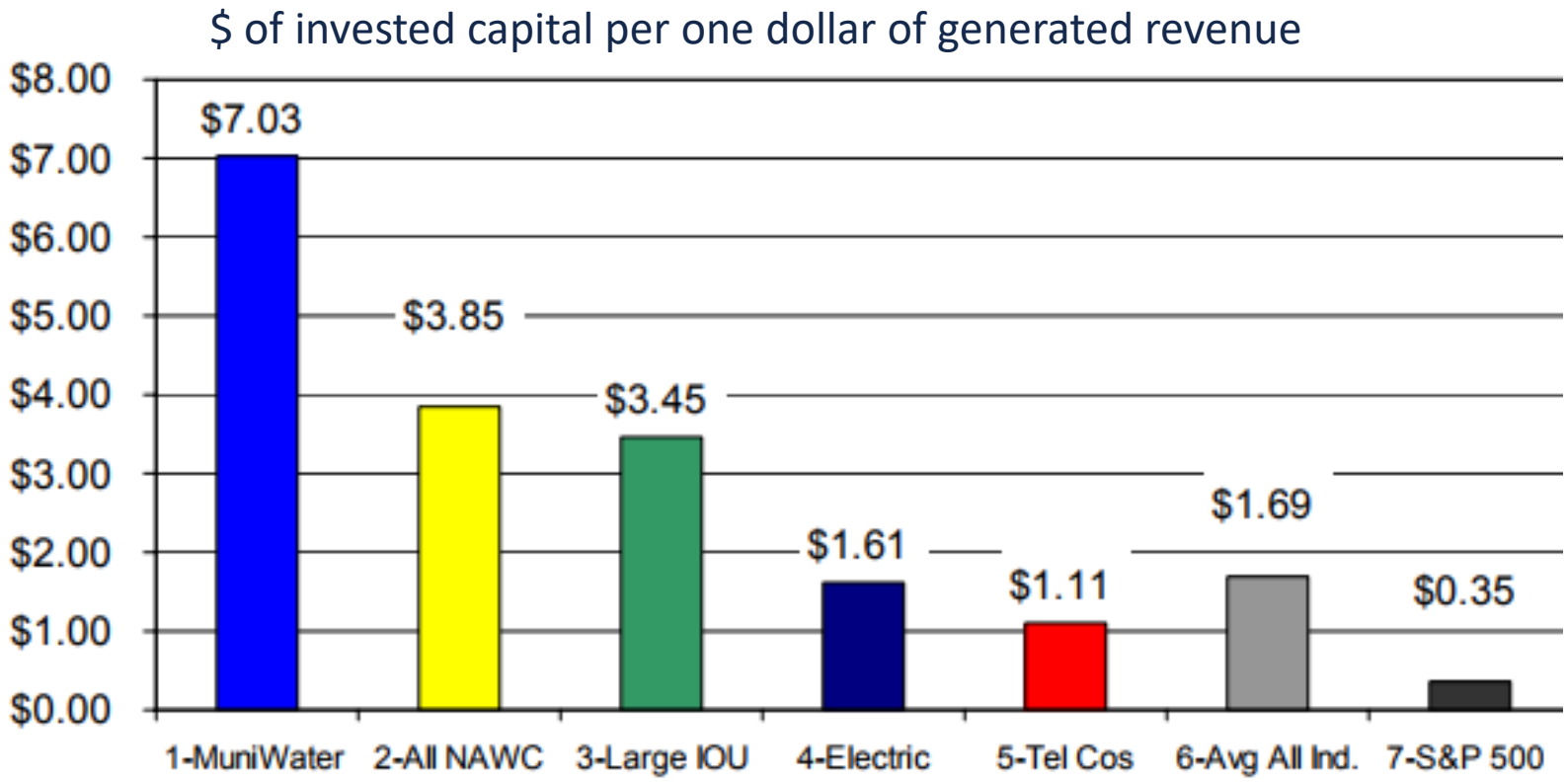
Contingencies for emergencies

Reserves for capital improvement

Indirect costs (fleet, buildings, shared expenditures, etc.)

Retirement

Water & Wastewater are Capital intensive

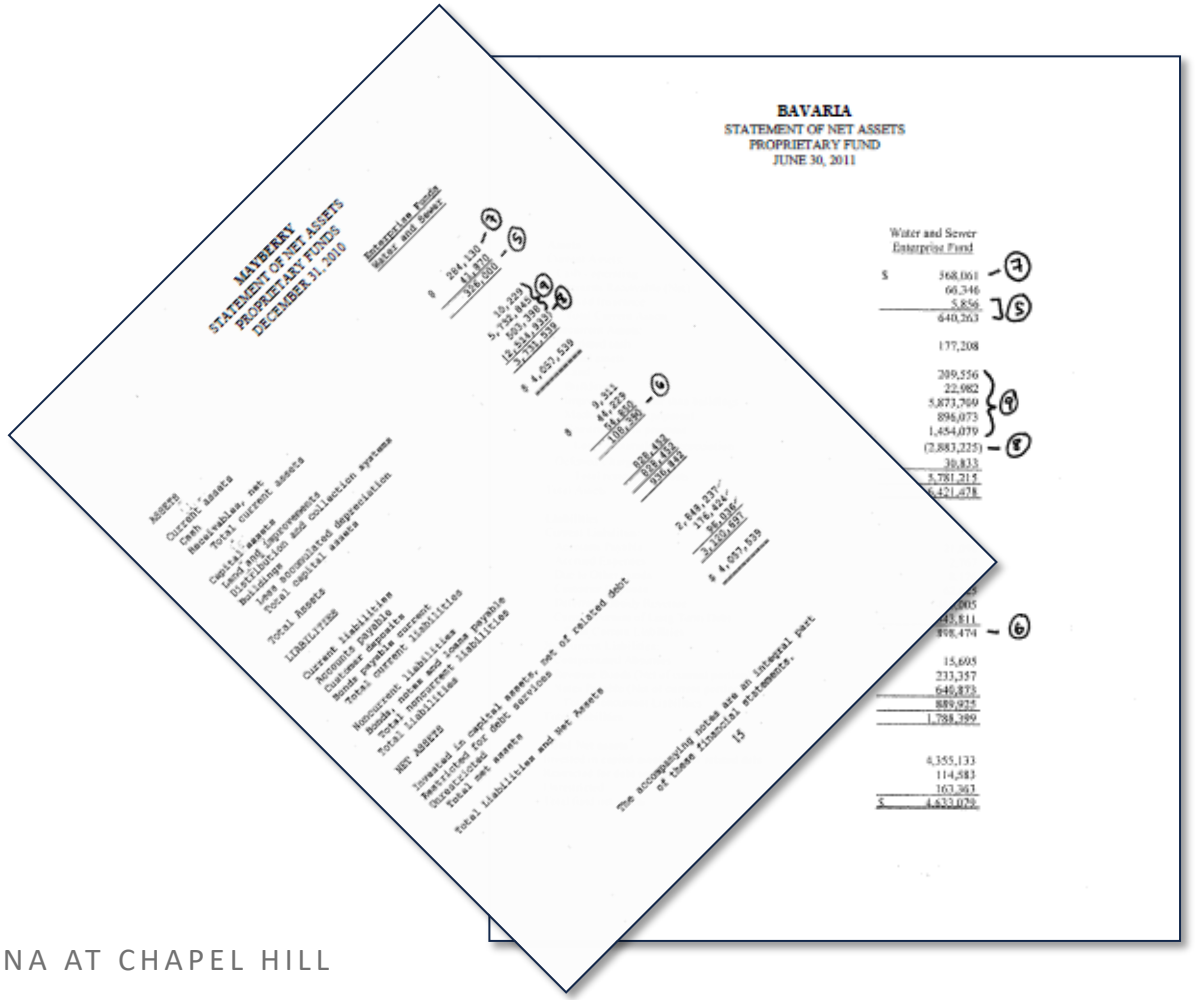


Source: Water Research Foundation, "Improving Water Utility Capital Efficiency" (2005 data)

Assessing Financial Condition

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
ENVIRONMENTAL FINANCE CENTER

Quick Overview of Financial Statements



Quick Overview of Financial Statements

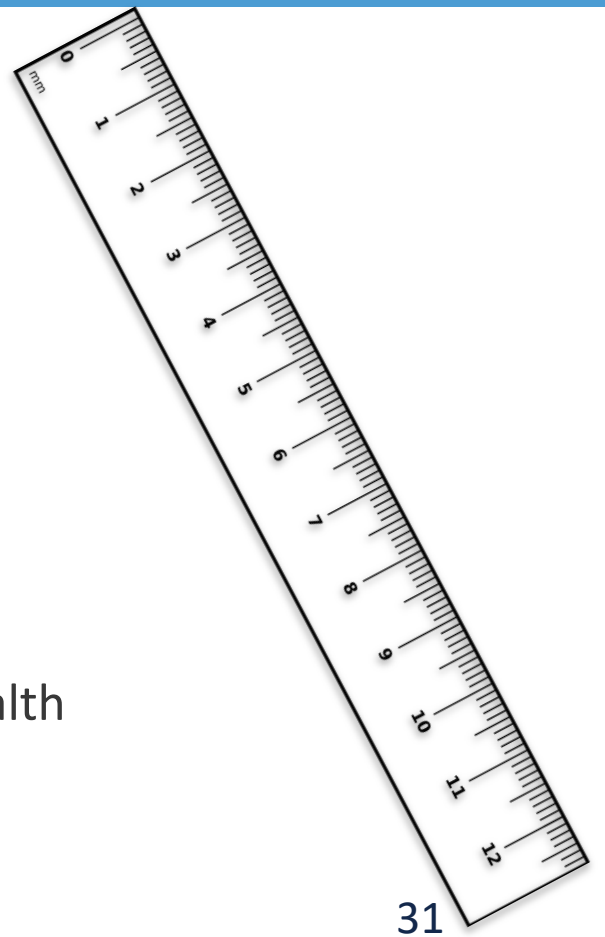
- Audited financial statements are produced at the end of each fiscal year and reflect only that fiscal year.
  - Ex post – based on what actually happened
- Performed by a third-party
- Primarily interested in *enterprise funds or proprietary funds*
- Varying degrees of complexity, like budgets
- Alternatives: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

KPIS

What are Key Performance Indicators?

What are KPIs?

- **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**



Water Clips: Financial Benchmarking

https://www.youtube.com/watch?v=QkwTJe-Nbuk&t=1s

Why Care About KPIs?

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

Key Performance Indicators

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

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

including (or excluding) depreciation

>1.0

Operating Ratio

Operating Revenues

Income from:

- Rates
- Late Fees
- Penalties
- Connection Fees
- Tap Fees

Operating Expenses

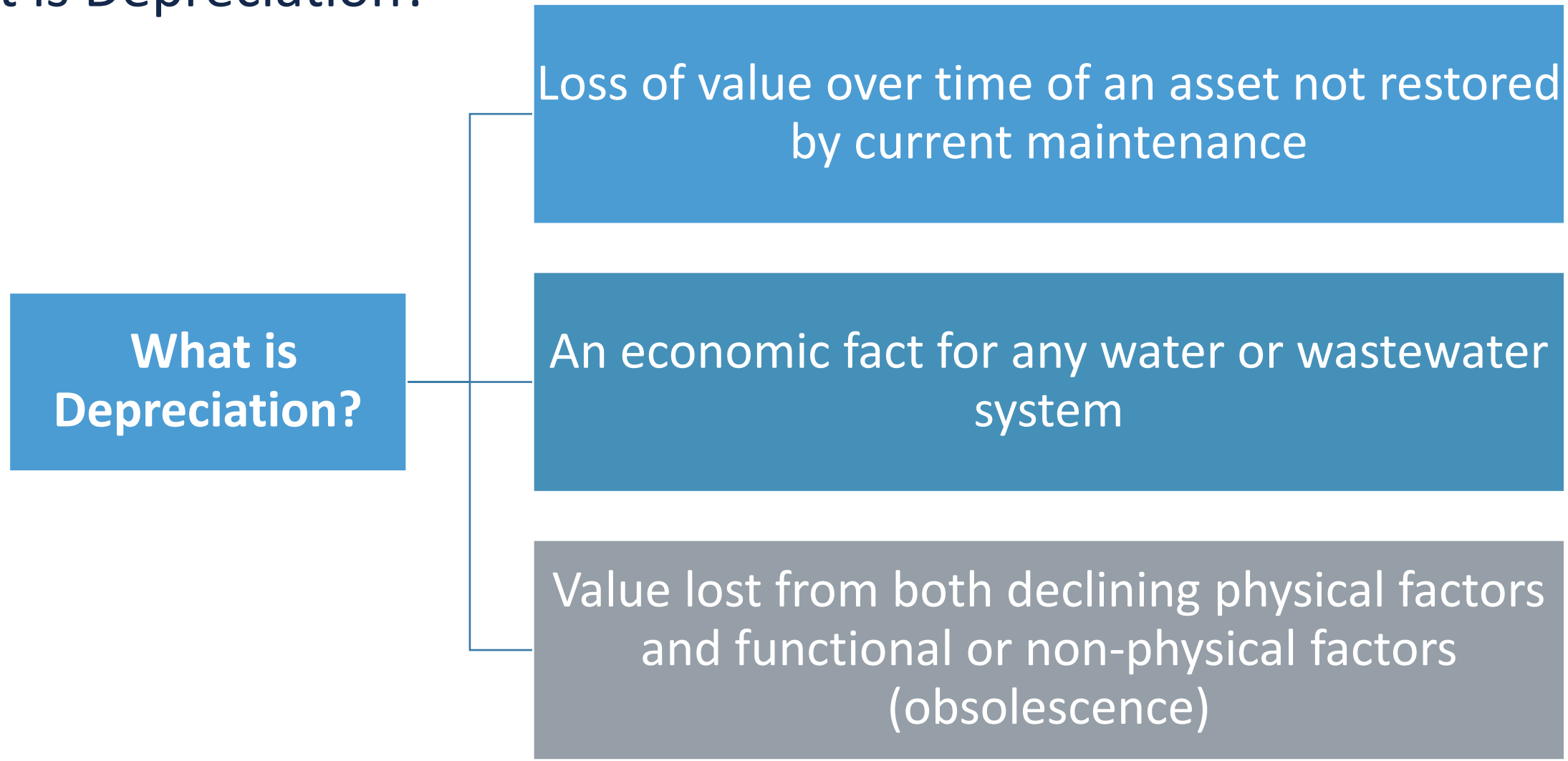
O&M Costs:

- 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?



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

You need to be able to generate enough revenues to pay for O&M and principal and interest payments.

A measure of the ability to pay debt service with operating revenue.

Operating revenue left over after daily operation expenditures, divided by debt service.

This metric is calculated by the funders and the debtors, it's a very common metric in the finance world.

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

>1.2

Days Cash on Hand

How long you can continue to pay for O&M without any additional revenues coming in

To calculate cash on hand you need to know what your unrestricted cash and cash equivalents are

Unrestricted Cash and cash equivalents =

Money that can be used for anything. Not all cash is unrestricted

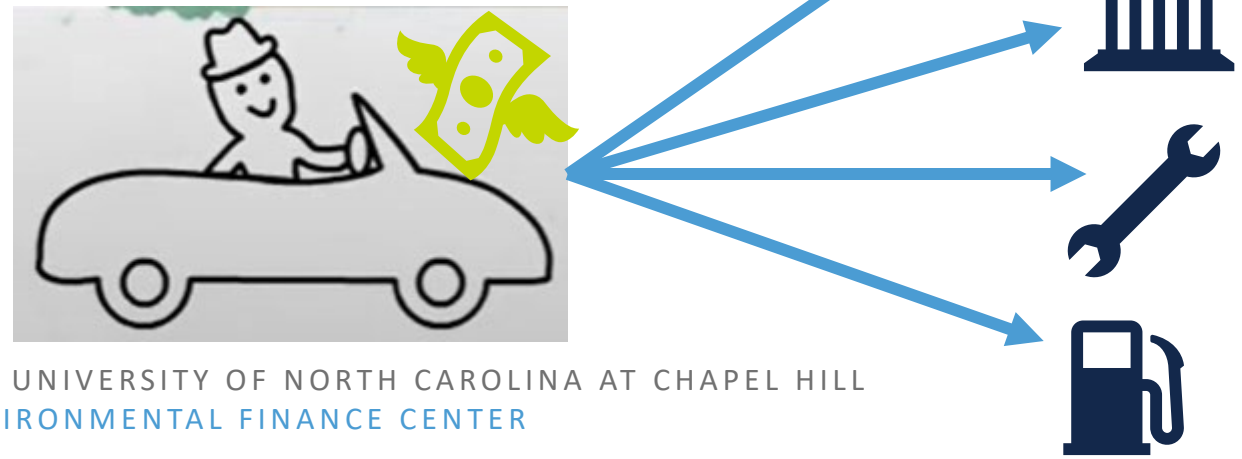
$$= \frac{Unrestricted\ cash\ and\ cash\ equivalents \times 365}{Operating\ Expenses - Depreciation}$$

>180 days

DO YOU HAVE ENOUGH LIQUIDITY TO PAY YOUR BILLS AT THE END OF THE YEAR?

Current Ratio

$$= \frac{\textit{Unrestricted cash and cash equivalents + Receivables, net}}{\textit{Current Liabilities}}$$



>1.0

Current Ratio

Typically approached as **current assets/current liabilities**.

By definition, current assets are those assets that could be liquidated within 12 months.

UNC EFC takes a conservative approach and typically we do not include restricted cash or inventories

$$= \frac{\textit{Unrestricted cash and cash equivalents + Receivables, net}}{\textit{Current Liabilities}}$$

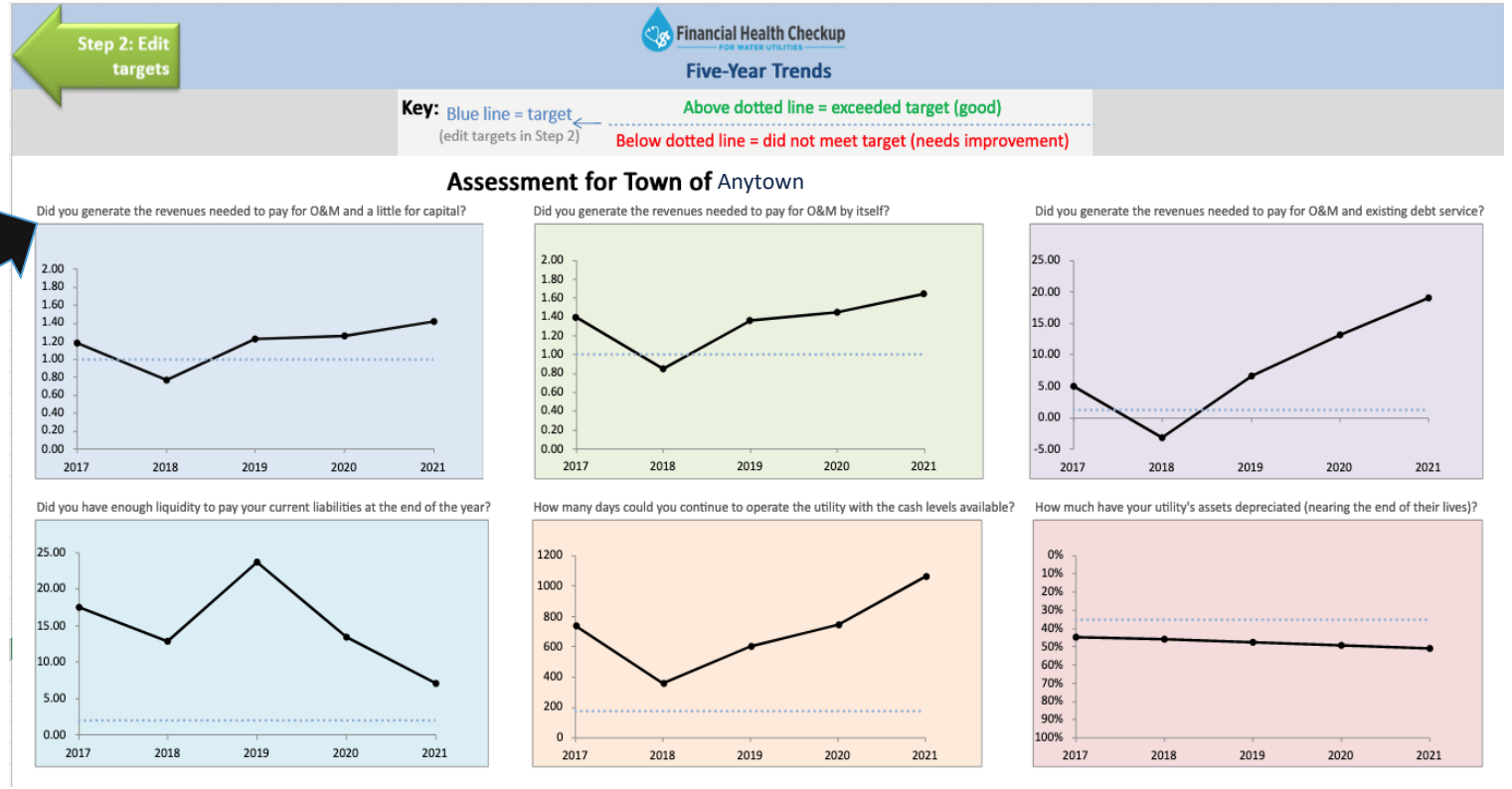
What's next?

- 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

Values from Financial Statement/CAFR
Total Operating Revenues
Total Operating Expenses
Depreciation & Amortization Expenses
Debt Principal Payments
Debt Interest Payments
Current Assets, excluding inventories, restricted cash, prepaids
Current Liabilities, excluding deposits & bond anticipation notes
Unrestricted Cash & Investments
Total Accumulated Depreciation
Total Depreciable Capital Assets

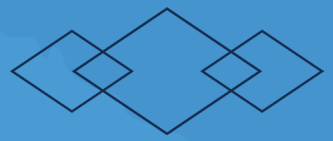


Created by the Environmental Finance Center at the University of North Carolina, Chapel Hill

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

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

Demo: FHCU Tool



HTTPS://EFC-AT-UNC.SHINYAPPS.IO/FINANCIAL_HEALTH_CHECKUP/

BREAK FOR LUNCH

A TALE OF TWO SYSTEMS

Self-Assessing Financial Performance:

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
ENVIRONMENTAL FINANCE CENTER

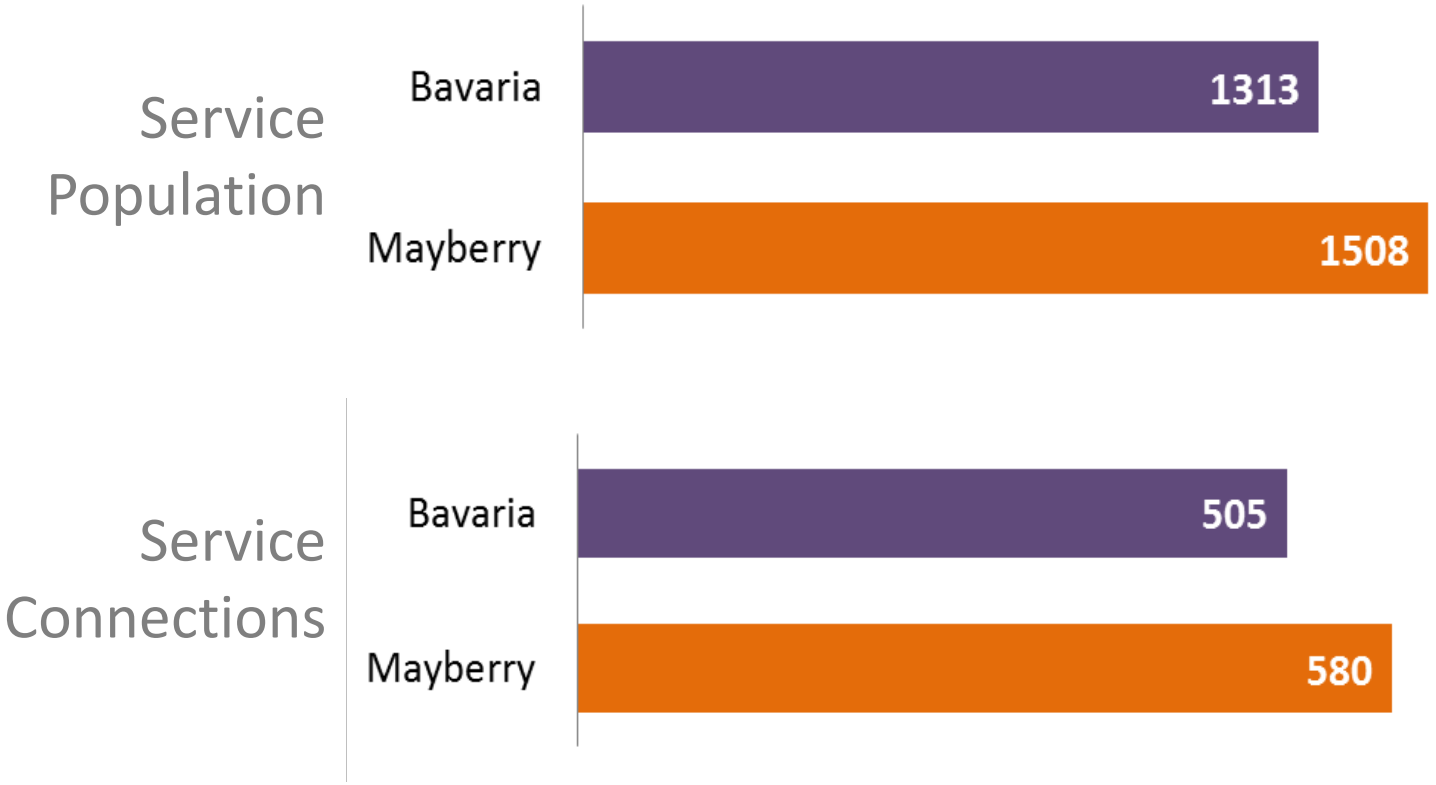
NOTE: ACTUAL NUMBERS FROM ACTUAL TOWNS

A Tale of Two Systems

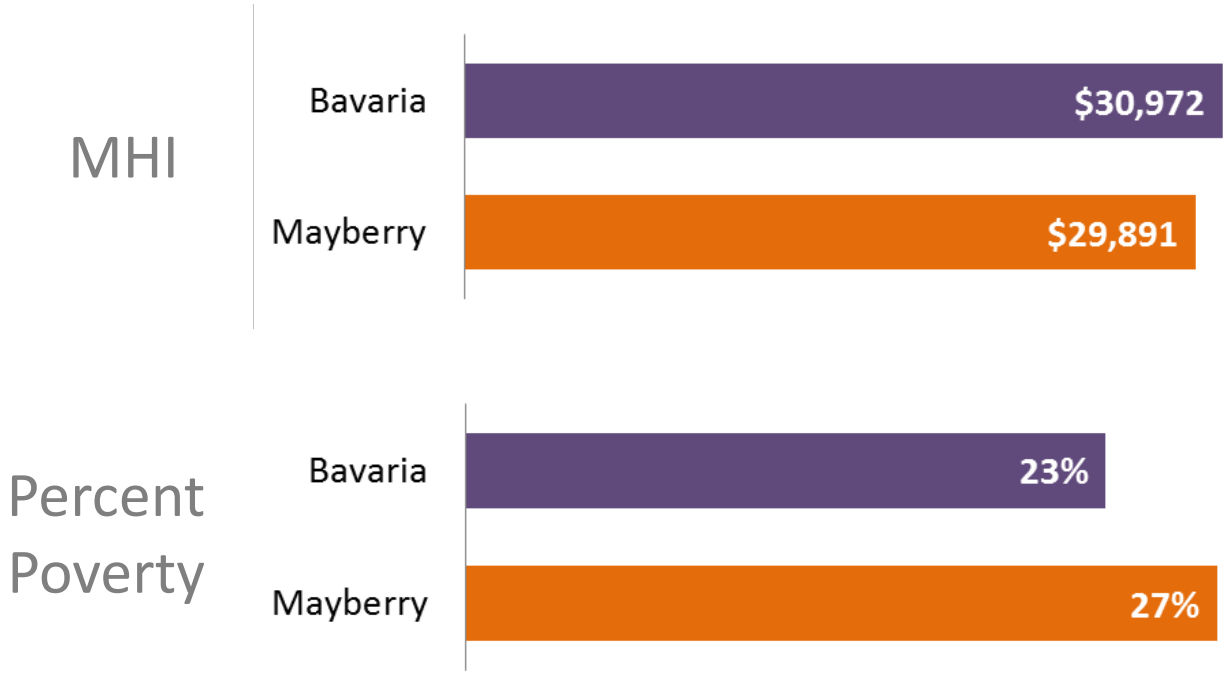
Bavaria and **Mayberry**

Two small town community water systems from the same state

They Serve Similar Populations



They Have Similar Demographics



Vastly Different Financial Indicators (and appearance!)

Mayberry

Bavaria

Operating Ratio

$$= \frac{\textit{Total Operating Revenues}}{\textit{Total Operating Expenses}}$$

Please calculate two numbers—
one including depreciation, and one
excluding depreciation

Operating Ratio

Including Depreciation

MAYBERRY

STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN NET ASSETS

PROPRIETARY FUNDS

FOR THE YEAR ENDED DECEMBER 31, 2010

	Enterprise Funds Water and Sewer
OPERATING REVENUES	
Charges for services	$ 444,231
Grants	0
Total operating revenues	444,231
OPERATING EXPENSES	
Personnel services	178,885
Contractural services	63,898
Other supplies and expense	126,202
Depreciation	142,463
Total operating expenses	511,448
Operating income (loss)	(67,217)

Operating Ratio – Mayberry

Including Depreciation

1a.

$$\frac{\$444{,}231}{\$511{,}448} = 0.87$$

Operating Revenues ***(1)***

Operating Expenses (including depreciation) ***(2)***

Operating Ratio

Excluding Depreciation

MAYBERRY

STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN NET ASSETS

PROPRIETARY FUNDS

FOR THE YEAR ENDED DECEMBER 31, 2010

	Enterprise Funds Water and Sewer
OPERATING REVENUES	
Charges for services	$ 444,231
Grants	0
Total operating revenues	444,231 ← (1)
OPERATING EXPENSES	
Personnel services	178,885
Contractural services	63,898
Other supplies and expense	126,202
Depreciation	142,463 ← (3)
Total operating expenses	511,448 ← (2)
Operating income (loss)	(67,217)

Operating Ratio – Mayberry

Excluding Depreciation

1b.

$$\frac{\$444{,}231}{\$368{,}985} = 1.20$$

Operating Revenues ***(1)***

Operating Expenses (excluding depreciation) ***(2-3)***

OE $511,448
- Dep $142,463

Debt Service Coverage Ratio

$$= \frac{\textit{Total Operating Revenues} - \textit{Operating Expenses (excluding depreciation)}}{\textit{Principal + Interest Payments on Long Term Debt}}$$

Debt Service Coverage Ratio

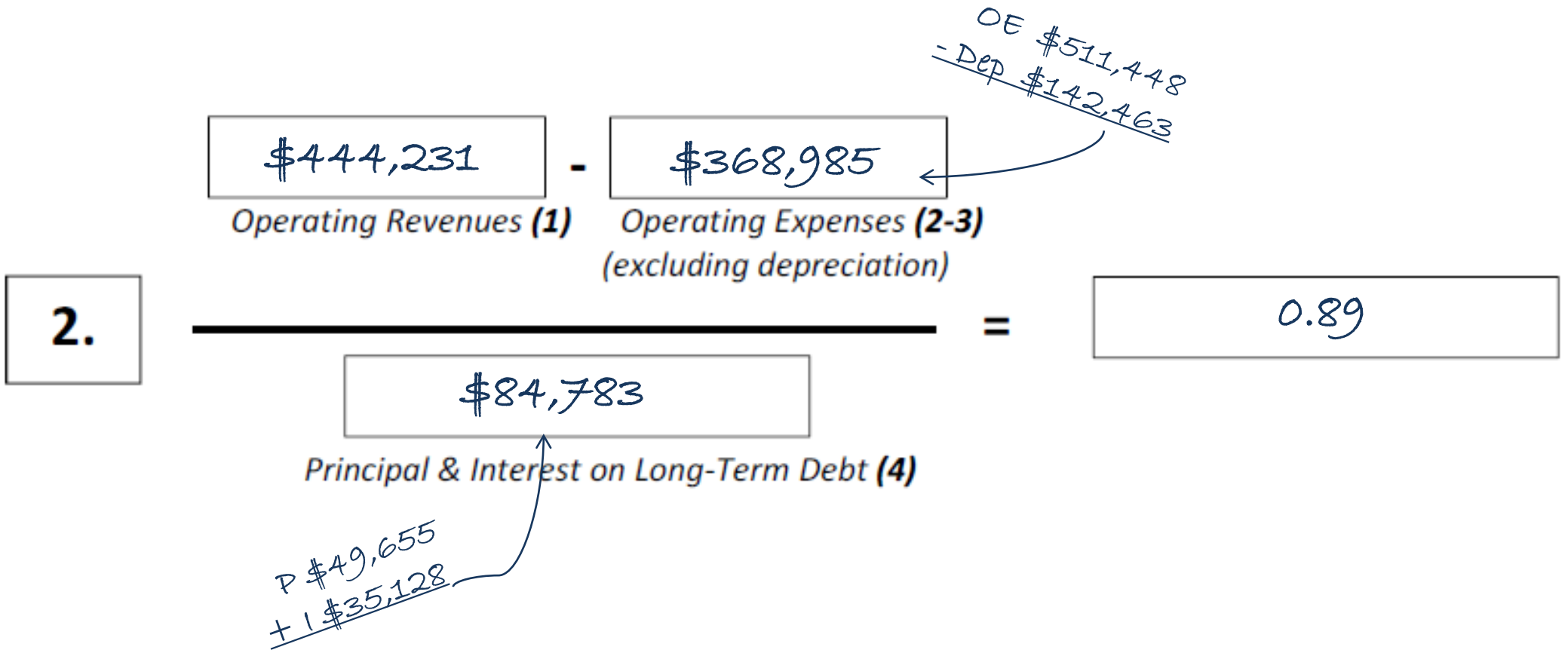
MAYBERRY
STATEMENT OF REVENUES, EXPENSES, AND CHANGES IN NET ASSETS
PROPRIETARY FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2010

	Enterprise Funds Water and Sewer
OPERATING REVENUES	
Charges for services	$ 444,231
Grants	0
Total operating revenues	444,231 — (1)
OPERATING EXPENSES	
Personnel services	178,885
Contractural services	63,898
Other supplies and expense	126,202 — (3)
Depreciation	142,463 — (2)
Total operating expenses	511,448
Operating income (loss)	(67,217)

MAYBERRY
STATEMENT OF CASH FLOWS
PROPRIETARY FUNDS
FOR THE YEAR ENDED DECEMBER 31, 2010

	Enterprise Funds Water and Sewer
CASH FLOWS FROM OPERATING ACTIVITIES	
Receipts from customers	$ 437,947
Payments to suppliers	(187,296)
Payments to employees	(178,885)
Net cash provided by operating activities	71,766
CASH FLOWS FROM NONCAPITAL FINANCING ACTIVITIES	
Transfers in (out)	(60,000)
Net cash (used) by noncapital financing activities	(60,000)
CASH FLOWS FROM CAPITAL AND RELATED FINANCING ACTIVITIES	
Loan proceeds	0
Purchases of capital assets	(39,841)
Principal paid on capital debt	(49,655) — (4)
Interest paid on capital debt	(35,128) — (4)
Net cash (used) by capital and related financing activities	(124,624)

Debt Service Coverage Ratio – Mayberry



Days of Cash on Hand

$$= \frac{\textit{Unrestricted cash and cash equivalents}}{\textit{(Operating Expenses excluding depreciation) / 365}}$$

Days of Cash on Hand

MAYBERRY
STATEMENT OF NET ASSETS
PROPRIETARY FUND
DECEMBER 31, 2010

	Enterprise Funds Water and Sewer
ASSETS	
Current assets	
Cash	107,706 (5)
Restricted cash	176,424
Receivables, net	41,870 (6)
Total current assets	326,000
Capital assets	
Land and improvements	10,229
Distribution and collection systems	5,732,845
Buildings	503,398
Less accumulated depreciation	(2,514,933)
Total capital assets	3,731,539
Total Assets	$ 4,057,539
LIABILITIES	

Days of Cash on Hand – Mayberry

3.

Unrestricted Cash & Cash Equivalents **(5)**		
$107,706		
Operating Expenses (excluding depreciation) **(2-3)**	/ 365	= 107
$368,985		

OE $511,448
- Dep $142,463

Current Ratio

$$= \frac{\textit{Unrestricted cash and cash equivalents} + \textit{Receivables, net}}{\textit{Current Liabilities}}$$

Current Ratio – Mayberry

4.

$$\frac{\$107{,}706 + \$41{,}870}{\$108{,}390} = 1.38$$

Unrestricted Cash & Cash Equivalents ***(5)***

Receivables, net ***(6)***

Current Liabilities ***(7)***

Your turn!
Calculate the four ratios for **Bavaria**

Operating Ratio – **Bavaria**

Including Depreciation

1a.

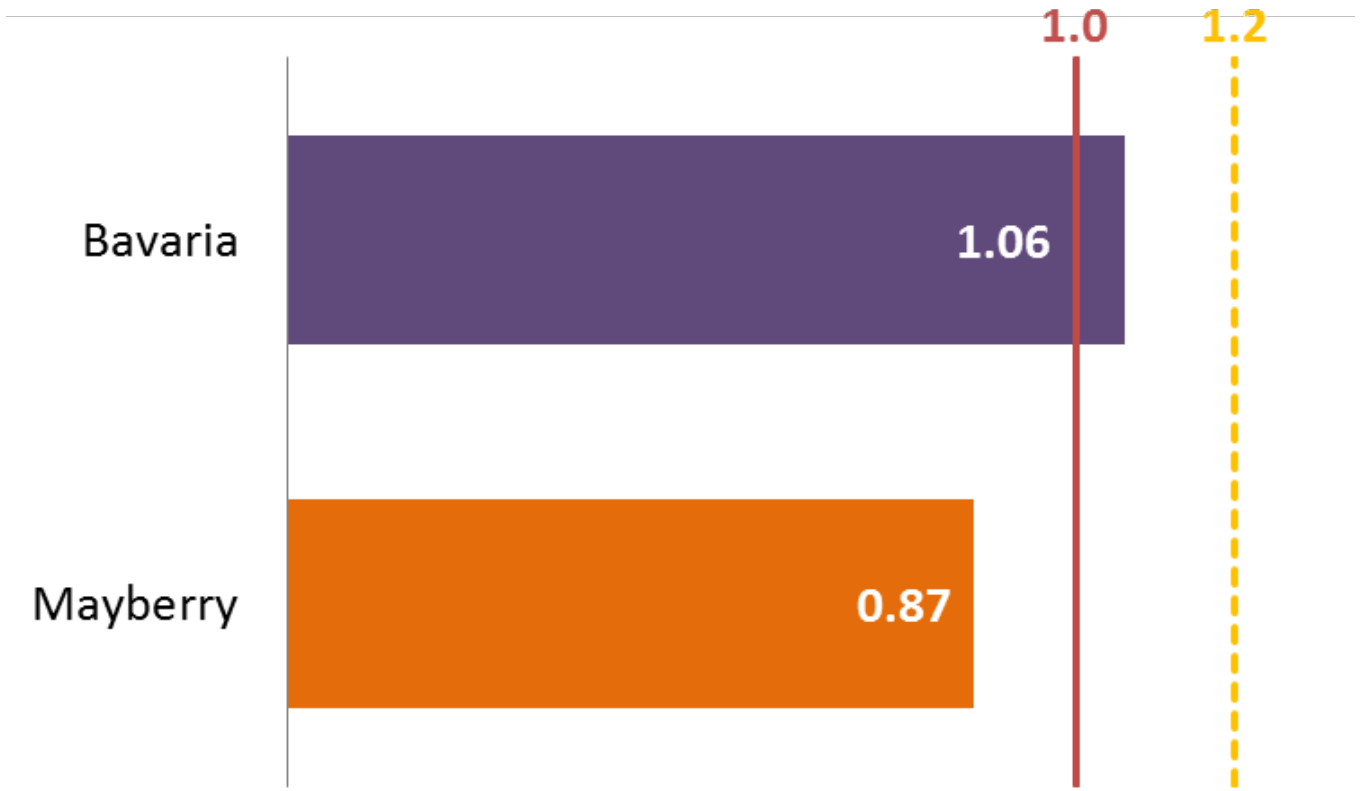
$$\frac{\$709{,}972}{\$671{,}333} = 1.06$$

Operating Revenues ***(1)***

Operating Expenses (including depreciation) ***(2)***

Operating Ratio

Including Depreciation



Operating Ratio – Bavaria

Excluding Depreciation

1b.

$709,972

Operating Revenues ***(1)***

$$\frac{\$709{,}972}{\$459{,}082} = 1.55$$

$459,082

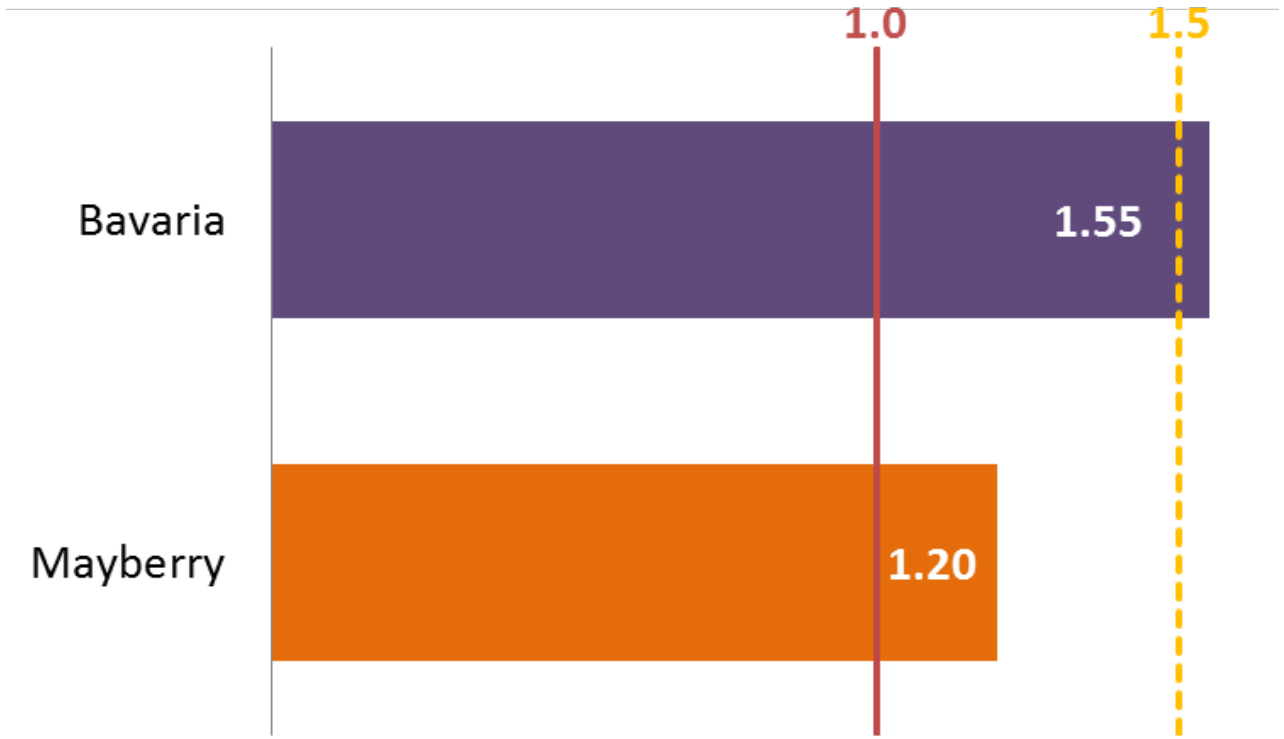
Operating Expenses (excluding depreciation) ***(2-3)***

OE $671,333

- Dep $212,251

Operating Ratio

Excluding Depreciation



Debt Service Coverage Ratio – Bavaria

OE $671,333
- Dep $212,251

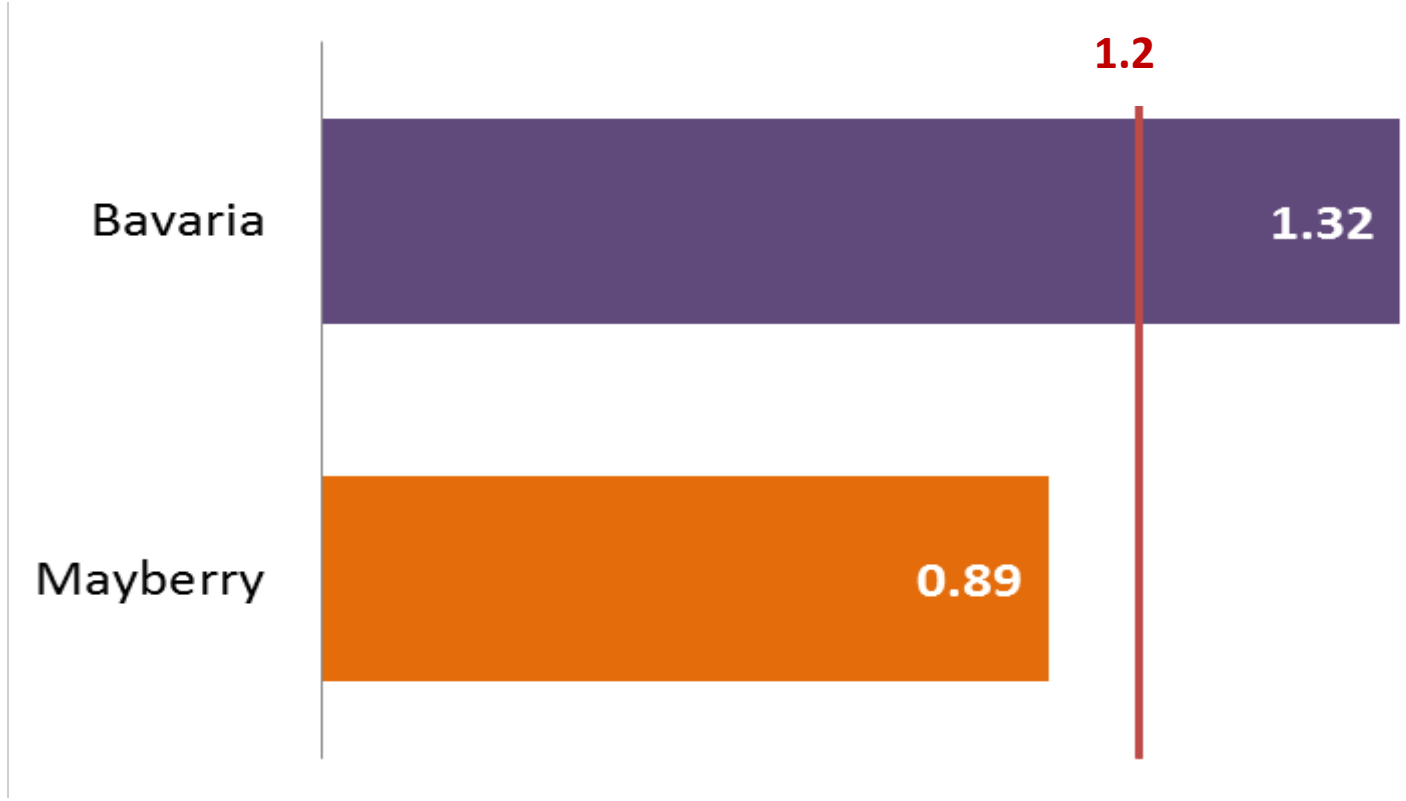
2. $\dfrac{\$709{,}972 - \$459{,}082}{\$190{,}633} = 1.32$

Operating Revenues ***(1)***

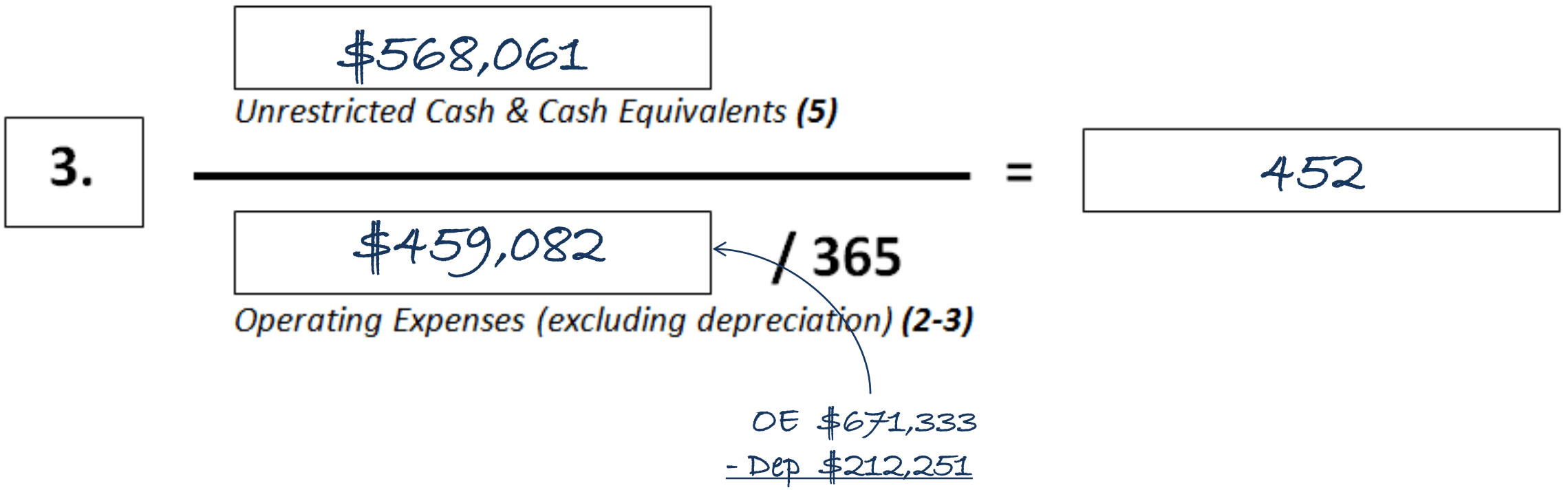
Operating Expenses ***(2-3)*** *(excluding depreciation)*

Principal & Interest on Long-Term Debt ***(4)***

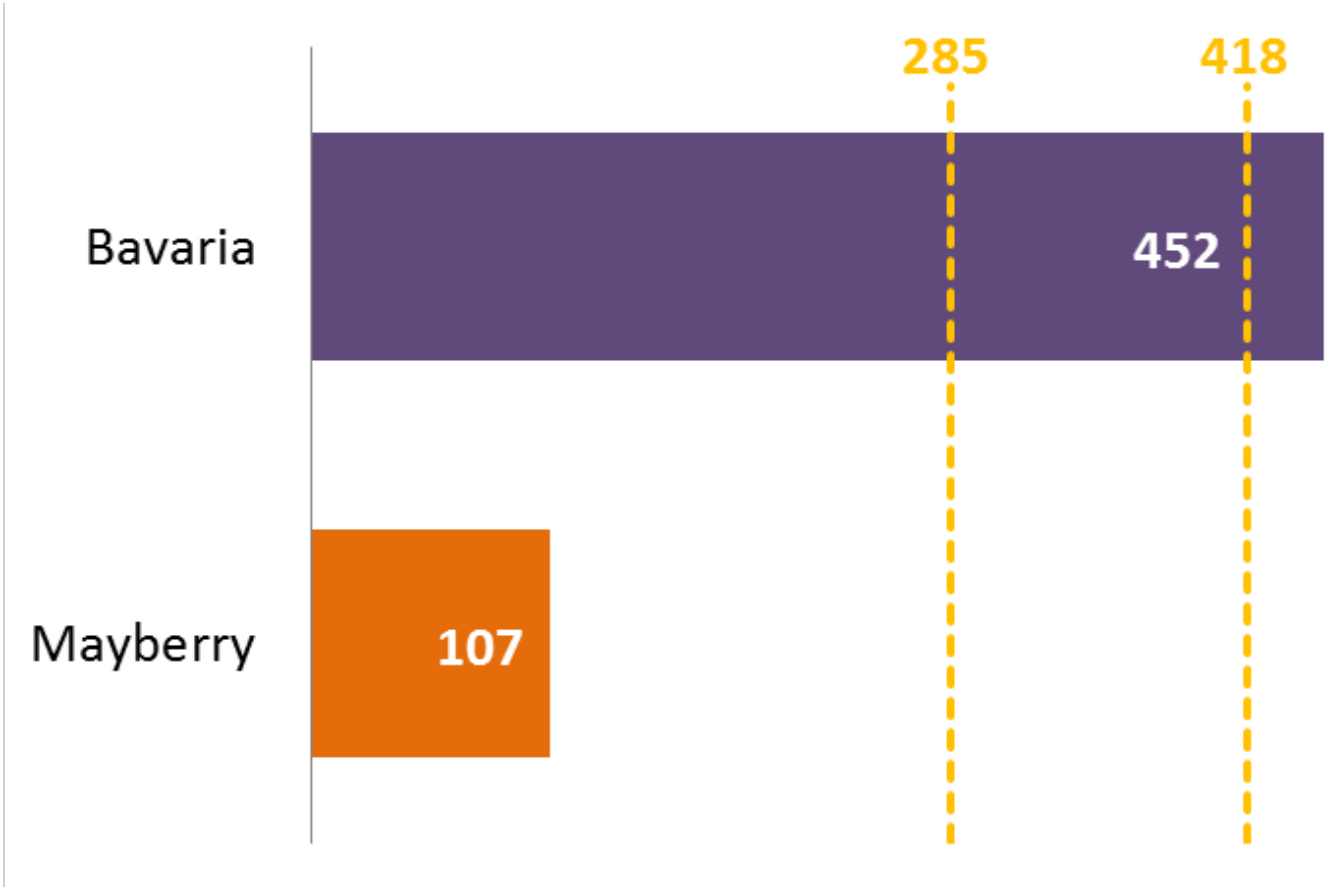
Debt Service Coverage Ratio



Days of Cash on Hand – Bavaria



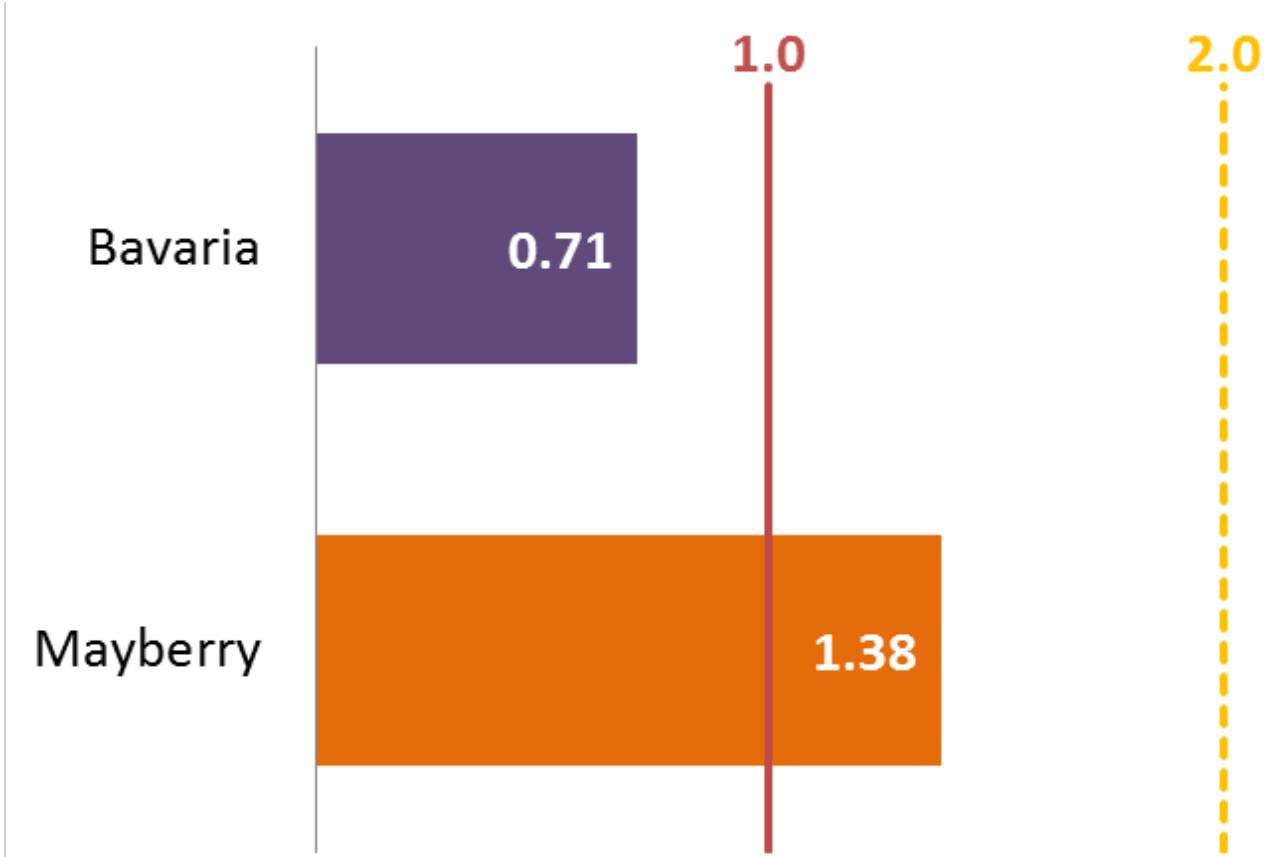
Days of Cash on Hand



Current Ratio – Bavaria

4. $\dfrac{\text{\$568,061 (Unrestricted Cash & Cash Equivalents (5)) + \$66,346 (Receivables, net (6))}}{\text{\$898,474 (Current Liabilities (7))}} = 0.71$

Current Ratio



What Happened to **Bavaria**?

Or

Why the Notes to Financial Statements are Crucial

The accompanying notes are an integral part
of these financial statements.

15

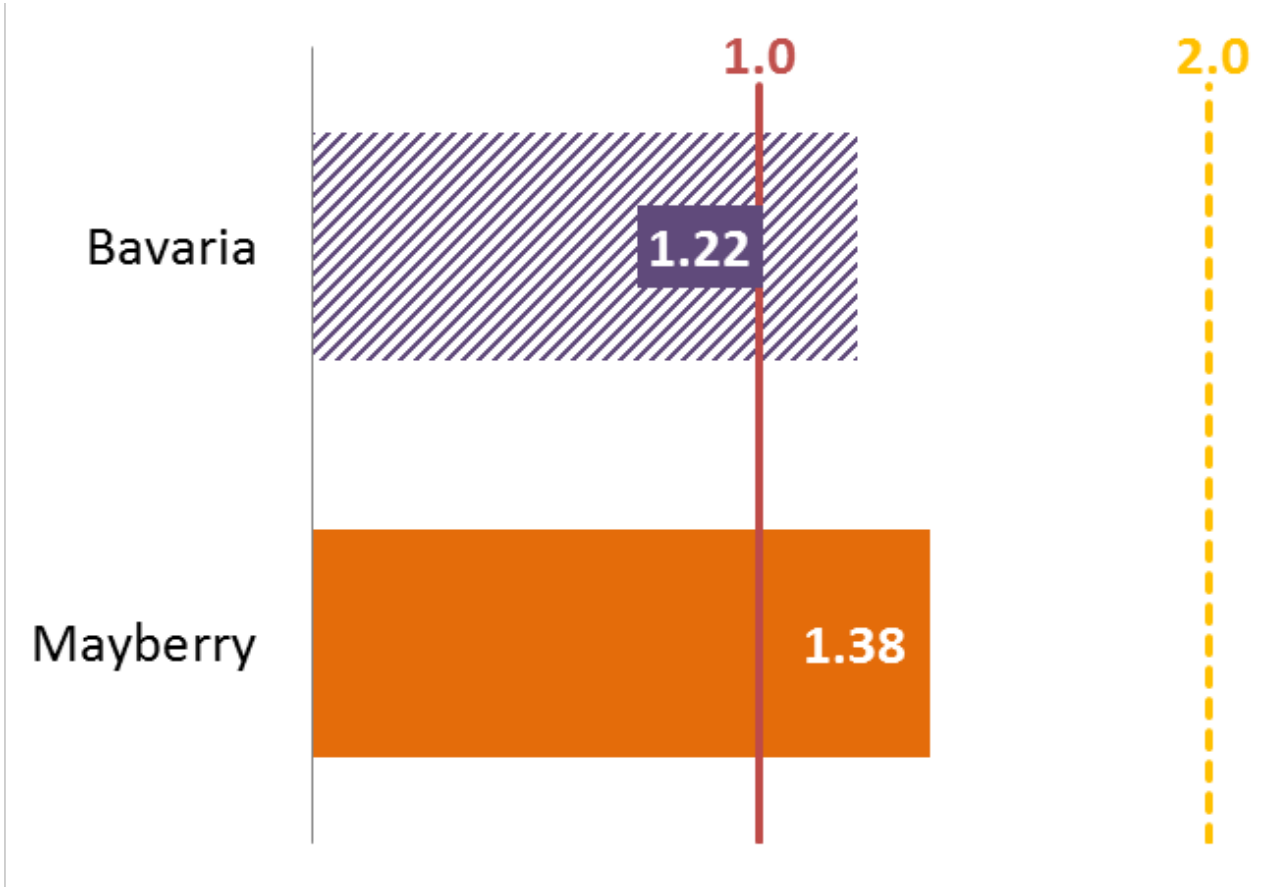
Bavaria corrected – including grant funds

C $568,061
+ G $460,005

4. ($1,028,066 *Unrestricted Cash & Cash Equivalents* **(5)** + $66,346 *Receivables, net* **(6)**) / ($898,474 *Current Liabilities* **(7)**) = **1.22**

Current Ratio

Bavaria Corrected for Missing Grant Funds



Caution: don't just look at last year

Example from a different utility.

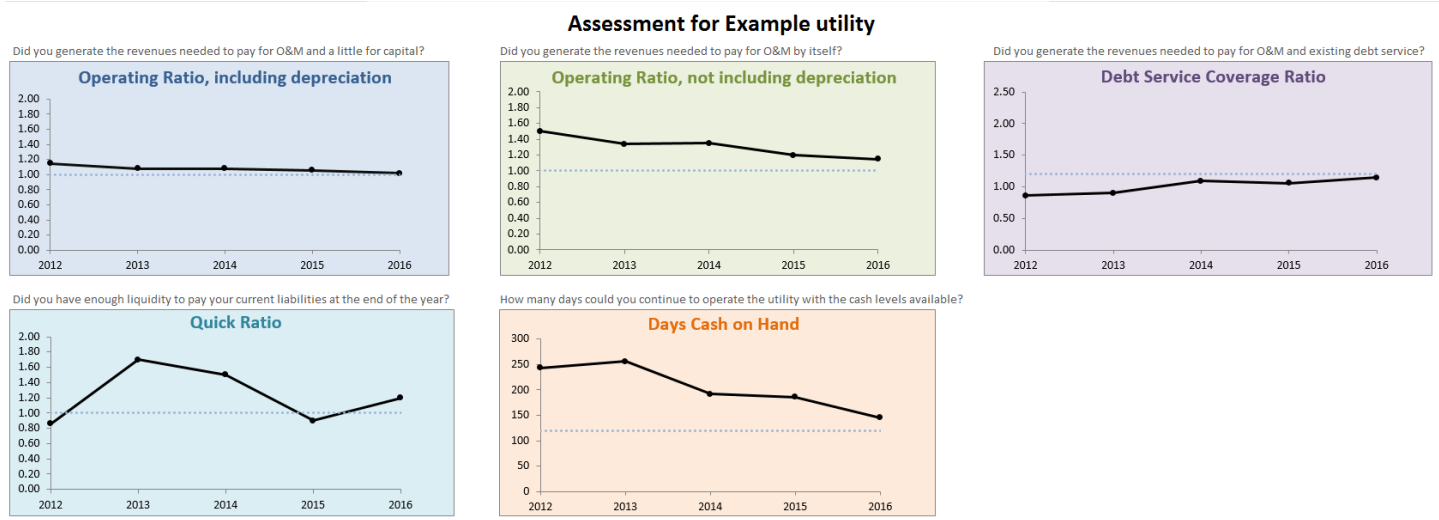
Last fiscal year's ratios:

- Operating ratio = 1.02
- Debt service coverage ratio = 1.
- Days cash on hand = 145
- Current ratio = 1.2



Potential conclusion: "we're on the right track"

But consider the trends in the last 5 years



New conclusion: “we were OK, but something needs to change”

?

Break Time

Revenue Goals & Rate Setting

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
ENVIRONMENTAL FINANCE CENTER

(THE ART OF) RATE SETTING

Rates & Rate Setting

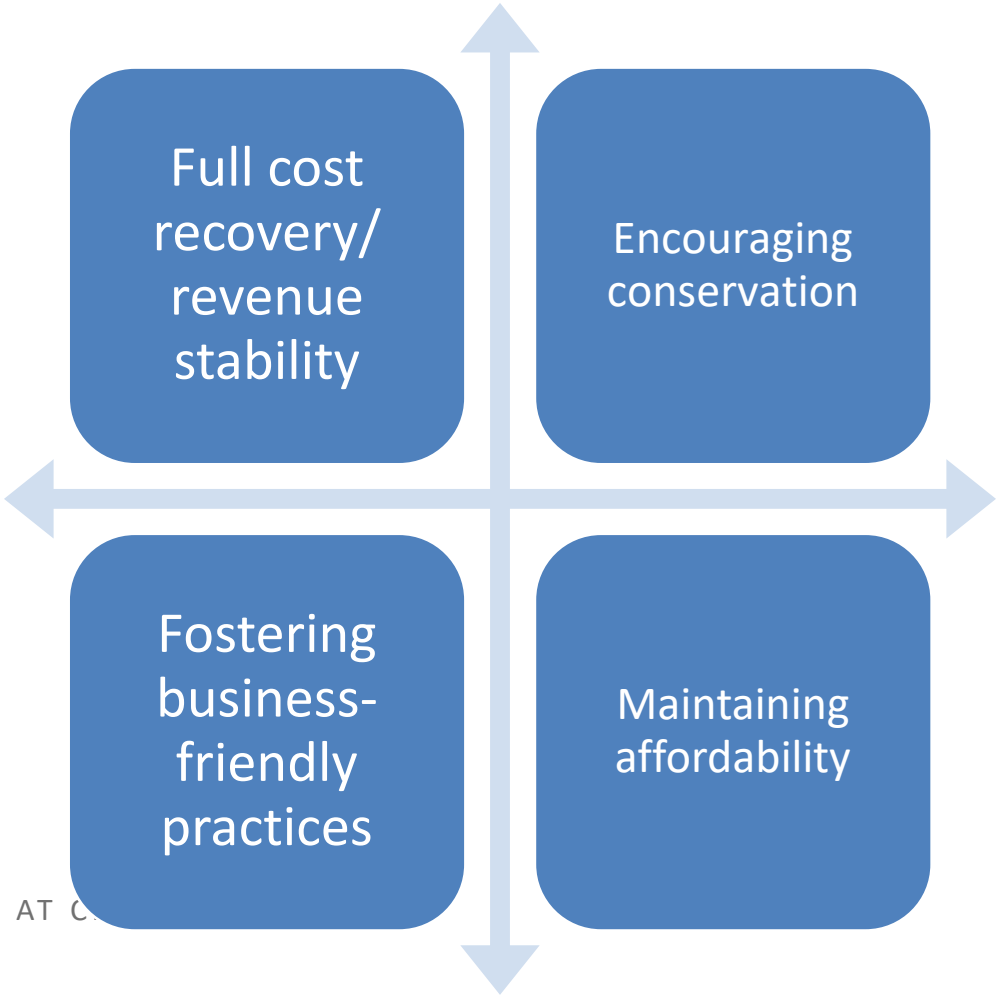
- Simple
- Based on expenses
- Cover full costs
- Fair, affordable & equitable

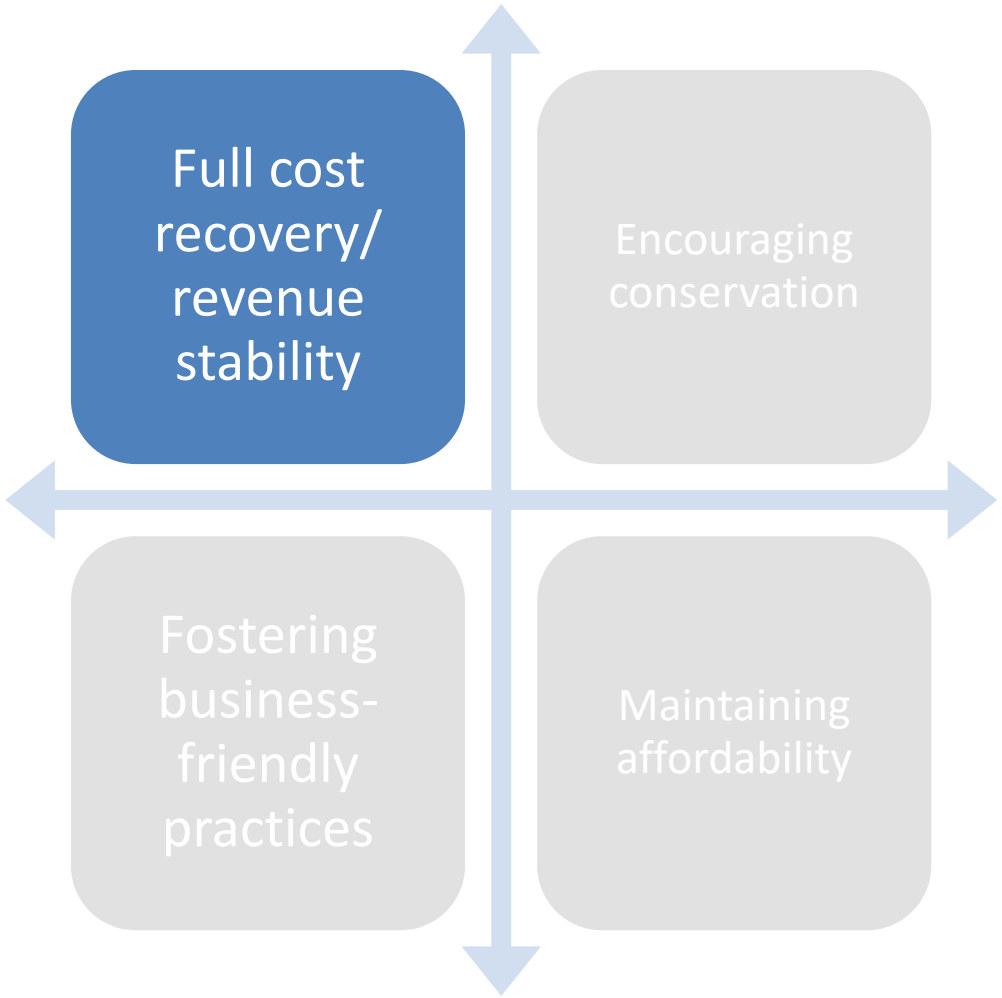
Rates & Rate Setting

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

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

Water System Objectives

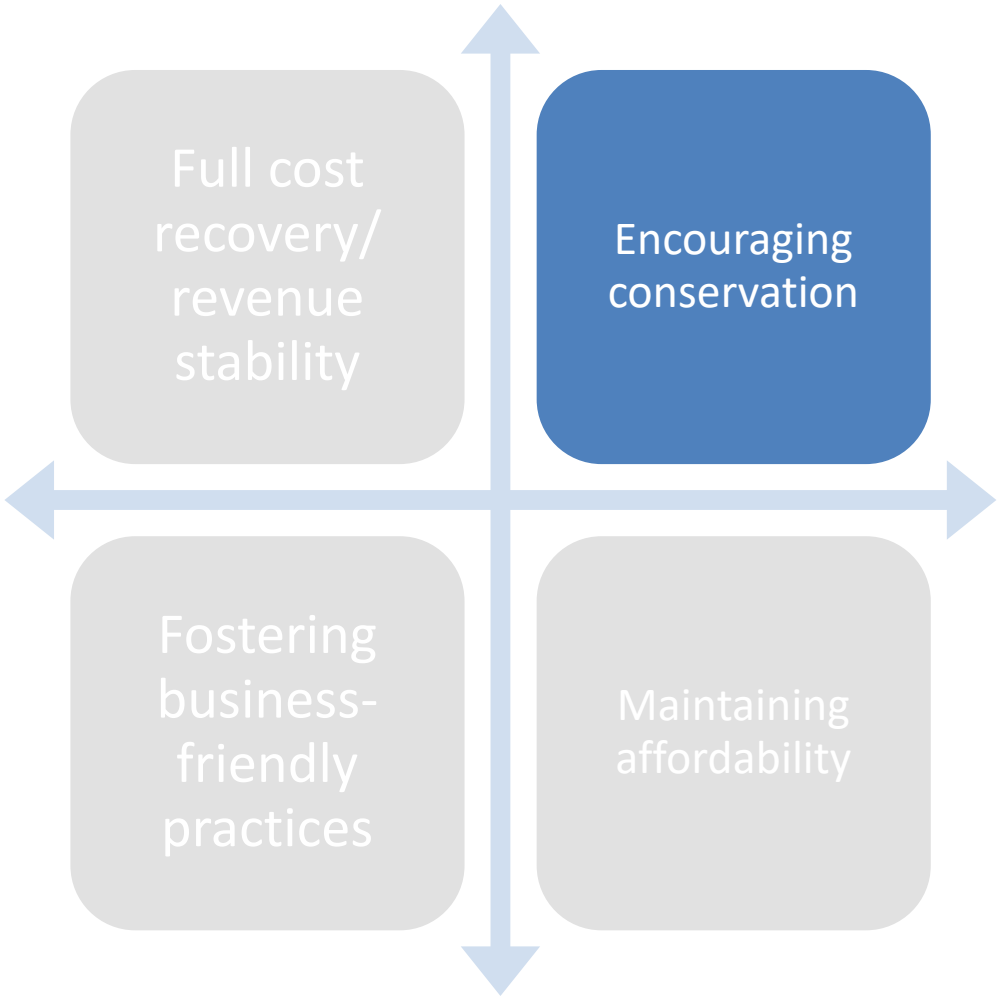




Bring in enough revenue to cover the full cost of running the water system:

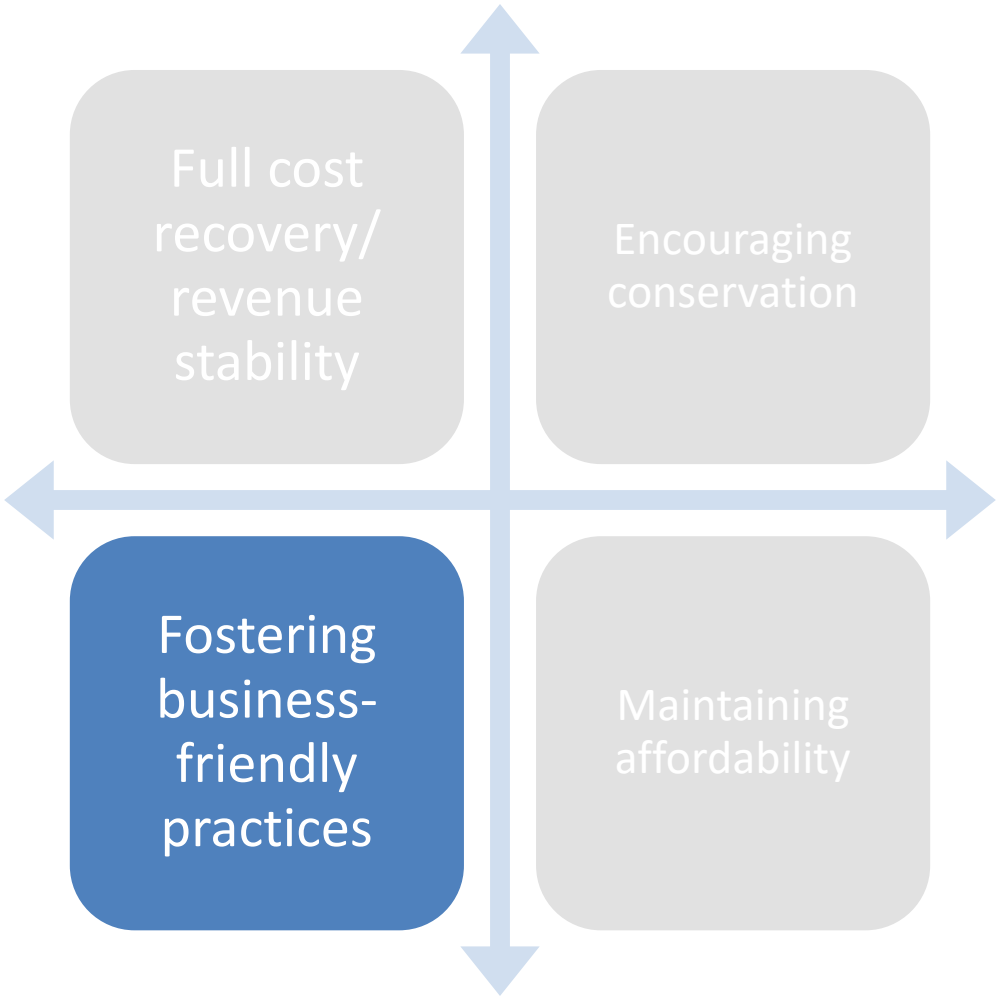
- O&M
- Capital needs
- Debt service

Why do this?



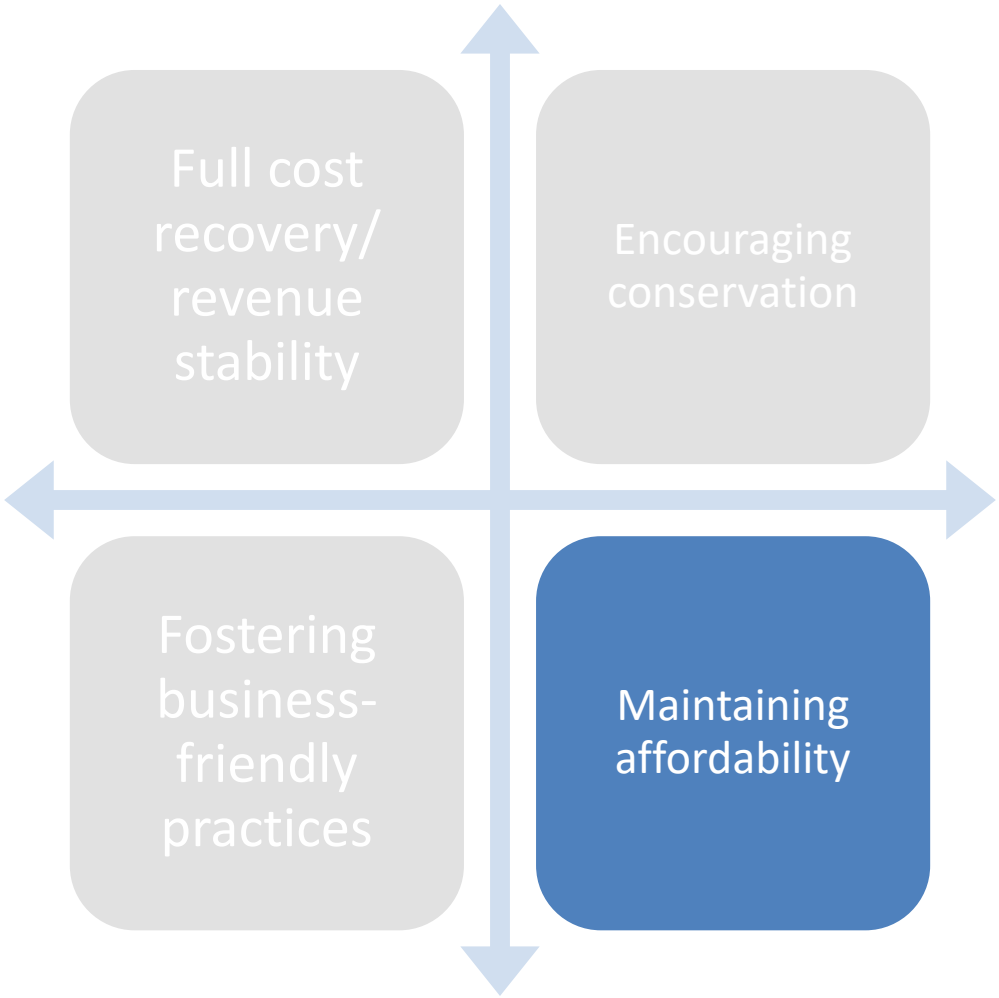
Use pricing to encourage customers to reduce their water consumption

Why do this? What challenges does this create?



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

Why do this?



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

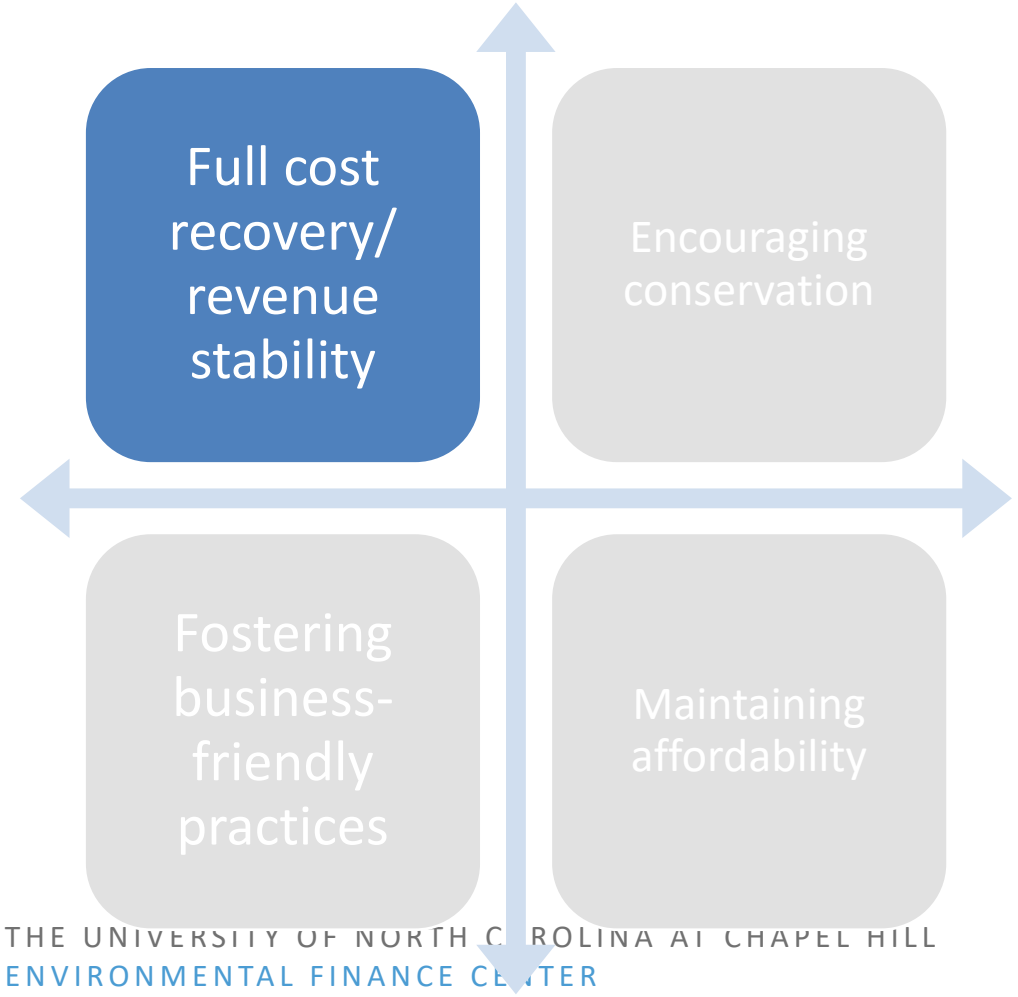
Why do this?

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

Rate Setting Philosophies

Jeff Hughes

The Painful Art of Setting Water and Sewer Rates

- *An increase in mergers and acquisitions*
- *Almost $8 billion in assets and more than $1 billion in annual revenues*[1]
- *Changing regulations, affecting the bottom line*
- *A backlog in capital investment needs*
- *Interruptions in supplies that hurt revenues*
- *Loss of major customers*
- *Innovative pricing and customer-relations strategies*
- *Sagging revenues*

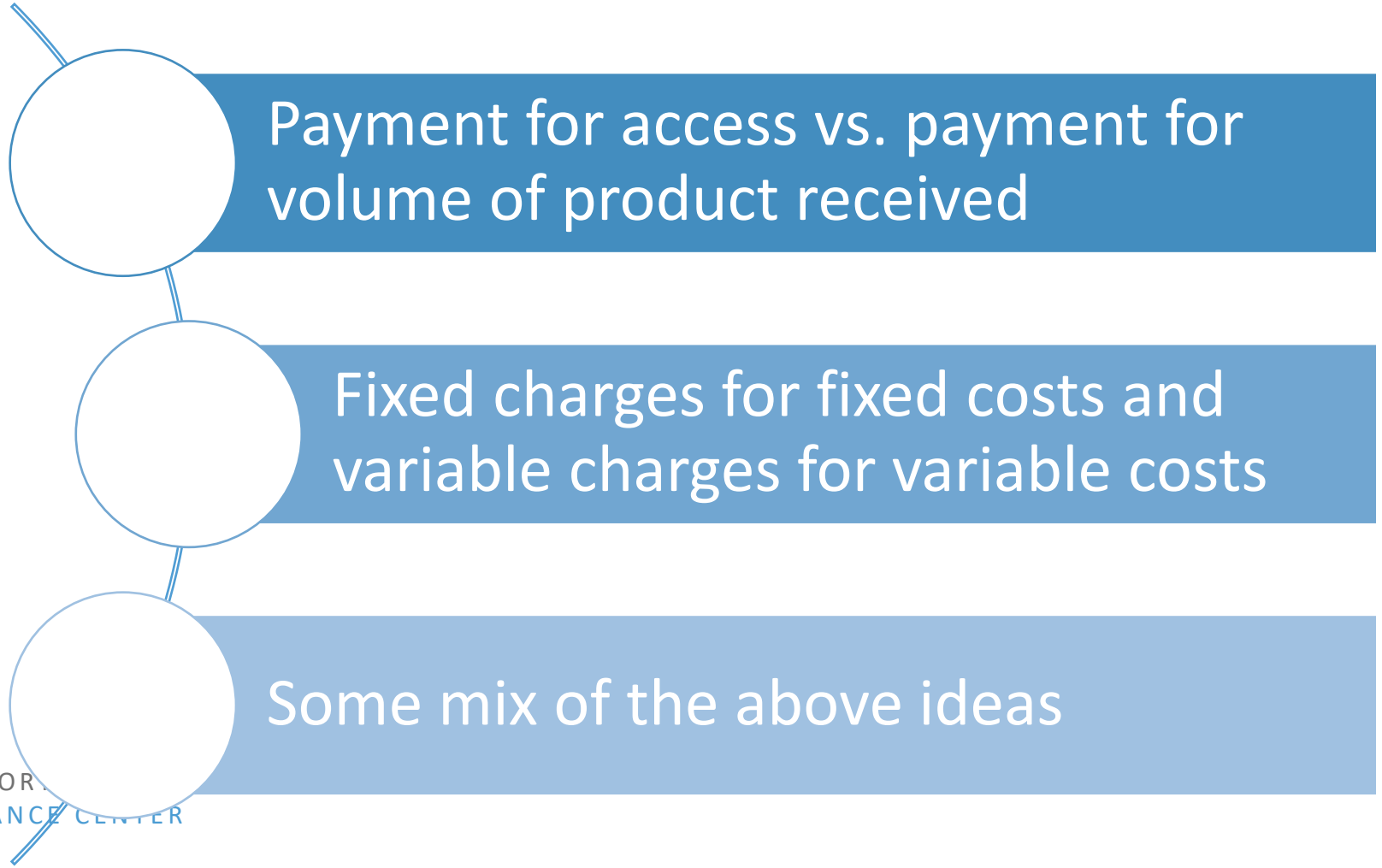
typically fall on governing boards that were chosen not as business or technical experts but as representatives of their constituents on a broad range of matters.

The drought of 2002 brought two types of water stories to the headlines: (1) the struggles of many communities to maintain their water supplies and (2) the financial difficulties of many communities due to decreased sales. The response to the first type of circumstance was immediate and significant: an executive order requiring conservation, and statewide initiatives to examine current supplies. The response to the second type of circumstance has been less obvious and less pronounced.

Table 1). These numbers are impressive. However, the projected numbers are staggering. According to a study by the North Carolina Rural Economic Development Center, the state will need more than $11 billion in investments to meet its capital needs for water and sewer infrastructure over the next twenty years.[2]

In North Carolina, as throughout the country, numerous water and sewer enterprises owned by local governments benefited from the federal government's ambitious construction grants program of the 1970s (for the patterns of federal wastewater funding from 1970 to 2000, see Figure 1). Many local government officials fondly remember those days of

Rate Setting Philosophies



Rate setting philosophies: Other rate design elements

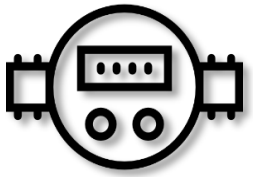
- Customer classes/distinction
- Billing period
- Base charge vs. volumetric
- Consumption allowance (included in base charge)
- # of blocks, sizes and rate differential
- Temporal adjustments
- Frequency of rate changes

Rate setting Exercise

Small town with a water and wastewater system

Population: 1,100

Service Connections: 450



MHI: $24,432

For the Exercise

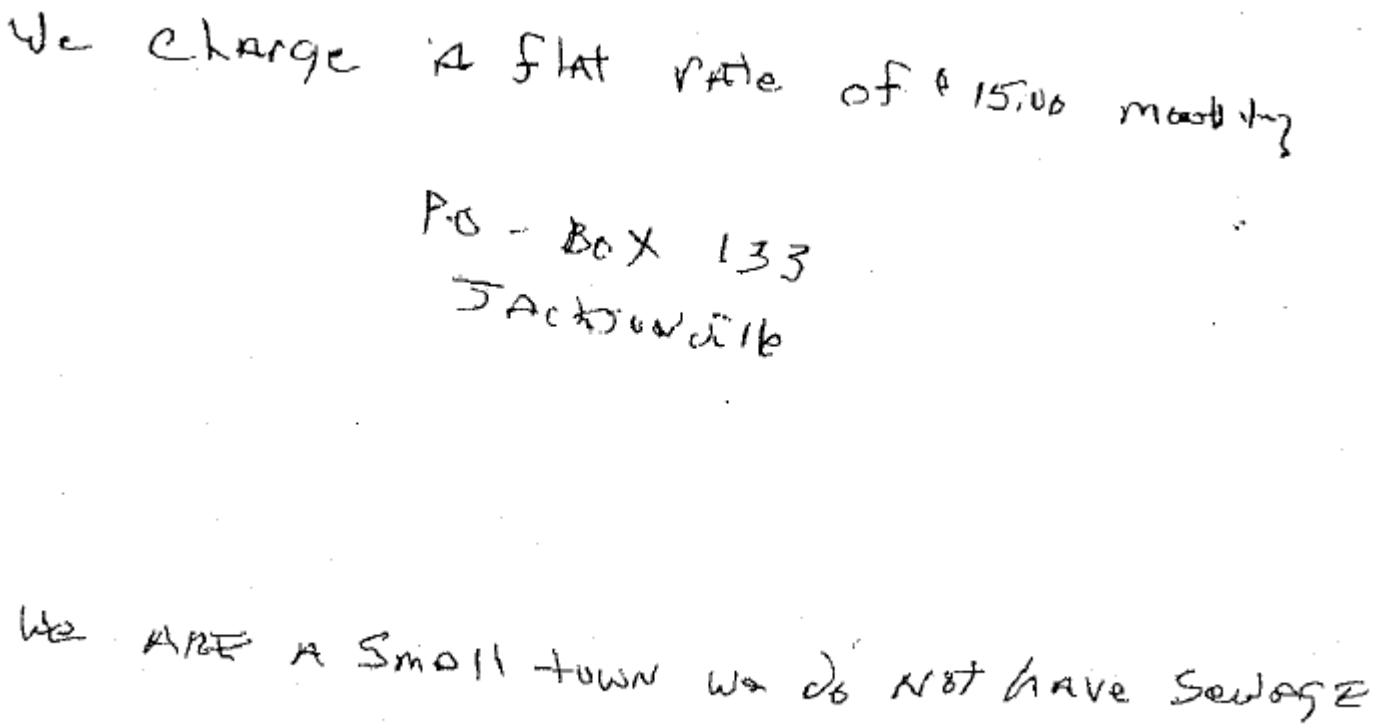
Revenue requirement:
$344,445.00

Where does this number come from? Not from the “full cost” actually! We’ll use it for this exercise, but it isn’t the correct revenue target.

Payment for Access

- In its pure form, everyone in the water system pays the same amount for access to the system, regardless of how much water they use (base charge or flat fee)

Payment for Access



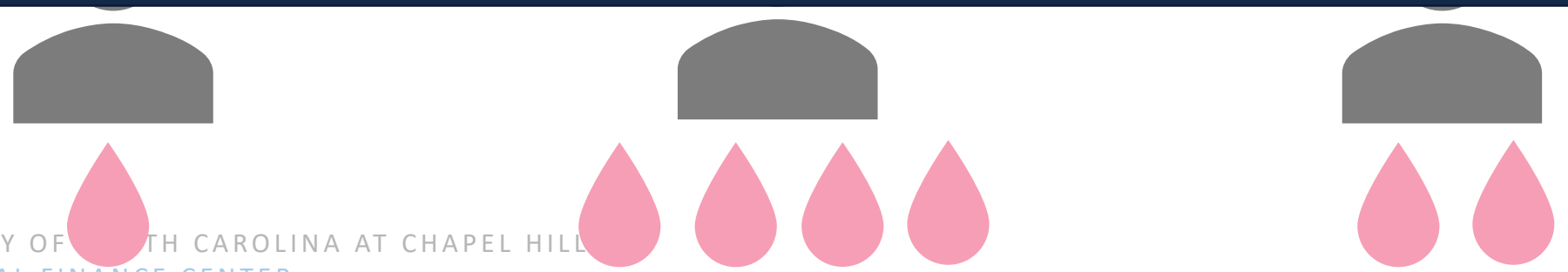
Jacksonville, GA

Payment for Access

- In its pure form, everyone in the water system pays the same amount for access to

Data needs:

- Total revenue requirement
- Number of accounts



Payment for Access

$$\frac{\text{\$344,445}\ \text{Total Needed Revenue}}{450\ \text{Total Accounts}} = \frac{\text{\$765.43}\ \text{Total Annual Bill}}{12} = \text{\$63.79}\ \text{Monthly Bill}$$

Payment for volume of product received

- In its pure form, everyone in the water system pays for the volume of water received and only for the volume of water received (volumetric rate)

Payment for volume of product received

WATER & SEWER RATES

In Town	
Water	$ 7.72 per 1000 gallons
Sewer	$ 10.73 per 1000 gallons
Out of Town	
Water	$ 15.44 per 1000 gallons
Sewer	$ 21.46 per 1000 gallons

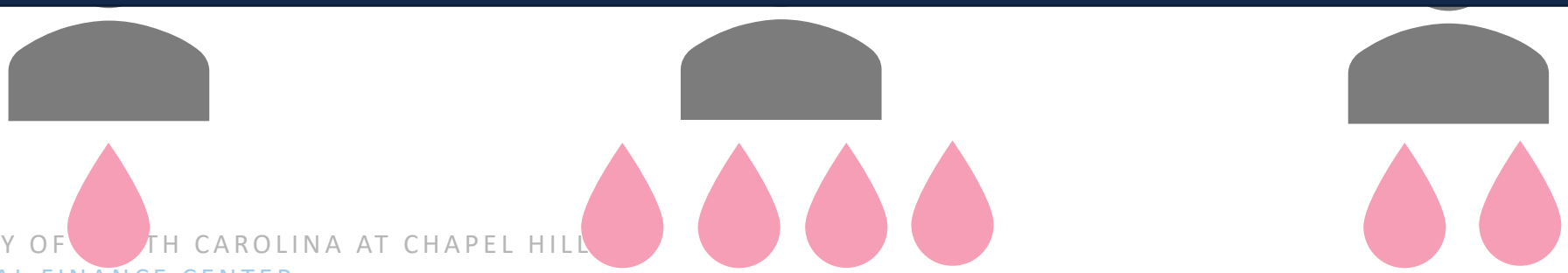
Troutman, NC

Payment for volume of product received

- In its pure form, everyone in the water system pays for the volume of water received and only for the volume of water received

Data needs:

- Total revenue requirement
- Total gallons sold



Payment for volume of product received

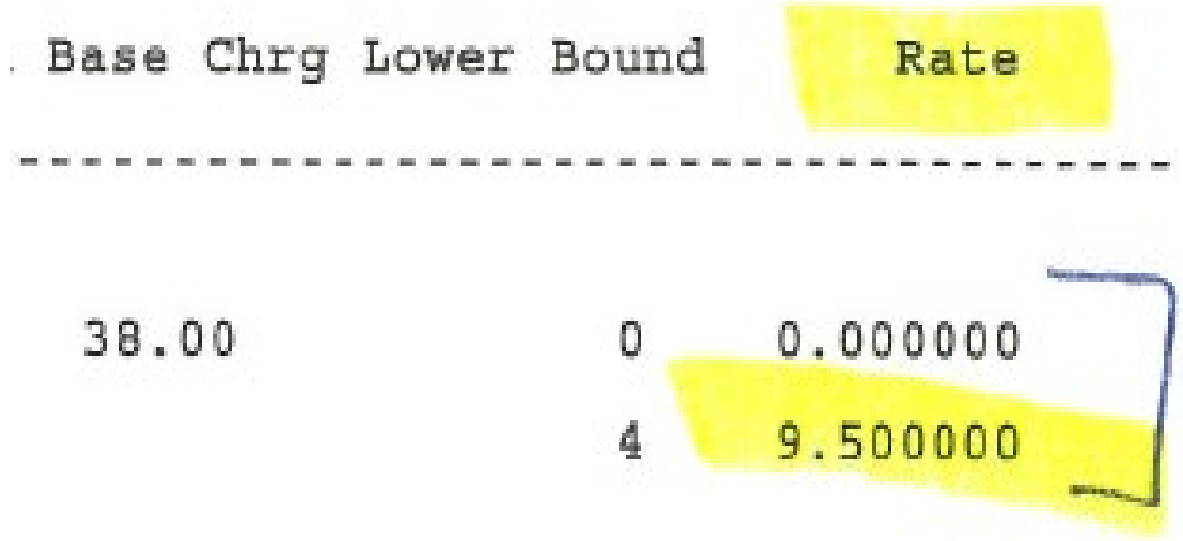
$$\frac{\$344{,}445}{32{,}877{,}590} \times 1{,}000 = \$10.48$$

Total Needed Revenue

Total Gallons Sold

Price per 1,000 Gallons

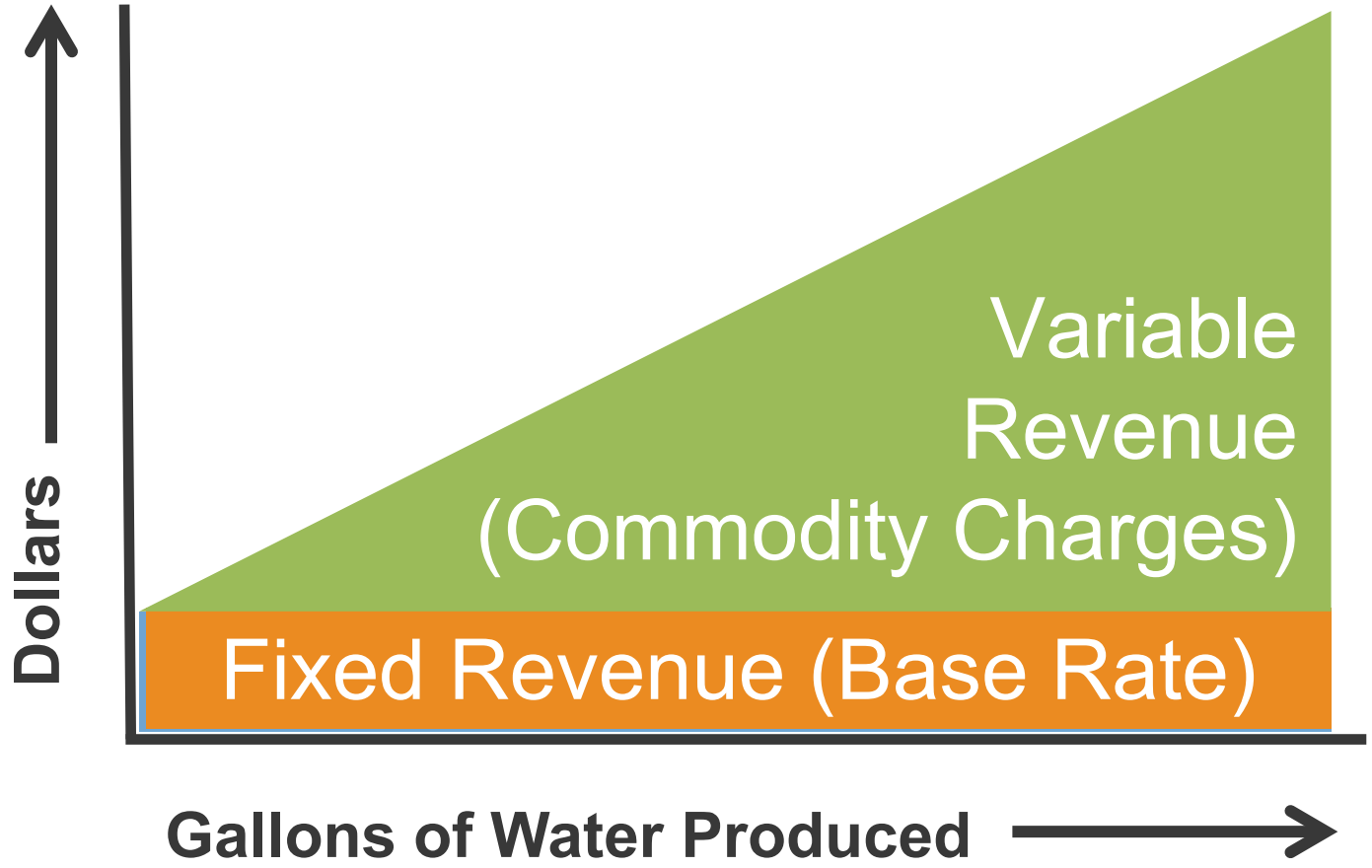
A combination:
base charge + volumetric charge



Base Chrg	Lower Bound	Rate
38.00	0	0.000000
	4	9.500000

Readsboro, VT

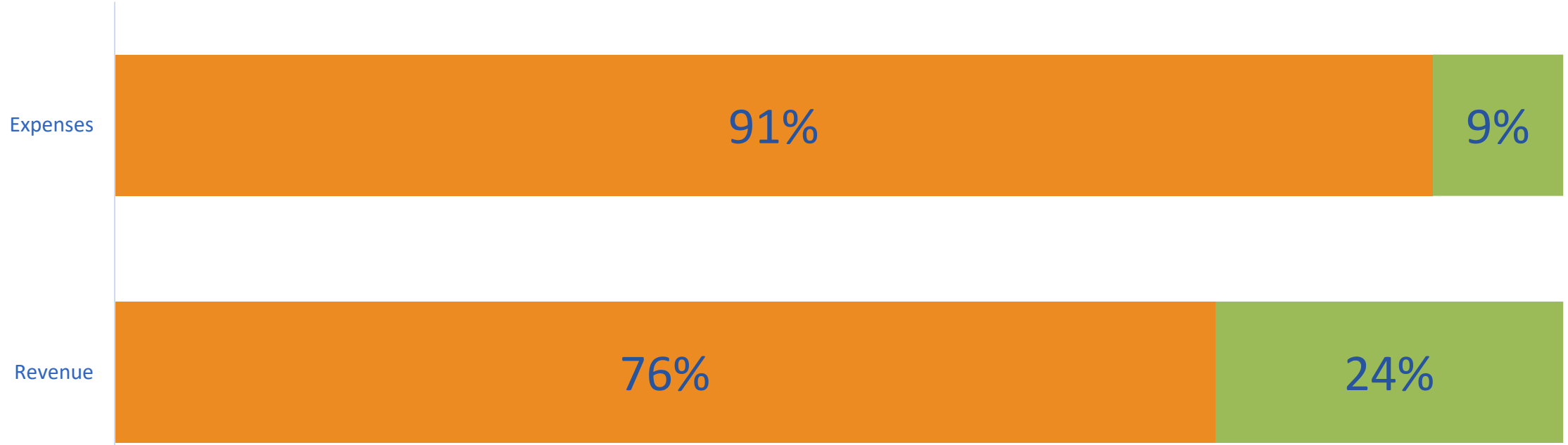
Base rate + volumetric charges



Base Charge for Fixed Costs; Volumetric Charge for Variable Costs

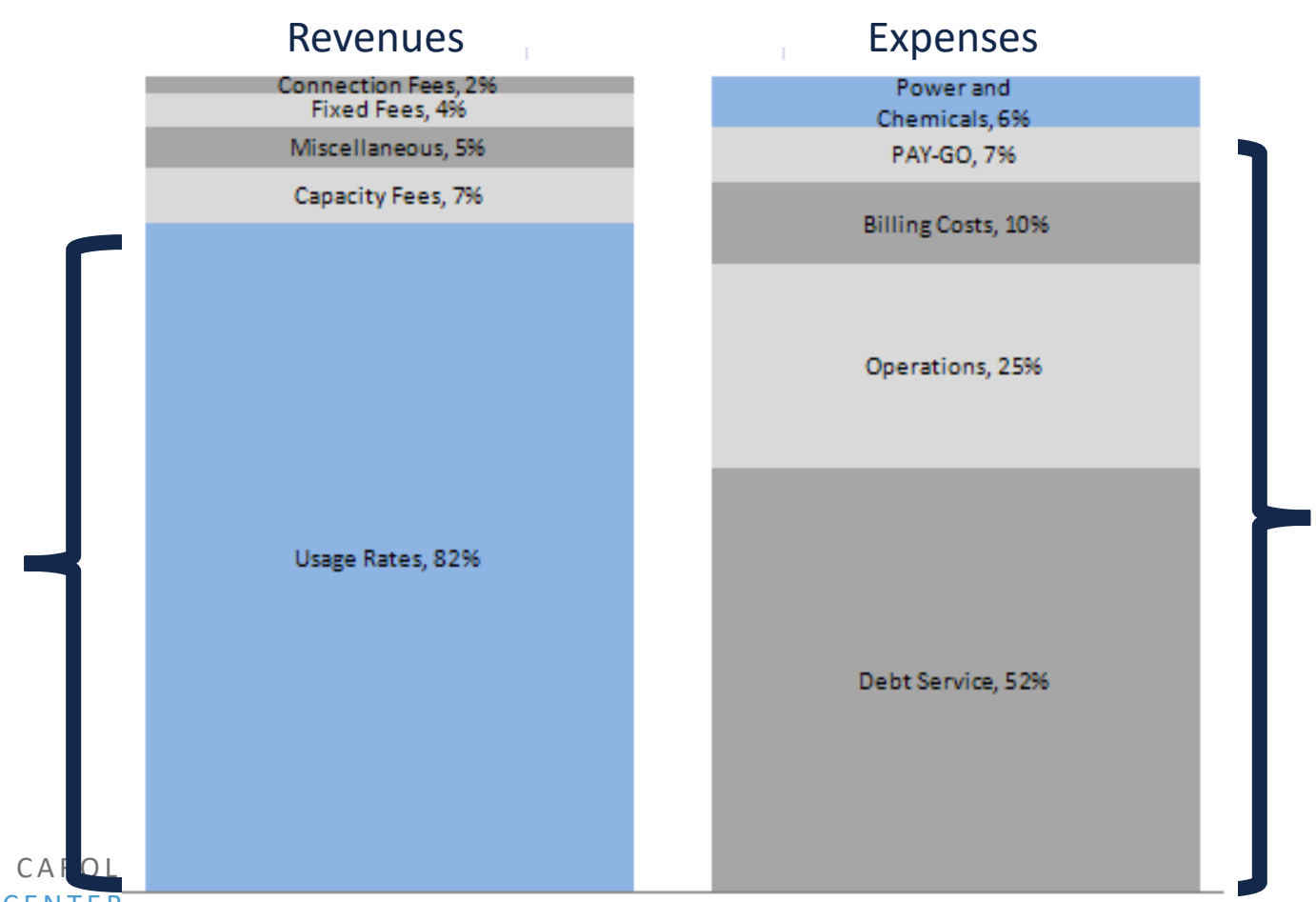
- In its pure form,
  - all of the fixed costs of the water system would be covered by the base charge, and
  - all of the variable costs would be covered by the volumetric rate

Base Charge for Fixed Costs; Volumetric Charge for Variable Costs



Readsboro, VT

Fixed vs. variable revenues & expenses



Fixed

Variable

Revenues change with the amount of water used (variable)

Most expenses stay constant (fixed)

THE UNIVERSITY OF NORTH CAROL
ENVIRONMENTAL FINANCE CENTER

Annual Revenues and Expenses for Charlotte-Mecklenburg Utilities (NC)

Figure Credit:
Doug Bean (CMU Director) 2008

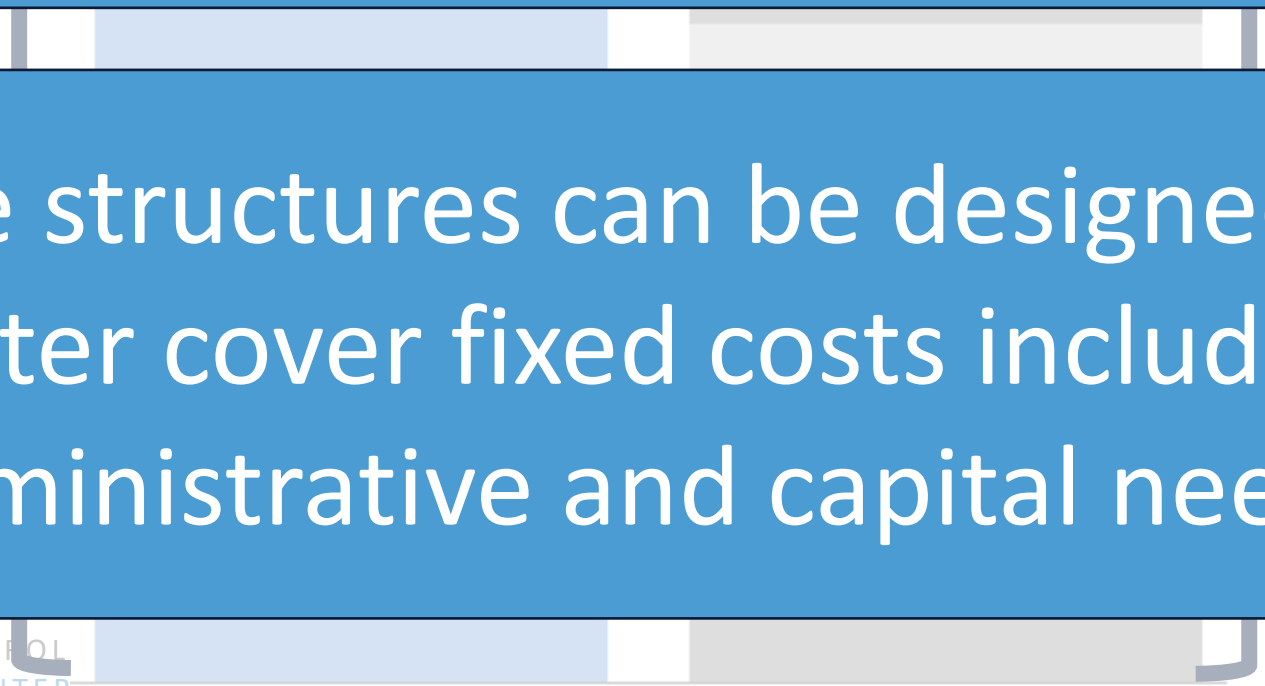
Fixed v

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

Revenu
change
the amo
water u

ses stay
ant



Base Charge for Fixed Costs
Volumetric Charge for Variable Costs

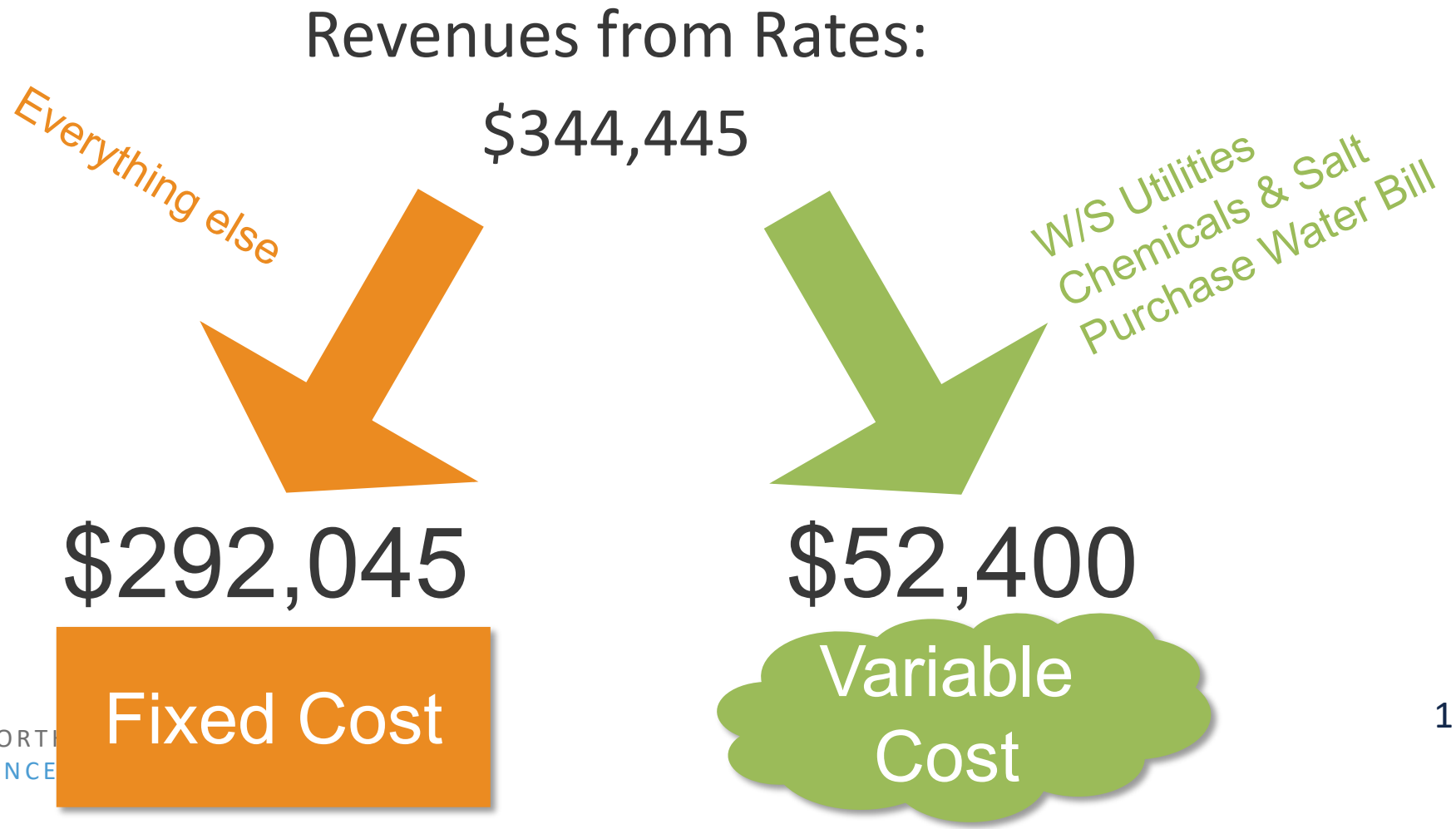
- In its pure form:
  - all the fixed costs of the water system would be covered by the base charge, and
  - all the variable costs would be covered by the volumetric rate
- Conservation-oriented
- Allows for consideration of a “lifeline” rate for small users
- Gives the opportunity to customers who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

Base Charge for Fixed Costs
Volumetric Charge for Variable Costs

Data needs:

- 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

Base Charge ($/mo)

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

Variable Rate ($/1000 gal)

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

$25 Base Charge; Rest from Volumetric Rates

- Pick a base charge and see what the volumetric charge would need to be

$25 Base Charge; Rest from Volumetric Rates

WATER & SEWER RATES AND FEE SCHEDULE EFFE

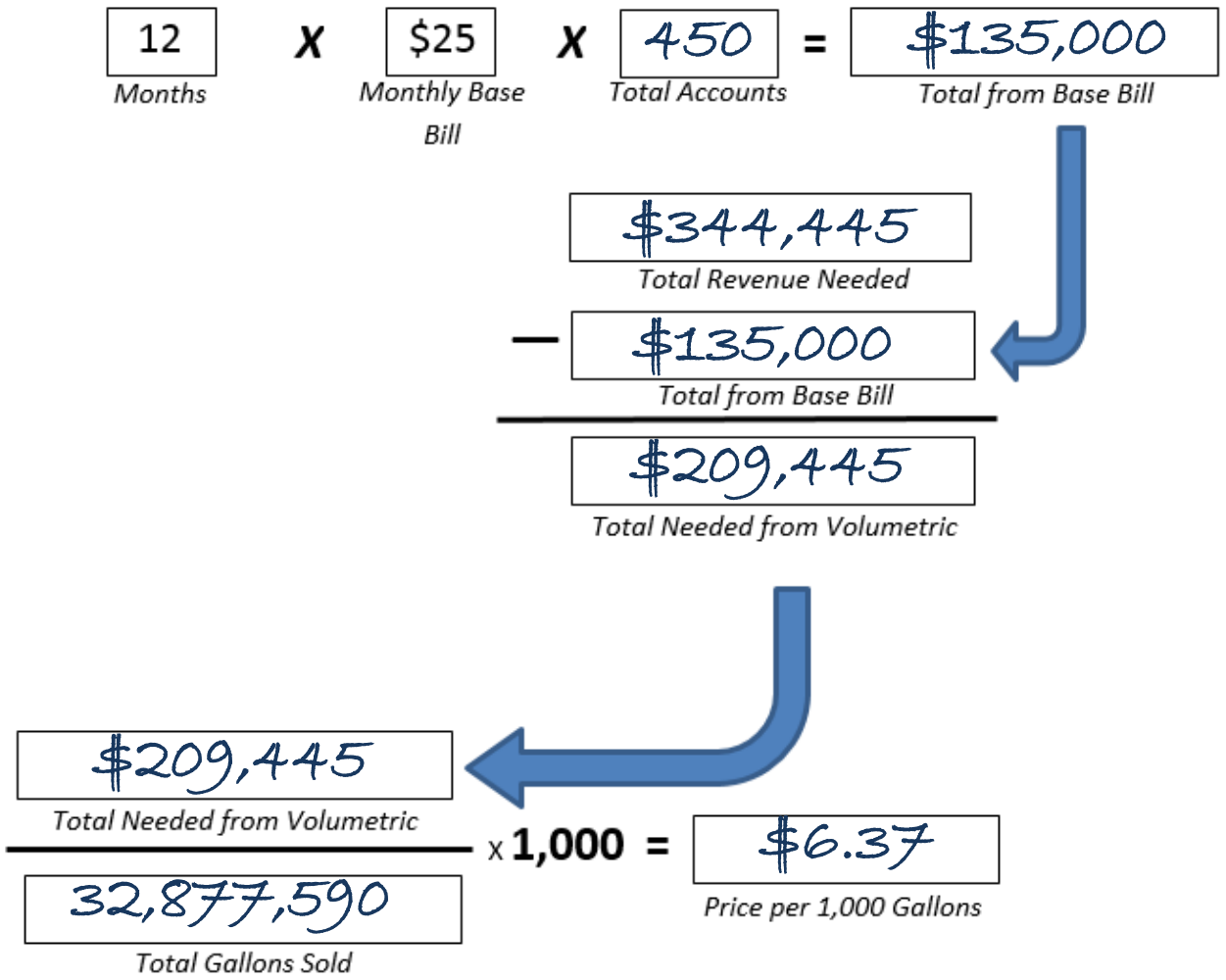
	IN TOWN
WATER MINIMUM (1000 GALLONS)	$25.00
SEWER MINIMUM (1000 GALLONS)	$25.00
DISPOSAL FEE	$ 5.00
ADDITIONAL WATER PER 1000 GALLONS	$ 6.15

Denton, NC

$25 Base Charge; Rest from Volumetric Rates

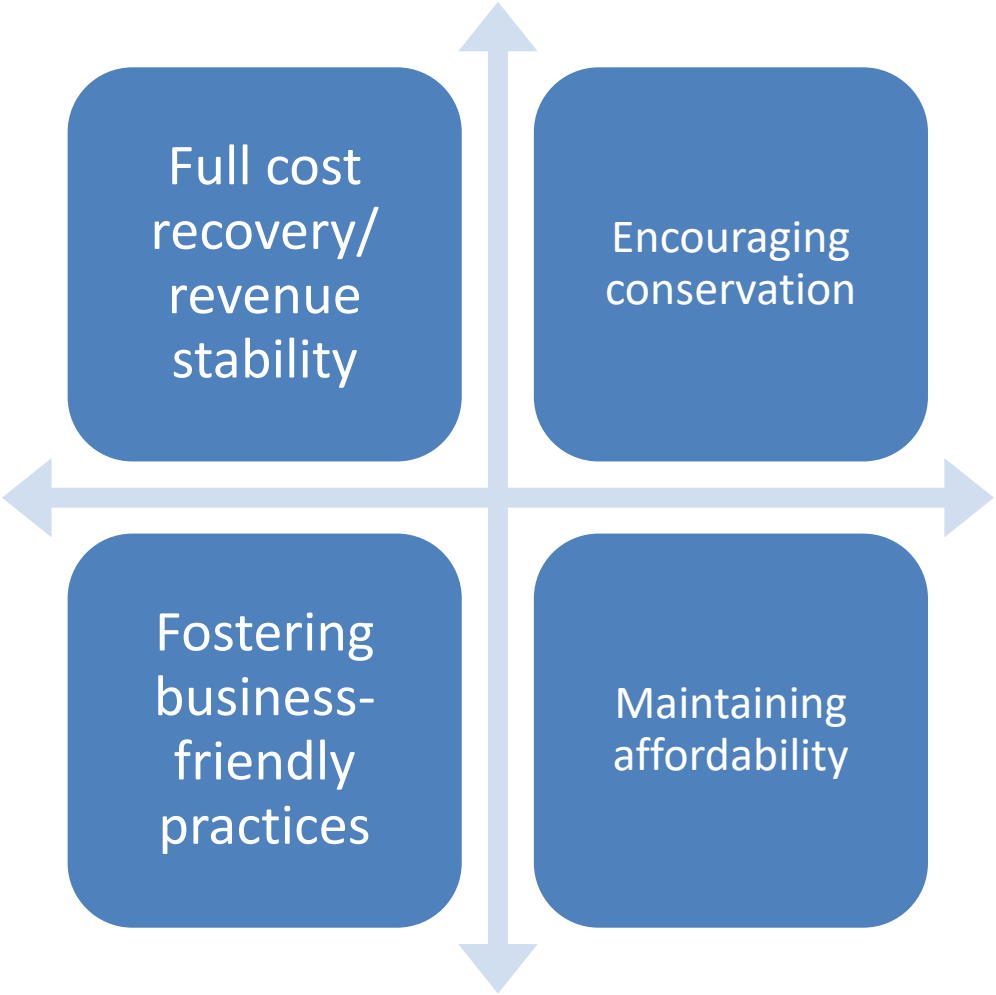
- What information do we need to make this calculation?
  - Total Accounts
  - Total Revenue Needed
  - Total Gallons

$25 Base Charge; Rest from Volumetric Rates



Different strategies

A. $63.79 base
B. $10.49 per 1,000 gallons
C. $54.08 base
   $1.59 per 1,000 gallons
D. $25.00 base
   $6.37 per 1,000 gallons



Where do you think the $25 per month base charge came from?

How do rate structures impact customers?

1,000 gallons/month

4,000 gallons/month

12,000 gallons/month

34,000 gallons/month

The Rates

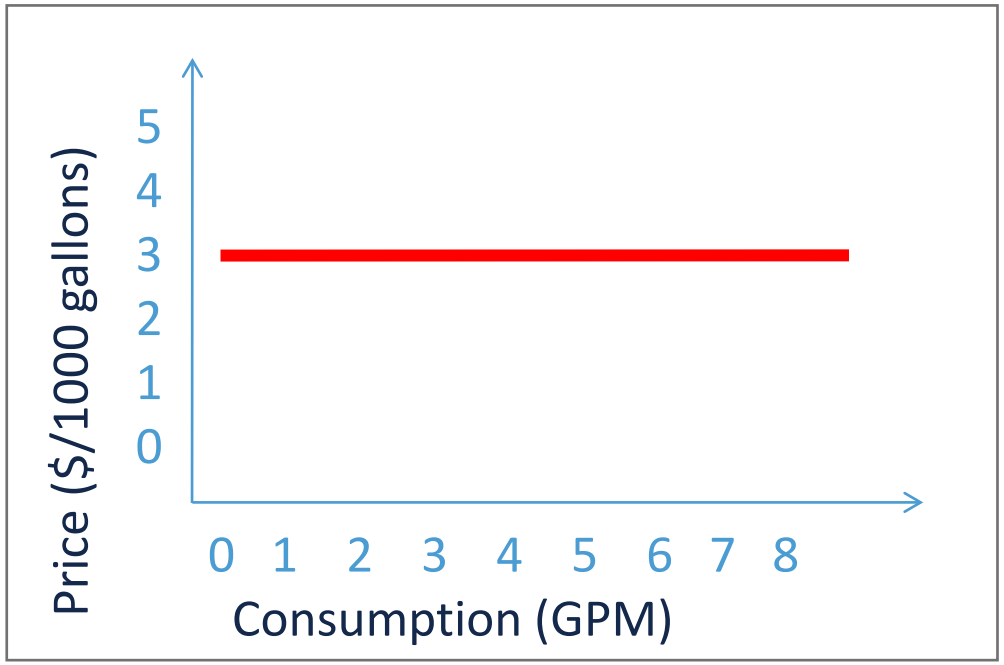
- $63.79 base – *payment for access*
- $10.49 per 1,000 gallons – *payment for volume*
- $54.08 base
  $1.59 per 1,000 gallons – *fixed vs. variable*
- $25.00 base
  $6.37 per 1,000 gallons – *pick a base charge*

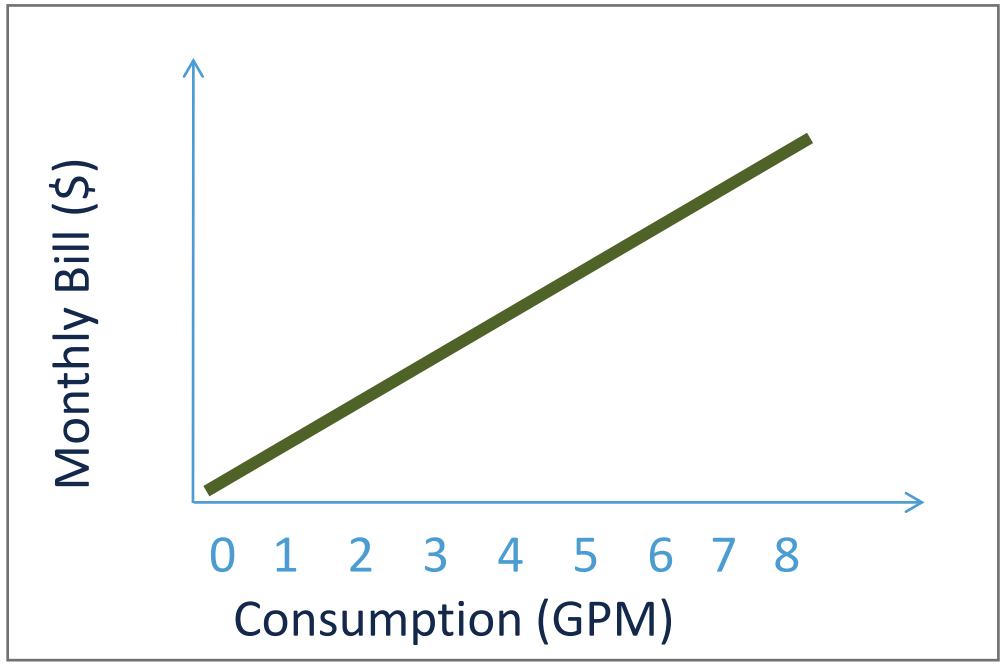
	 1,000 gallons/month	 4,000 gallons/month	 12,000 gallons/month	 34,000 gallons/month
Payment for Access (Fixed Monthly Bill)	$63.79	$63.79	$63.79	$63.79
Payment for Volume of Product Received	$10.48	$41.92	$125.76	$356.32
Base Charge for Fixed Costs; Volumetric Charge for Variable Costs	$55.67	$60.44	$73.16	$108.14
$25 Base Charge; Volumetric Charge for Rest	$31.37	$50.48	$101.44	$241.58

Rate design elements

- Customer classes/distinction
- Billing period
- Base charge vs. volumetric
- Consumption allowance (included in base charge)
- # of blocks, sizes and rate differential
- Temporal adjustments
- Frequency of rate changes

Uniform (“Flat”) Rates vs Volumetric rates





Uniform Volumetric Charge

Base Fees:

Residential:	25.00
Commercial:	40.00
Distribution:	30.00

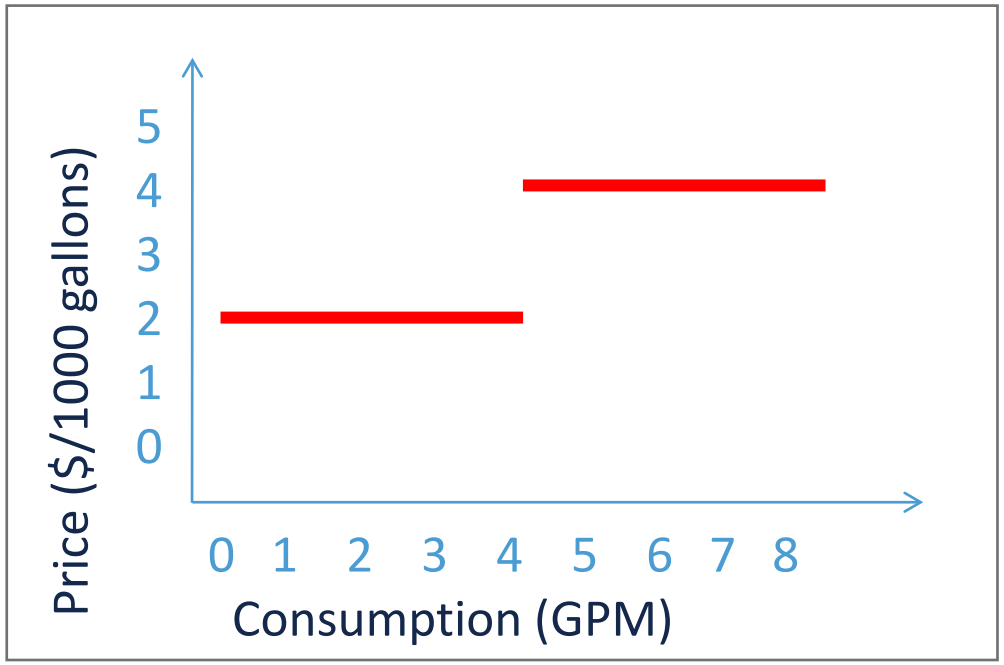
Usage fee: 14.75 per thousand gallons

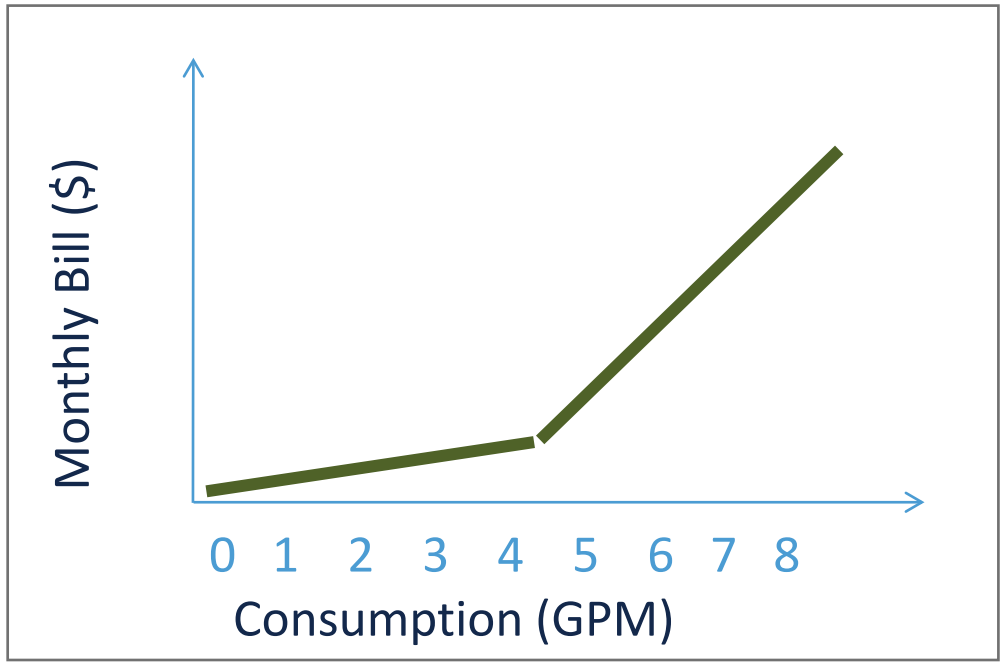
What rate setting goals might this accomplish?

Increasing Block Rates

- At higher usage levels, the price increases, which encourages customers to cut back on usage
- Provides affordability for lower users
  - “Lifeline” or “essential use”
- Sends a conservation signal
- Can help with capacity constraints

Increasing Block Rates





Increasing Block Rates

What rate setting goals might this accomplish?

Tier	Water Usage	Rate per 1,000 gallons ($)
1	First 5,000 gallons or less	$13.00
2	Next 5,001 – 15,000	$17.75
3	Next 15,001 – 25,000 (Over 15,000 cattle lessees)	$18.75
4	25,001 or more for all except cattle lessees	$19.75

Increasing Block with Low 1st Block

What rate setting goals might this accomplish?

Base Water Rates (residential *effective 4/1/2015*)

Line Size	Inside City Limits	Outside City Limits
5/8 – 3/4 inch line	$ 15.50	$ 25.20
1 inch line	$ 15.50	$ 25.20

Volume Rate (residential *effective 4/1/2015*)

1st 2,000 gallons	$ 2.50 per 1,000 gal.	$ 3.00 per 1,000 gal.
2,001 – 6,999 gallons	$ 7.20 per 1,000 gal.	$ 8.00 per 1,000 gal.
7,000 + gallons	$ 9.00 per 1,000 gal.	$ 9.00 per 1,000 gal.

Block Designs

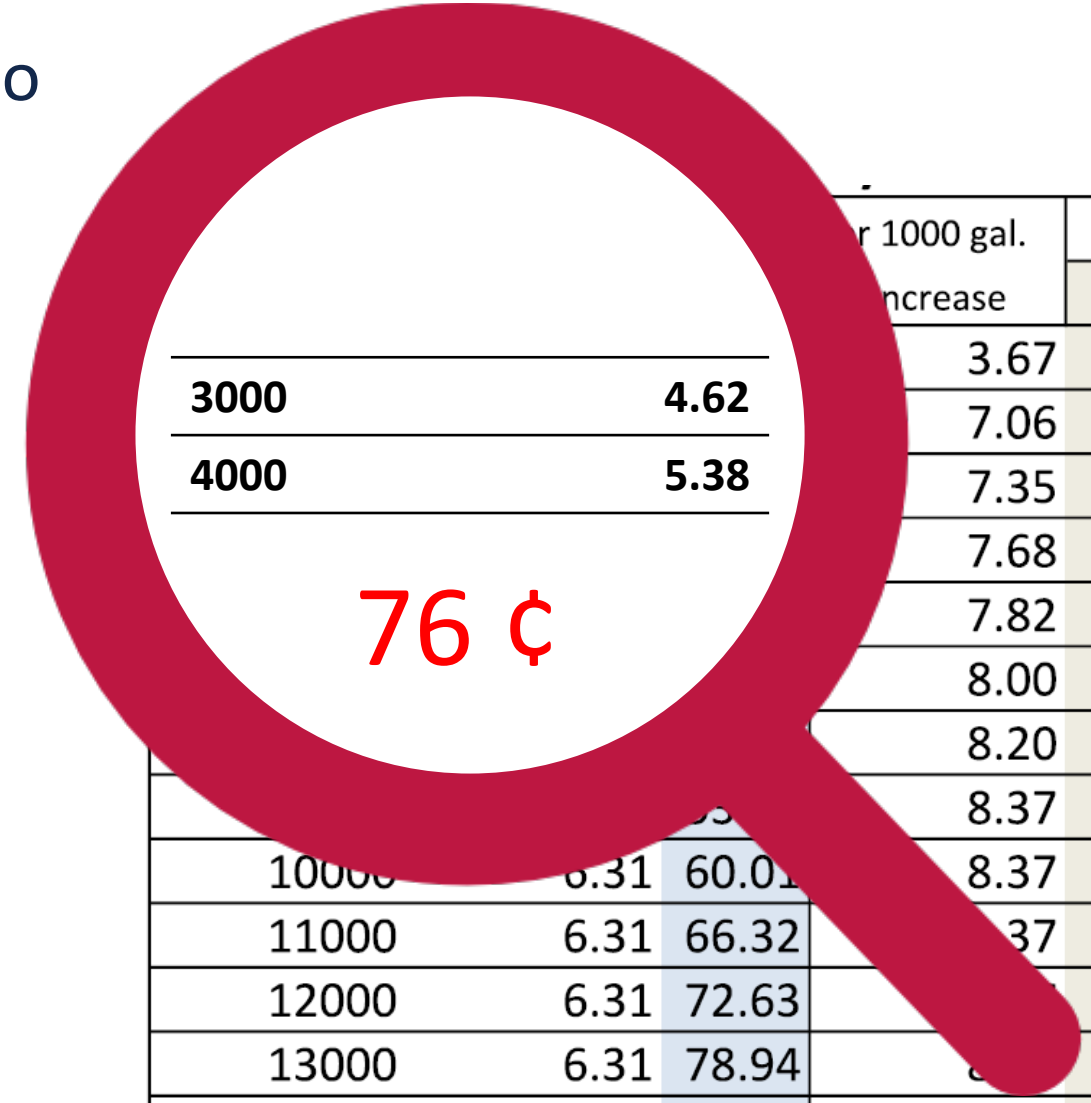
For block rate structures to be effective:

- Decide on the correct number of blocks
- Decide on where the blocks should end/start
- Set significant rate differentials between blocks
- Keep in mind your base charge and consumption allowance
- Meter reading must be punctual, and meters must be reliable
- Think about large families, commercial users, etc.

Try not to do this!

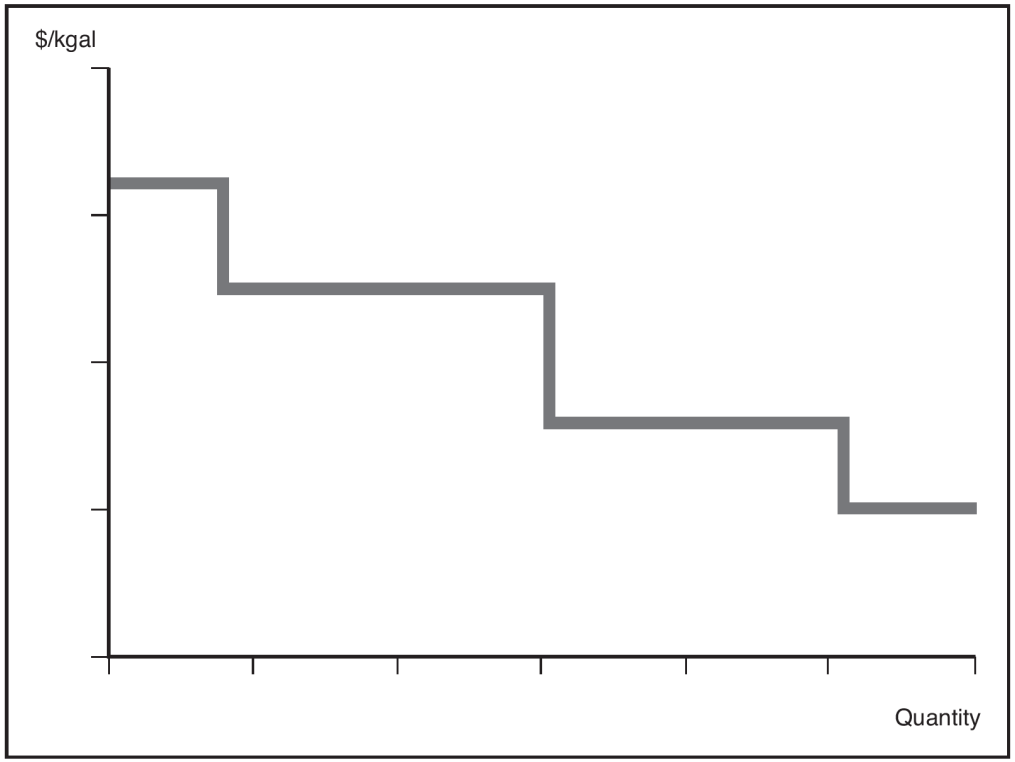
	Per 1000 gal.	water	Per 1000 gal.	sewer	combined
fixed 1000	increase	11.66	increase	13.10	24.76
2000	2.43	14.09	3.67	16.77	30.86
3000	4.62	18.71	7.06	23.83	42.54
4000	5.38	24.09	7.35	31.18	55.27
5000	5.50	29.59	7.68	38.86	68.45
6000	5.75	35.34	7.82	46.68	82.02
7000	5.93	41.27	8.00	54.68	95.95
8000	6.12	47.39	8.20	62.88	110.27
9000	6.31	53.70	8.37	71.25	124.95
10000	6.31	60.01	8.37	79.62	139.63
11000	6.31	66.32	8.37	87.99	154.31
12000	6.31	72.63	8.37	96.36	168.99
13000	6.31	78.94	8.37	104.73	183.67
14000	6.31	85.25	8.37	113.10	198.35
15000	6.31	91.56	8.37	121.47	213.03
15001-99999999	6.51	98.07	8.56	130.03	228.10

Try not to do this!



			r 1000 gal.	sewer	combined
			ncrease	13.10	24.76
			3.67	16.77	30.86
			7.06	23.83	42.54
			7.35	31.18	55.27
			7.68	38.86	68.45
			7.82	46.68	82.02
			8.00	54.68	95.95
			8.20	62.88	110.27
			8.37	71.25	124.95
10000	6.31	60.01	8.37	79.62	139.63
11000	6.31	66.32	37	87.99	154.31
12000	6.31	72.63		96.36	168.99
13000	6.31	78.94		104.73	183.67
14000	6.31	85.25	8.37	113.10	198.35
15000	6.31	91.56	8.37	121.47	213.03
15001-99999999	6.51	98.07	8.56	130.03	228.10

Decreasing block rates



- An alternative to customer classes that lowers price per gallon as usage increases
- Helpful for when you can benefit from economies of scale
- Recognizes that high users may also have more consistent use that is less work to maintain (i.e., lower peaks)

Decreasing Block Rates

What rate setting goals might this accomplish?

COMMERCIAL WATER:

0 to 2000 gallons:----------$21.25 Minimum Bill

Additional: ----------$7.00 2001 – 12,000 gal

$6.75 12,001 – 27,000 gal

$6.50 27 001 gallon & up

Ardmore, AL

Decreasing Block Rates

What rate setting goals might this accomplish?

WATER RATES –

CONSUMPTION RATES –

1000 – 1,000,000 = 3.75 per 1,000

1,000,000 + = $0.30 per 1,000

BASE RATE –

80.00 per residential unit

150.00 per commercial unit

Increasing then Decreasing Block Rates

What rate setting goals might this accomplish?

Water Rates

EFFECTIVE JUNE 1, 2010 (ROUTES 1-9)

FIRST – 2000	GALLONS	$12.30
2001-3000	GALLONS	$3.30 PER 1000
3001-10,000	GALLONS	$3.60 PER 1000
OVER 10,000	GALLONS	$2.70 PER 1000

Block Size Based on Meter Size

What rate setting goals might this accomplish?

1" Meter (All Classes)	
1 to 32,000 Gallons	$6.72
Over 32,000 Gallons	$10.34
1 ½" Meter (All Classes)	
1 to 106,000 Gallons	$6.72
Over 106,000 Gallons	$10.34
2" Meter (All Classes)	
1 to 195,000 Gallons	$6.72
Over 195,000 Gallons	$10.34
3" Meter (All Classes)	
1 to 434,000 Gallons	$6.72
Over 434,000 Gallons	$10.34

A. Peterson Water, AZ

Block Size Based on Meter Size

What rate setting goals might this accomplish?

Water Consumption Charges - Per 1,000 Gallons

5/8" Meter	Rate
1st Tier (3,001 – 10,000 gallons per month)	$ 2.75
2nd Tier (10,001 – 17,000 gallons per month)	$ 4.60
3rd Tier (17,001 – 24,000 gallons per month)	$ 6.10
4th Tier (24,001 and above per month)	$ 7.10
3/4" Meter	**Rate**
1st Tier (3,001 – 15,000 gallons per month)	$ 2.75
2nd Tier (15,001 – 25,500 gallons per month)	$ 4.60
3rd Tier (25,501 – 36,000 gallons per month)	$ 6.10
4th Tier (36,001 and above gallons per month)	$ 7.10
1" Meter	**Rate**
1st Tier (3,001 – 25,000 gallons per month)	$ 2.75
2nd Tier (25,001 – 42,500 gallons per month)	$ 4.60
3rd Tier (42,501 – 60,000 gallons per month)	$ 6.10
4th Tier (60,001 and above gallons per month)	$ 7.10

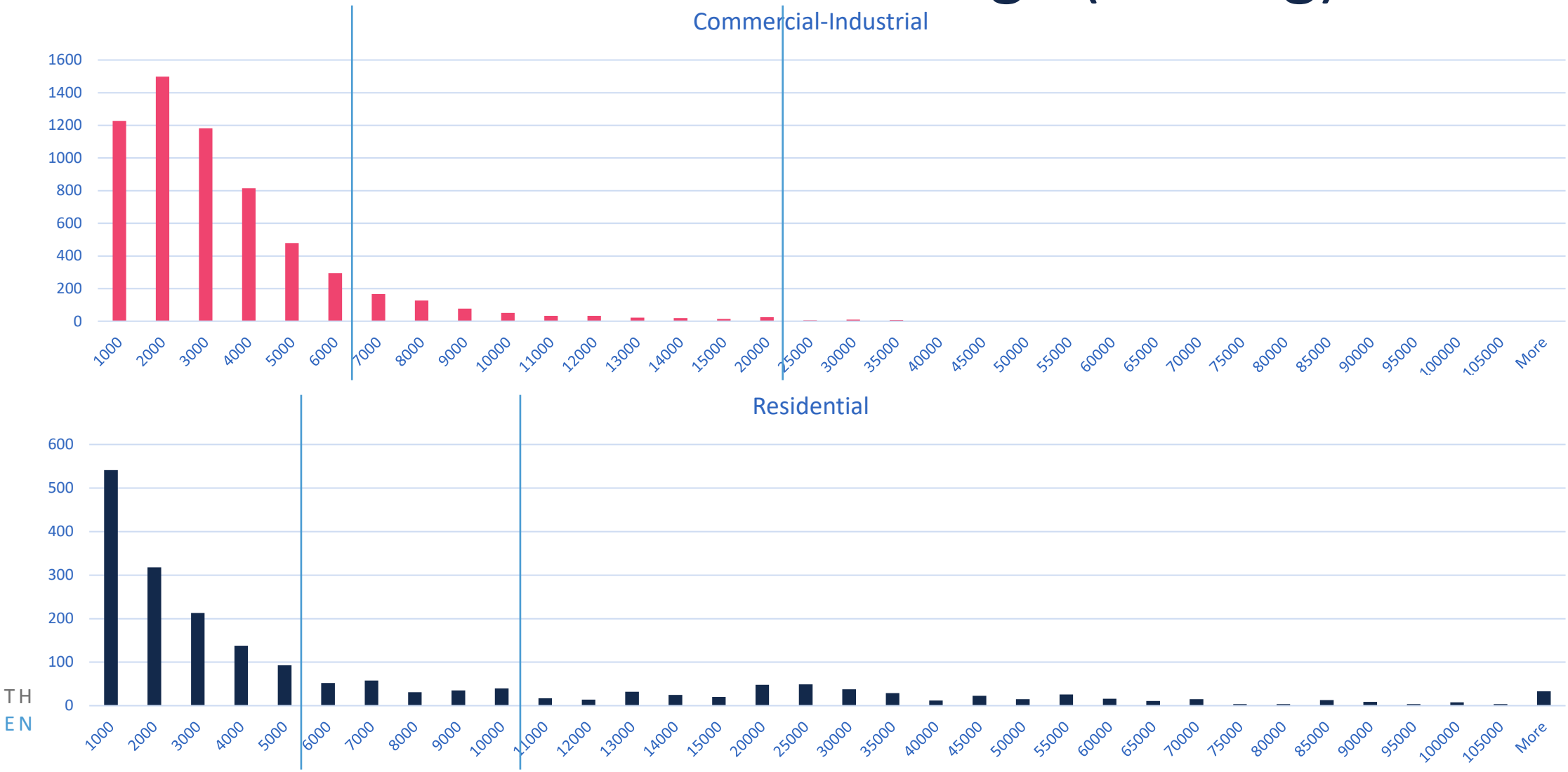
Metropolitan Domestic Water Improvement District, AZ

Block rate design considerations

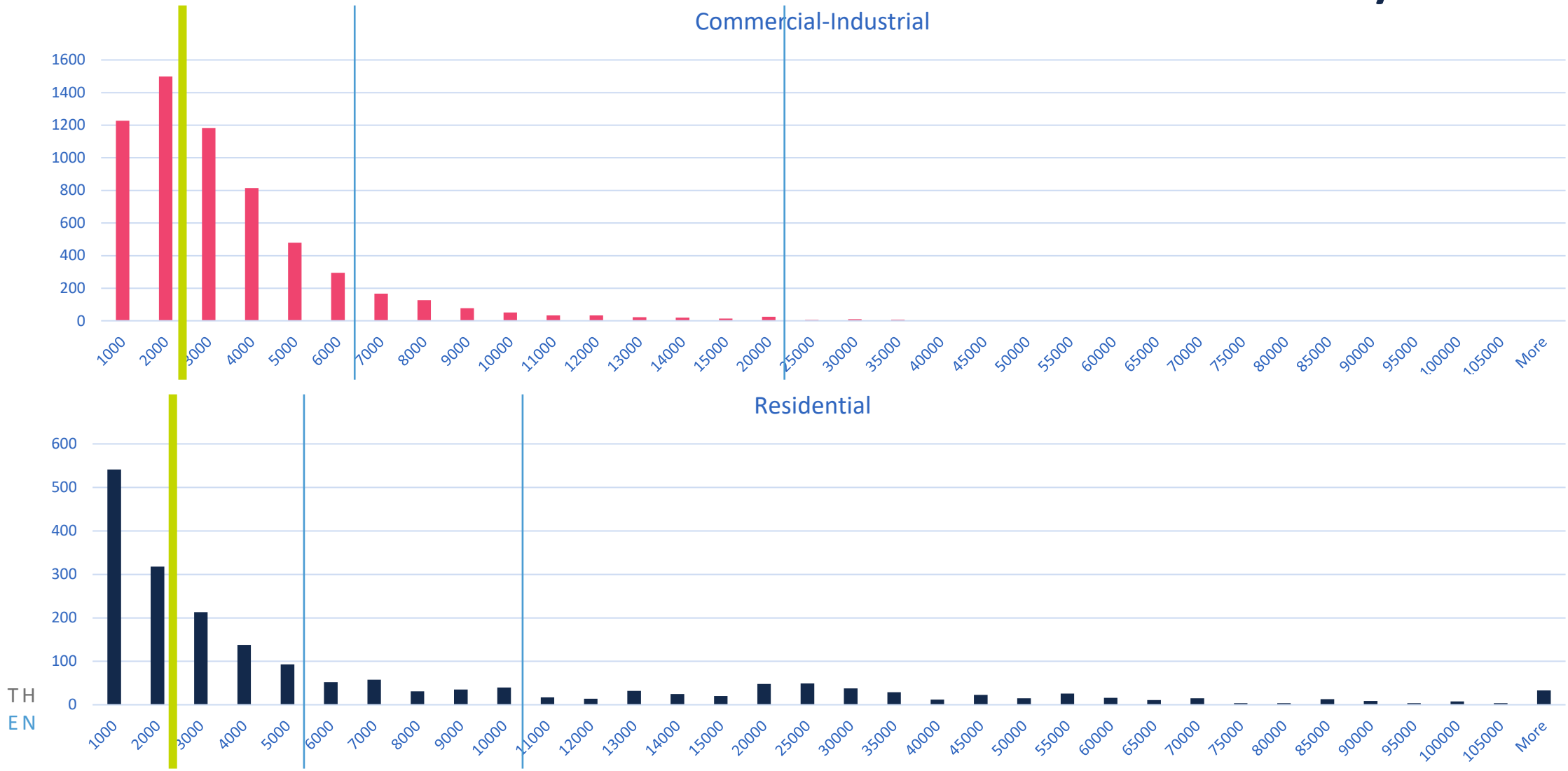
- For block rate structure designs, decide on:
  - The correct number of blocks
  - Where the blocks should end/start
- Remember your larger users
- Keep in mind your base charge and consumption allowance
- Set significant rate differentials between blocks
- Meter reading must be punctual, and meters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

RATES REVIEW

Shift Blocks to Better Reflect Usage (if using)



Add Allowance if Concerned with Affordability



TH
EN

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

Cheaper Commercial or Industrial Rates

The following monthly water rates are effective for residential and business customers:

Inside City Limits:

First 2,000 gallons or less per month	$10.00
Over 2,000 gallons per month (per 1,000/gal)	$ 1.85

INDUSTRIAL CUSTOMERS
WATER and SEWER RATES

First 3,000 gallons or less per month	$6.75
Over 3,000 gallons up to 300,000 gal./per M gal	$0.68
Over 300,000 gal up to 500,000 gal/per M gal	$0.62
Over 500,000 gal up to 1,500,000 gal/per M gal	$0.55
Over 1,500,000 gal/per M gal	$0.53

Camilla, GA

Cheaper Commercial or Industrial Rates

Residential Rates	Current Rates
0 - 2,000 (Minimum)	$19.67
2,001 - 6,000	$5.79 / 1,000 gals.
6,001 - 10,000	$6.14 / 1,000 gals.
10,001 - 20,000	$9.22 / 1,000 gals.
All Over 20,000	$10.75 / 1,000 gals

Commercial Rates	
0 - 2,000 (Minimum)	$29.49
2,001 - 48,000	$3.51 / 1,000 gals.
All Over 48,000	$4.10 / 1,000 gals.

Agricultural Rates	
0 - 2,000 (Minimum)	$21.45
2,001 - 48,000	$2.57 / 1,000 gals.
All Over 48,000	$3.57 / 1,000 gals.

Example: rates for special classes of customers

2017 QUARTERLY RATES

WATER $39.57 0 – 5,000 Gallons
$ 6.60 Per T/Gallons 5,000 +

2017 SENIOR RATES

Water $ 35.61 0 – 5,000 Gallons
$ 5.94 Per T/Gallons 5,000 +

Example: rates for special classes of customers

Combined Water & Sewer		Quantity Charges CCF / Mo. 1st 300 cf	Over 300 cf
RESIDENTIAL			
WATER			
2017	**10.00%**		
2017	Regular Residential	1.47	2.46
2017	Low Income Residential	1.33	2.21
	(90 % of Regular Residential)		

Great Falls, MT

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)

Seasonal Rates

- Prices are higher during high-use times of year, encouraging conservation
- For most systems, this is the summer unless you are a winter holiday area or get a lot of snowbirds

Seasonal Rates

RATES AND CHARGES

OCTOBER THROUGH APRIL	MAY THROUGH SEPTEMBER
$ 3.00 PER 1,000 GALLONS	$ 4.60 PER 1,000 GALLONS

Cactus Stellar Ltd., AZ

Seasonal Rates

TOWN OF IPSWICH
WATER & SEWER RATES

WATER RATE

Non-residential water rate (Base Rate): $8.33 per 100 cubic feet (Effective May 1, 2016)

Residential water rate (Seasonal Rate):

Summer (May 1, 2017 – September 30, 2017): $12.50 per 100 cubic feet

Winter (Nov 1, 2016 – April 30, 2017): $3.38 per 100 cubic feet

Higher Irrigation Rates

- Meter and charge separately for outdoor water use and price that water differently than regular water use
  - Why would you charge higher?
  - Why would you charge lower?

Higher Irrigation Rates

Residential

0 through 4,000 gallons	$	5.27 Per Thousand
4,001 through 9,000 gallons	$	8.10 Per Thousand
9,001 gallons and up	$	10.90 Per Thousand

Commercial, Apartments and Mobile Home Parks

0 through 10,000	$	6.69 Per Thousand
10,000 and up	$	8.03 Per Thousand

Irrigation

Per thousand gallons	$	10.72

Higher Irrigation Rates

IRRIGATION BASE WATER RATES (Residential and Commercial)

Inside Southport City Limits $7.45
Outside City Limits: $11.18

Usage Rates 0-10,000 gallons

Inside Southport City Limits: $5.50 per 1,000 gal.
Outside City Limits: $8.25 per 1,000 gal.

Usage Rates > 10,000 gallons

Inside Southport City Limits: $7.00 per 1,000 gal.
Outside City Limits: $10.50 per 1,000 gal.

Higher Irrigation Rates

Rate Structure for Residential Customers:

0	--	2,000 gallons	$22.00 minimum
2,100	--	7,000 gallons	$ 5.50/thousand

Irrigation Rate (for those with an irrigation meter only):

0	--	2,000 gallons	$22.00 minimum
2,100	--	10,000 gallons	$15.00 per thousand
10,100	--	up	$20.00 per thousand

Low Supply and Drought Surcharges

- Prices increase only when supplies of water are limited, encouraging conservation at crucial times

Drought Surcharges

Water shortage stage	Water use Block 1 1,000-2,000 gallons	Water use Block 2 3,000-5,000 gallons
Stage 1	No surcharge	No surcharge
Stage 2	No surcharge	1.25 x Block 2 rate
Stage 3, Emergency	No surcharge	1.5 x Block 2 rate

Water use Block 3 6,000-10,000 gallons	Water use Block 4 11,000-15,000 gallons	Water use Block 5 16,000 or more gallons
1.25 x Block 3 rate	1.5 x Block 4 rate	2 x Block 5 rate
1.5 x Block 3 rate	2 x Block 4 rate	3 x Block 5 rate
2 x Block 3 rate	3 x Block 4 rate	4 x Block 5 rate

Low Supply Surcharges

COMMODITY RATES PER 1,000 GALLONS PER MONTH BY CONSERVATION STAGE IN EFFECT				
(Zero Gallons Included in Base Rate)		Stages 1 & 2	Stage 3[a]	Stage 4[a]
1st Tier: 0 – 4,000 Gallons	$	6.80	6.80	6.80
2nd Tier: 4,001 – 13,000 Gallons	$	10.20	10.20	10.20
3rd Tier: 13,001 – 20,000 Gallons	$	12.30	15.00	20.00
4th Tier: 20,001 – 30,000 Gallons	$	12.42	20.00	40.00
5th Tier: over 30,000 Gallons	$	12.55	30.00	70.00

[a] Stage 3 and 4 water resource conditions are reached when any combination of build-out, water use, and adjustments to useable CAP allocation causes 80% or 90%, respectively, of the total useable CAP allocation to be used (see Policies & Procedures).

Tonto Hills, AZ

Drought Surcharges

3. That the above rates charged for non wholesale water customers shall be increased for any consumption above 2,000 as follows when the water level at the Lake of Egypt spillway, at any time during a billing cycle, falls below the levels specified:

   a. 24 inches below spillway rates shall increase $1.00 Per thousand gallons
   b. 30 inches below spillway rates shall increase $2.00 Per thousand gallons
   c. 36 inches below spillway rates shall increase $3.00 Per thousand gallons
   d. 40 inches below spillway rates shall increase $5.00 Per thousand gallons
   e. 48 inches below spillway rates shall increase $10.00 Per thousand gallons

Lake of Egypt, IL

Restriction example

Watering Schedule

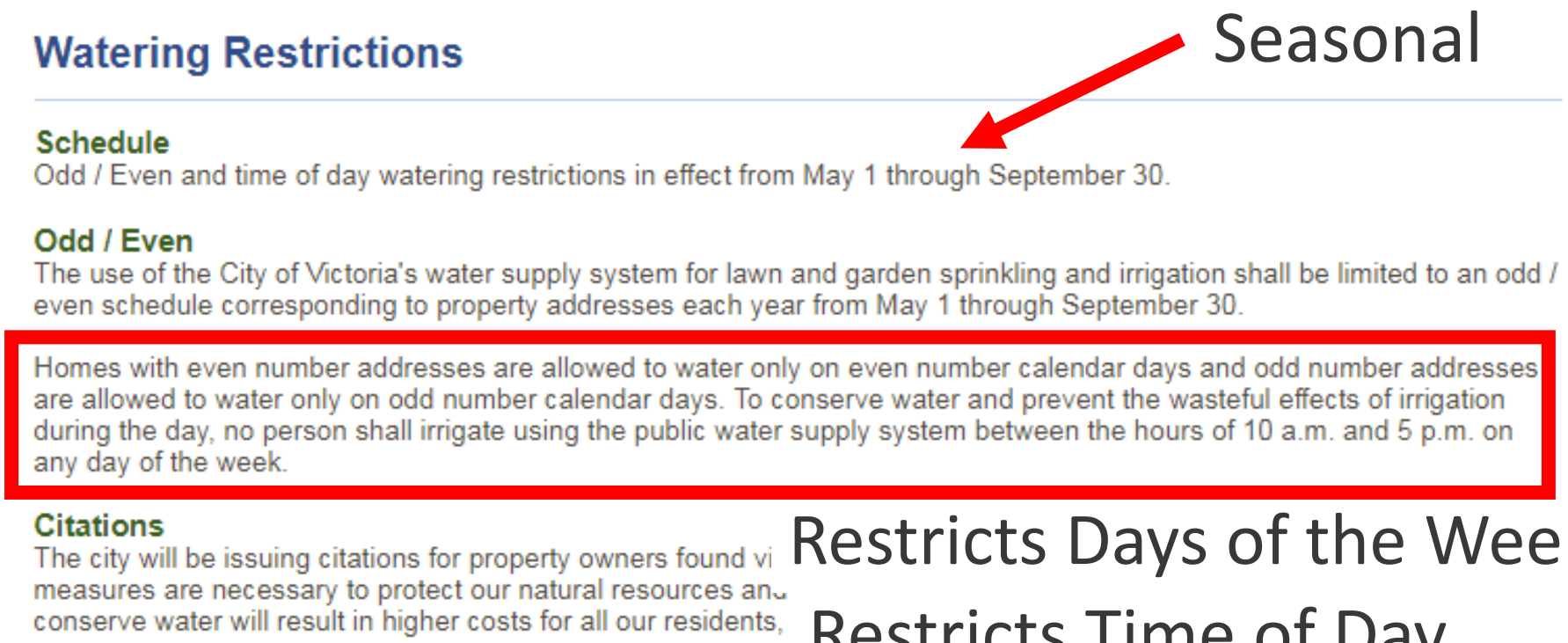
12:00 am to 9:00 am
OR
7:00 pm to 12:00 am

Restrict time of day

Monday, Wednesday, Friday	Tuesday, Thursday, Saturday
Home Addresses ending in	Home Addresses ending in
0, 2, 4, 6, 8	1, 3, 5, 7, 9

Restrict days of the week

Restriction example



Watering Restrictions

Schedule
Odd / Even and time of day watering restrictions in effect from May 1 through September 30.

Odd / Even
The use of the City of Victoria's water supply system for lawn and garden sprinkling and irrigation shall be limited to an odd / even schedule corresponding to property addresses each year from May 1 through September 30.

Homes with even number addresses are allowed to water only on even number calendar days and odd number addresses are allowed to water only on odd number calendar days. To conserve water and prevent the wasteful effects of irrigation during the day, no person shall irrigate using the public water supply system between the hours of 10 a.m. and 5 p.m. on any day of the week.

Citations
The city will be issuing citations for property owners found vi
measures are necessary to protect our natural resources an
conserve water will result in higher costs for all our residents,

Blue Lake Springs, CA

Drought restriction example

Drought Stage 1 | Drought Stage 2 | D

Water Supply Conditions

- Slightly Restricted Water Supplies (below norm
- Asking shareholders for up to 10% Supply Redu

Drought Stage

- Voluntary reductions in use NO watering of for
- Voluntary Odd/Even outside watering
  - *Odd addresses: Tues., Thurs., Sat.*
  - *Even addresses: Wed., Fri., Sun.*
- No watering between 10am and 6pm

ENVIRONM

Drought Stage 1 | **Drought Stage 2**

Water Supply Conditions

- Moderately Restricted Water Supplies
- Necessary 20% Total Supply Reduction

Drought Stage

- Mandatory stage with restrictions on use
- Odd/Even days watering based on addresses.
  - *Odd addresses: Tues., Thurs., Sat.*
  - *Even addresses: Wed., Fri., Sun.*
- No watering between 10am and 6pm
- No watering of forest trees (Bark Beetle Trees)
- No unnecessary watering (decks, driveways, cars, etc.)

Drought Stage 1 | Drought Stage 2 | **Drought Stage 3**

Water Supply Conditions

- Severely Restricted Water Supplies
- Necessary 35% Total Supply Reduction

Drought Stage

- Mandatory restrictions (severe prohibitions) on use
- ABSOLUTELY NO OUTSIDE WATERING

A Balanced Budget?

Budget Expenses

		Account	Budget
19		30-810-01 W/S PROF. SERVICES	$500.00
20		30-810-02 TOWN MANAGER SALARY	$28,499.99
21		30-810-03 W/S EMPLOYEE SALARY	$57,200.00
22		30-810-04 CLERK SALARY	$37,251.88
23		30-810-05 FICA EXPENSE	$8,703.00
24		30-810-06 W/S EMPLOYMENT TAX	$975.00
25		30-810-07 W/S OVERTIME	$4,500.00
26		30-810-08 MERIT BONUS	$3,000.00
27		30-810-09 HOLIDAY/EMPLOYEE APREC	$1,200.00
28		30-810-10 POSTAGE	$2,700.00
29		30-810-11 Office Supplies/Repairs	$4,700.00
30		30-810-12 PHONE	$3,400.00
31		30-810-13 W/S UTILITES	$30,000.00
32		30-810-14 TRAINING	$2,400.00
33		30-810-15 Employee Screening	$105.00
34		30-810-16 MAINT/REPAIR:SYST-EQUIP	$30,000.00
35		30-810-17 Mayor Salary	$1,800.00
36		30-810-18 Board Salary	$10,500.00
37		30-810-20 W/S UNIFORMS	$2,000.00
38		30-810-30 GAS AND OIL FOR VEHICLES	$4,500.00
39		30-810-31 TIRES FOR VEHICLES	$600.00
40		30-810-32 REPAIRS TO VEHICLES	$1,000.00
41		30-810-33 SUPPLIES & MATERIALS	$3,000.00
42		30-810-34 CHEMICALS AND SALT	$20,000.00
43		30-810-45 CONTRACTED SERVICES	$36,500.00
44		30-810-46 STATE PERMITS	$1,700.00
45		30-810-48 DUES/SUBSCRIPTIONS	$1,500.00
46		30-810-50 DEPRECIATION	$0.00
47		30-810-54 INSURANCE	$13,608.00
48		30-810-55 HOSPITAL INSURANCE	$22,443.00
49		30-810-57 MISC EXPENSE	$500.00
50		30-810-60 W/S - LGERS	$9,272.00
51		30-810-70 WATER STUDY EXPENSES	$24,000.00
52		30-810-74 Online Payments SVC	$1,600.00
53		30-810-75 ARRA LOAN PRINCIPAL	$8,875.00
54		30-810-76 PURCHASE WATER BILL	$2,400.00
55		30-810-79 Banking Fees	$500.00
56		30-810-89 CAPITAL OUTLAY NEW EQUIP	$0.00
57		30-810-90 TRANSFER TO OTHER FUND	$0.00
58		30-810-95 FINES AND PENALTIES	$1,500.00
			$382,932.87

Budget Revenues

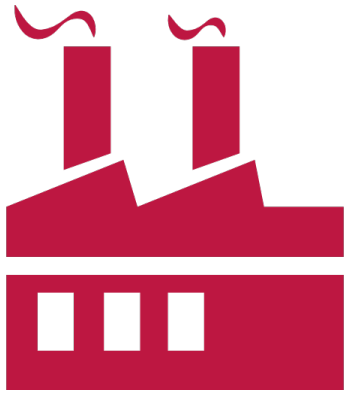
	Account	Budget
1	30-329-00 W/S INTEREST EARNED DEPOS	$0.00
2	30-334-00 CONTRIBUTIONS/DONATIONS	$0.00
3	30-335-00 W/S MISC. REVENUE	$700.00
4	30-336-00 FUND BALANCE APPROPRIATED	$9,187.87
5	30-345-01 SALES TAX REFUND	$0.00
6	30-371-01 W/S CHARGES	$344,445.00
7	30-371-02 W/S ADJUSTMENTS	$0.00
8	30-373-00 TAP CONNECTIONS	$1,500.00
9	30-373-02 SERVICE CHARGES/CUT OFFS	$12,500.00
10	30-373-04 IMPACT FEES	$1,000.00
11	30-373-05 CAPITAL CONTRIBUTIONS	$0.00
12	30-374-00 Online W/S Payment Fee	$1,600.00
13	30-375-80 Contributed Capital - G.R.S.P.	$0.00
14	30-375-81 Contributed Capital Fund	$0.00
15	30-377-00 RBEG - Pump Station	$0.00
16	30-378-00 I&I Study Grant - Commerce	$12,000.00
17	30-385-00 SALE OF ASSETS	$0.00
18	30-386-00 TRANSFER FROM OTHER FUND	$0.00
		$382,932.87

$382,933 = $382,933 But revenues and expenses ca vary significantly from your budget!

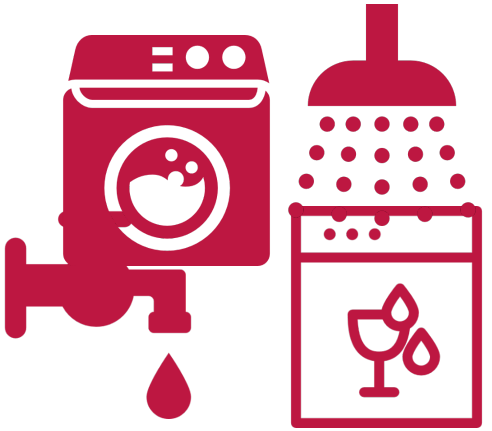
Revenue Variability

Rate changes

Population change

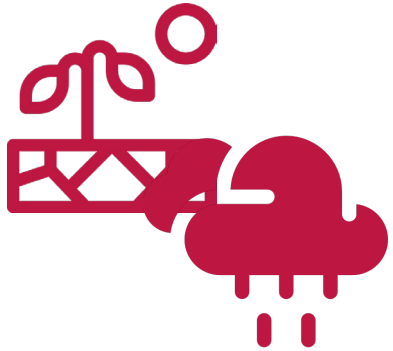


Losing a big customer



New technology

Economic conditions



Weather

Water use restrictions

Changes in collection rates

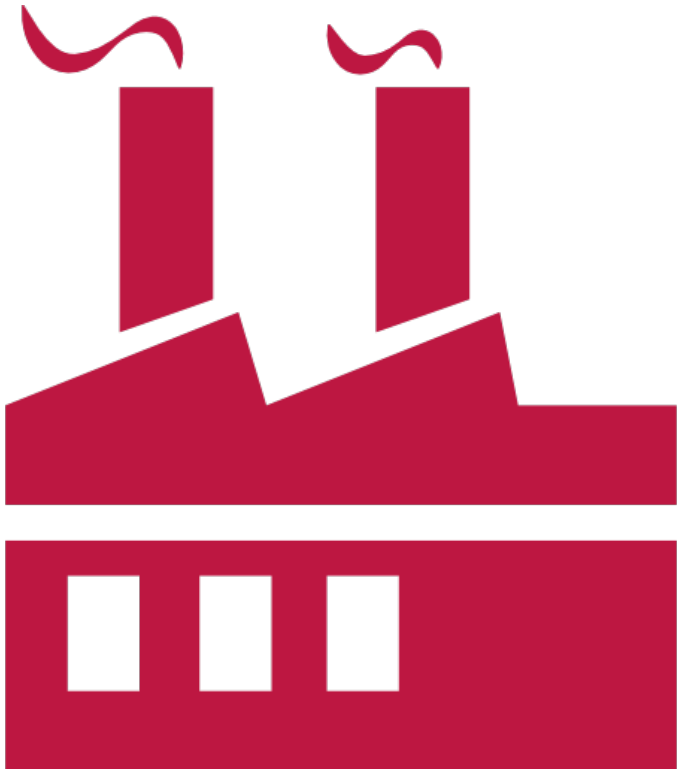
Rate changes

- As rates go up, usage goes down
- As a rule of thumb, typically usage goes down 3-4% for every 10% increase in rates

population changes

- Customers could be coming into your system or leaving your system

Loss of a big customer



- Some customers use significantly more water than others.
- Losing or gaining a single big user can have a disproportionate impact on your budget

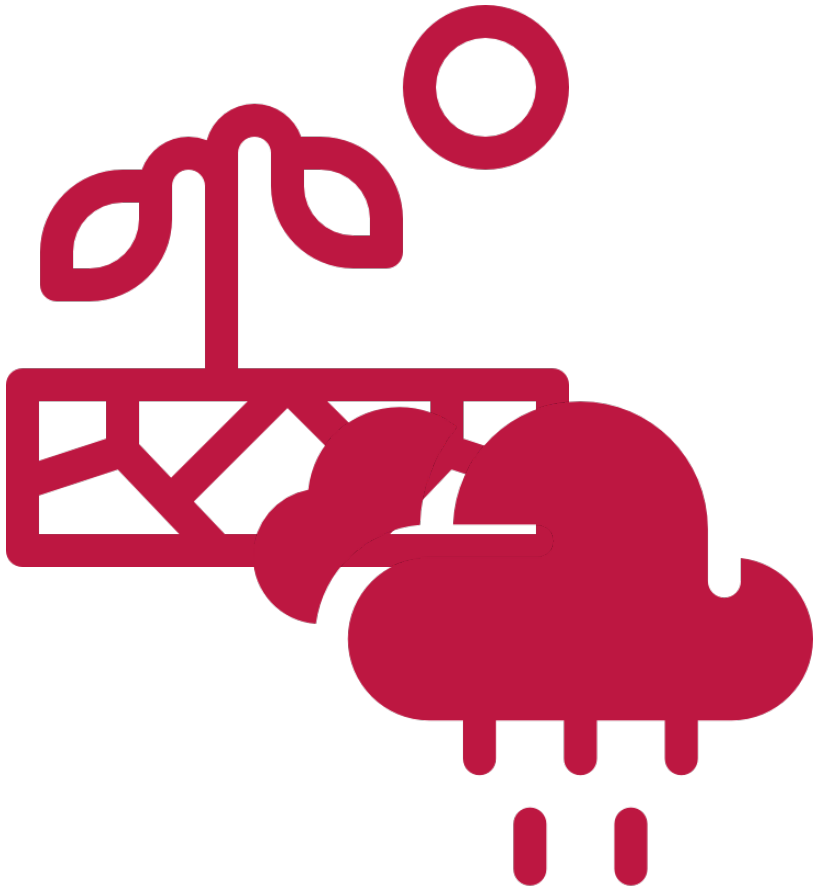
Economic conditions

- Economic downturns can cause customers to cut back on water use.
- Conversely, periods of economic growth can lead to higher water consumption

Changes in collection rates

- Even if the number of customers doesn't change, how often they are paying you may be changing

weather



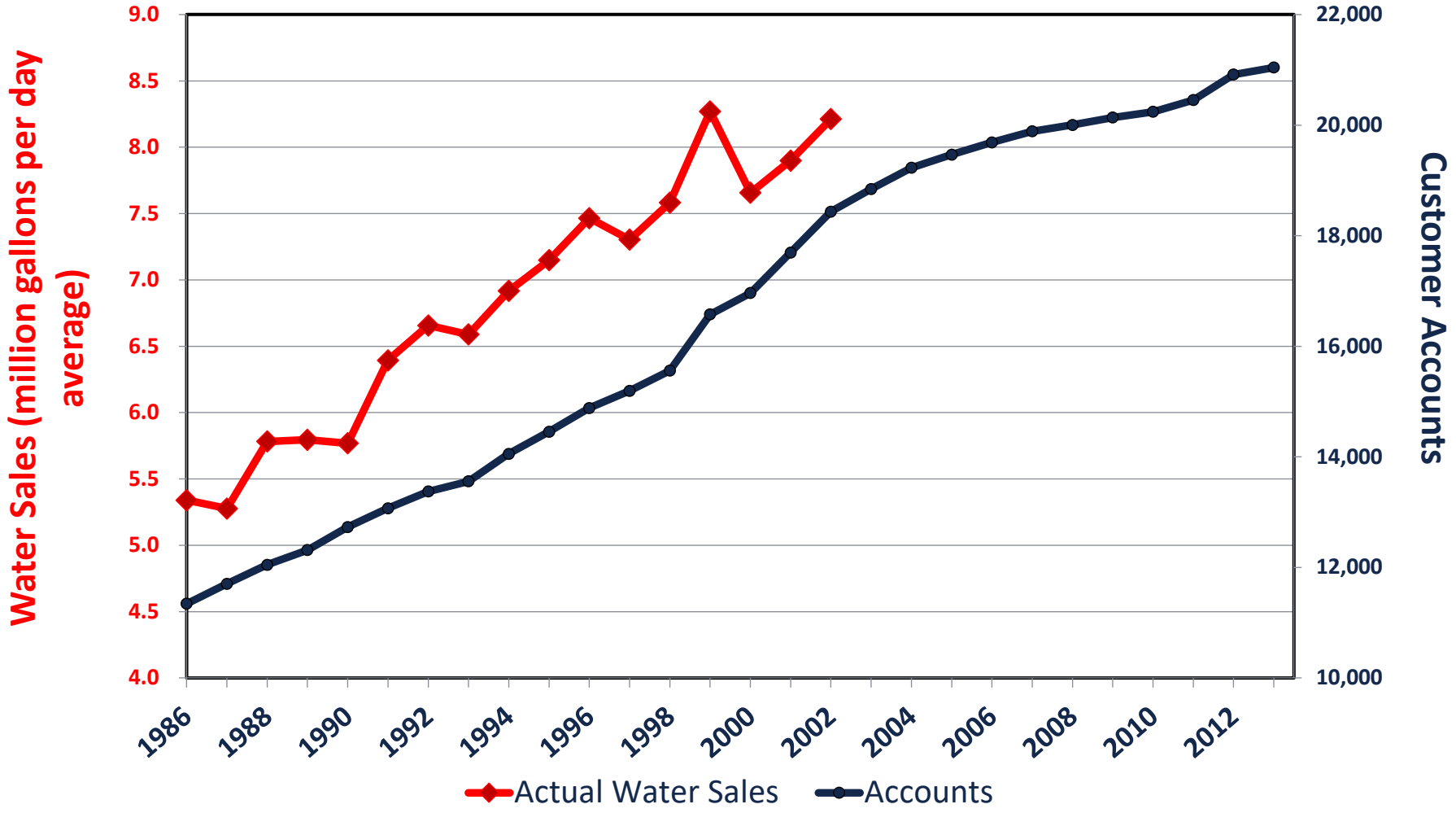
- Rainy conditions or dry/drought conditions can impact how much water customers use for outside irrigation
- Rainy conditions can impact how much additional water is entering your wastewater system

Water Use Restrictions

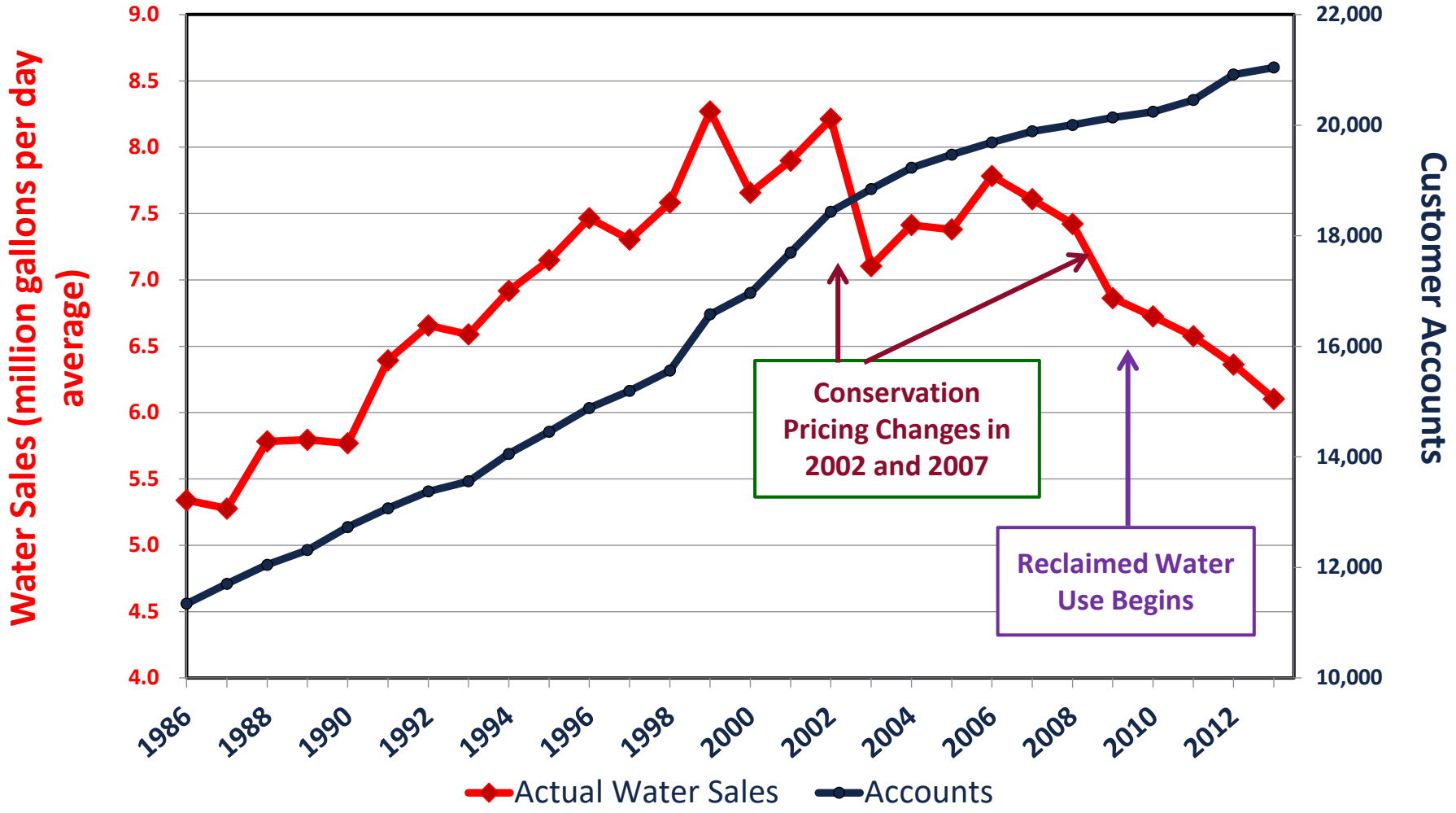
Whether due to water supply shortages or drought conditions, restricting water use will obviously impact revenues

Technology

Fixtures use less water today than in the past, and overall per capita water demand is decreasing across the country

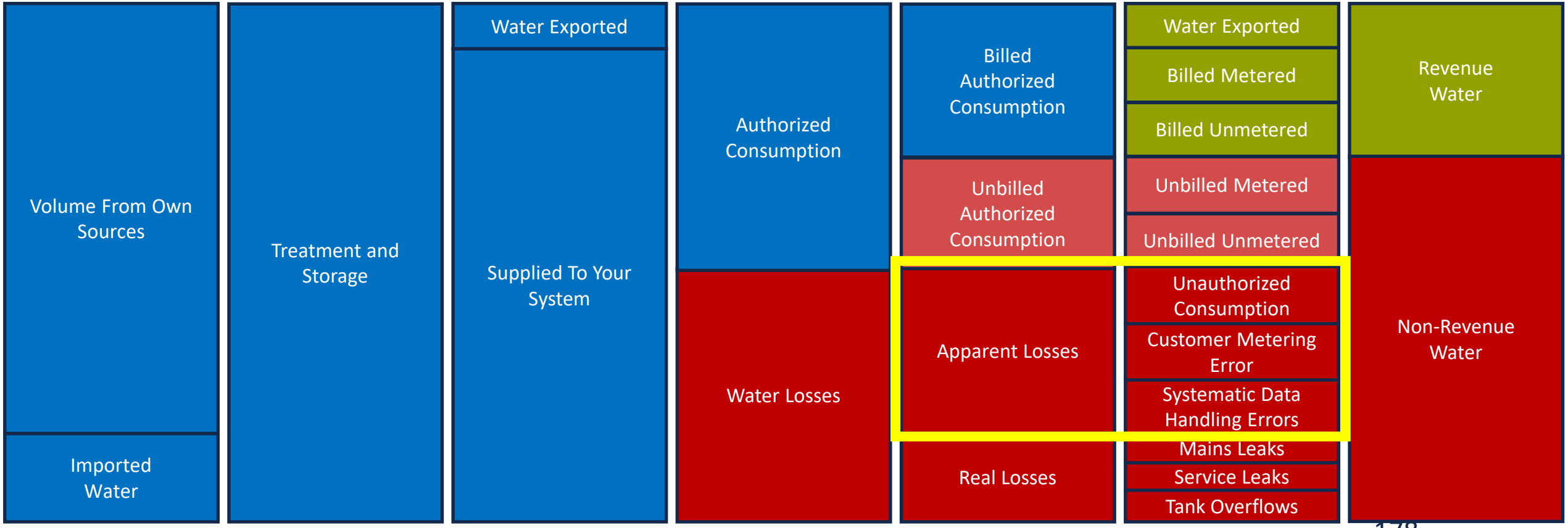


Source: Orange Water and Sewer Authority, North Carolina

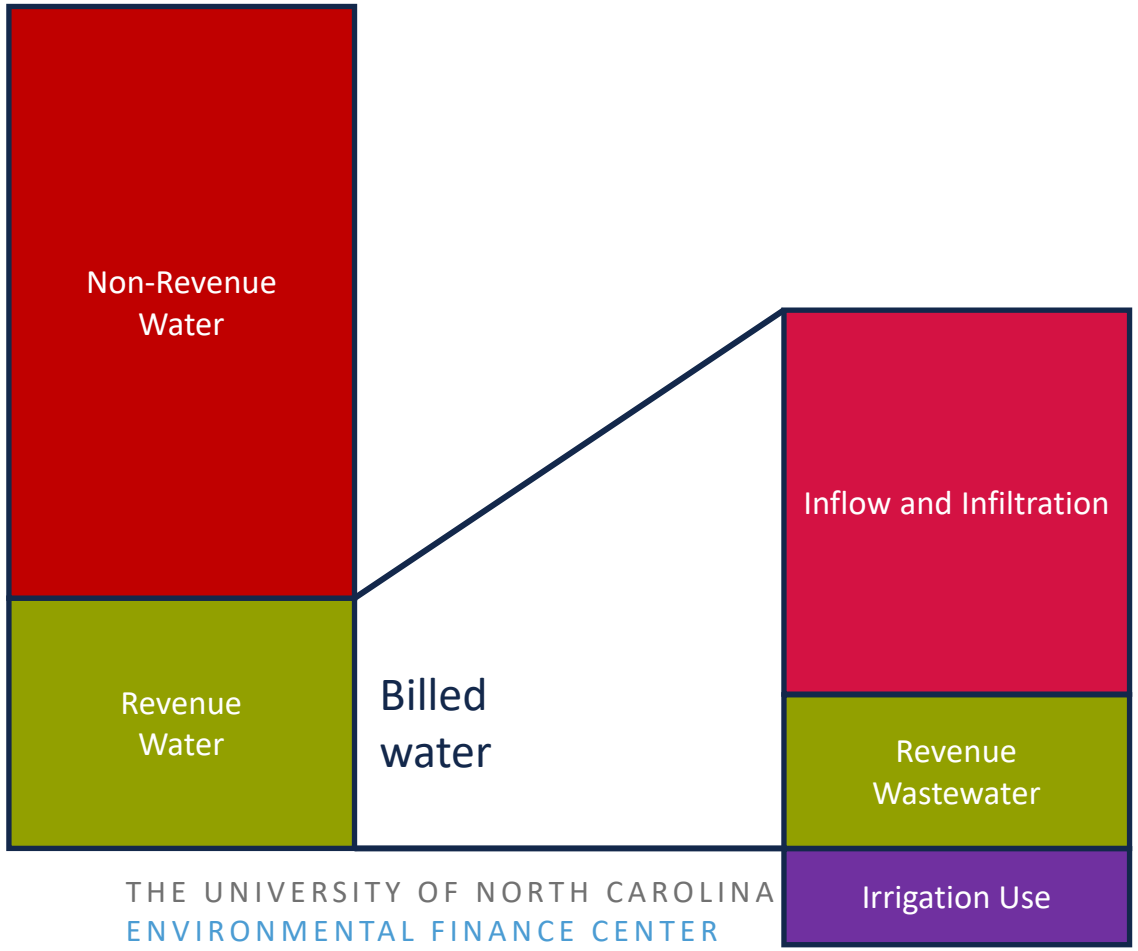


Source: Orange Water and Sewer Authority, North Carolina

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?

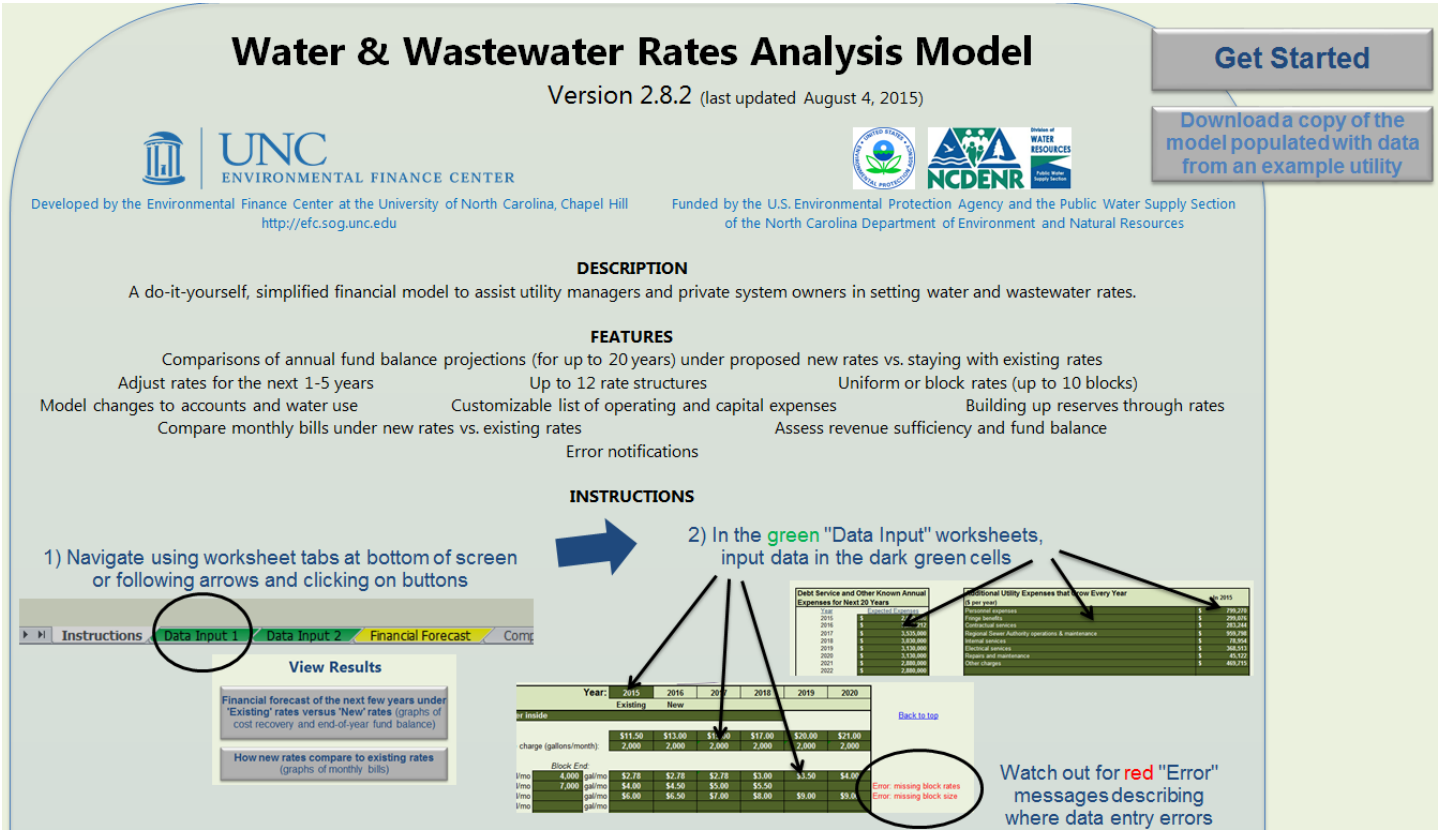
What not to do?
Potential Pitfalls in rate making

- Making the rate design too complex
- Not setting a solid revenue requirement
- Lack of consideration of revenue variability
- 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!
  - 10% ↑ rates ~ 3-4% ↓ consumption
- Use tools to stress test projections
- Give decision-makers options to consider
- Make incremental rate increases
- Communicate early and often!

WATER AND WASTEWATER RATES ANALYSIS MODEL



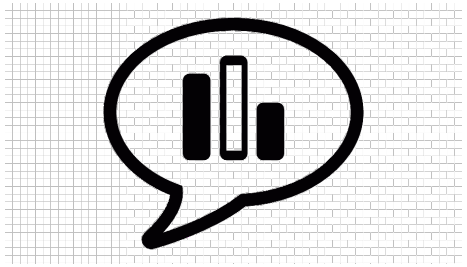
Created by the Environmental Finance Center at the University of North Carolina, Chapel Hill
Funded by the U.S. E.P.A. and the N.C. Department of Environment and Natural Resources

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

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

When was your last rate increase?

1. Sometime in the past year
2. In the past three years
3. In the past five years
4. It's been a little while...
5. Not part of a utility



When should you revisit your rates?

- We recommend revisiting your rates *every year* to make sure that your utility's revenues can sustain its operations (and then some)
  - Some utilities find that small, yearly increases ensure that revenues from rates are sustainable
  - Other utilities find that implementing rate increases less frequently allows them to make more targeted increases and rate updates

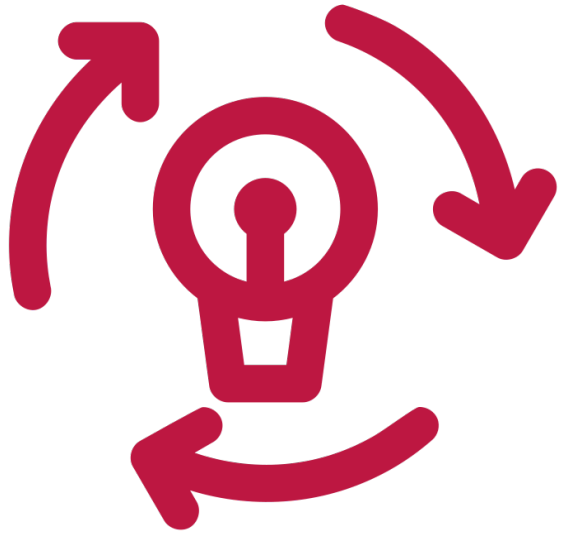
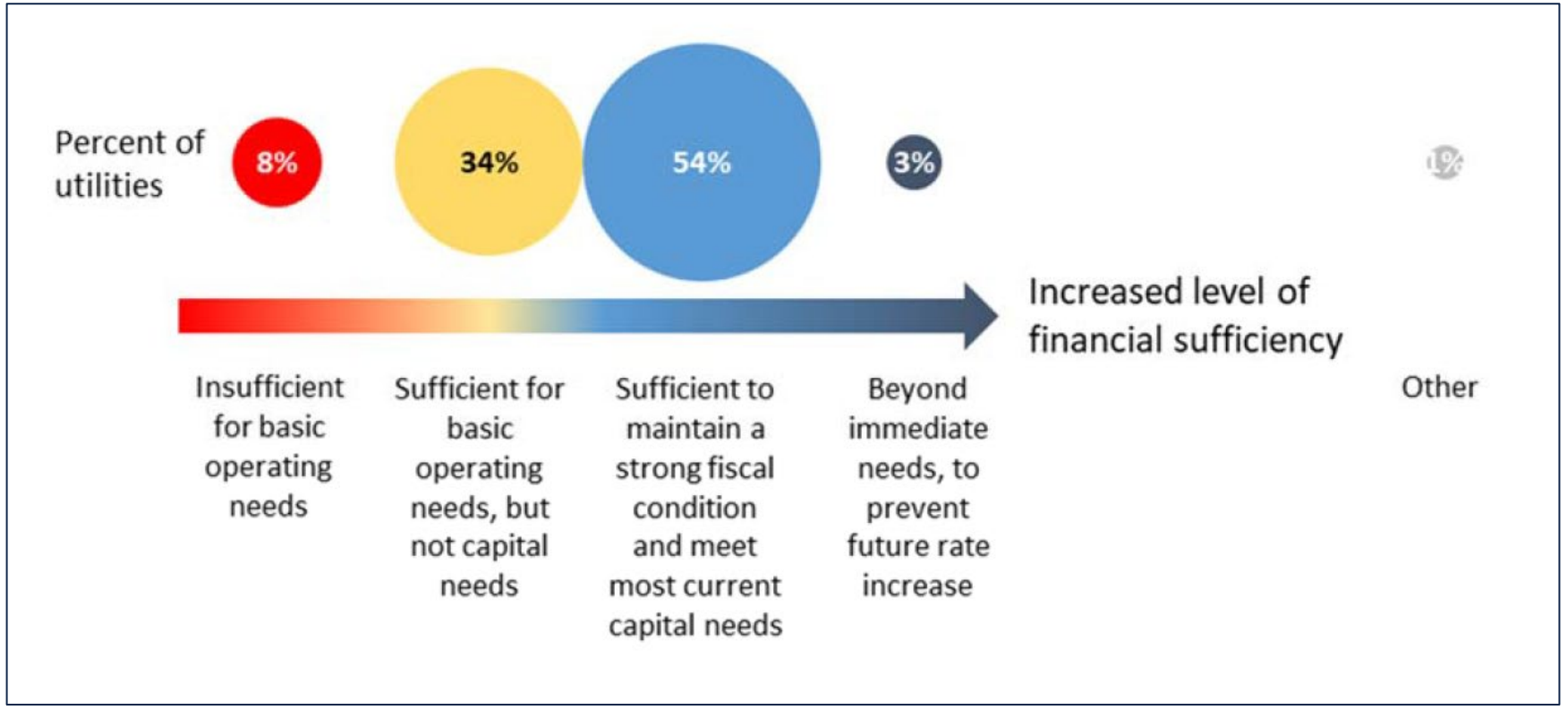


Image by Joe Pictos found on The Noun Project

Are Utilities Asking for Enough?



Source: UNC-EFC: Results of the 2017-2018 North Carolina Water and Wastewater Utility Management Survey

When should you increase your rates?

- While it is ultimately up to the utility to determine when to increase rates, the EFC recommends updating rates *at least every four years*
  - This accounts for inflation, changes in customer base, asset management, debt service, and several other financial factors

Image by Vectorstall found on The Noun Project

Rate increases and Affordability

- Be wary of sudden, drastic rate increases
- These may overwhelm your customer base and significantly impact what customers are able (or willing) to pay
- Additionally, consumption will drop as rates increase
  - Larger increases = noticeable drop in consumption

Affordability tool

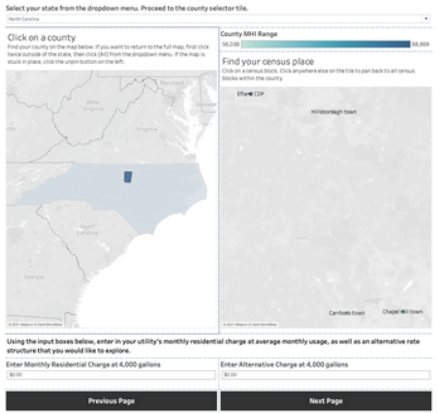
Instructions | **Input** | **Socioeconomic Metrics** | **Assessment**

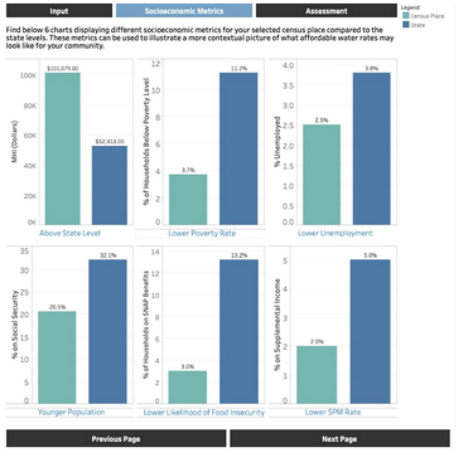
This tool contains a series of dashboards which allow users to enter relevant Census data on their service community to help assess the affordability of their water or wastewater rates on their residential customers. The tool also allows for a new rate structure to be entered to see how affordability compares from one rate structure to the next. To navigate between pages, use either the tab titles at the top of the page, or the next and previous buttons at the bottom of the page.

The "Inputs" tab allows for the user to geographically select their desired municipality or census place by navigating through a series of map selector tools. To find the correct census place, select the state from the dropdown menu at the top of the screen, the proceed to click on the county containing the census place. The next tile will then display all of the census places within that county and their Median Household Income. Make sure to follow the instructions underneath the map tiles for exiting out of the selected view.
There are input boxes on this tab that allow the user to enter the utility's current monthly residential water and wastewater rates, as well as alternative rates to be explored. The entered rates will impact the amount that customers pay as a portion of their monthly income, displayed on the "Assessment" tab.

The user can then proceed to the "Socioeconomic Metrics" tab to view key socioeconomic indicators for their desired place, such as Median Household Income and Percentage of the Population Below the Poverty Line, and compare them to the state levels.

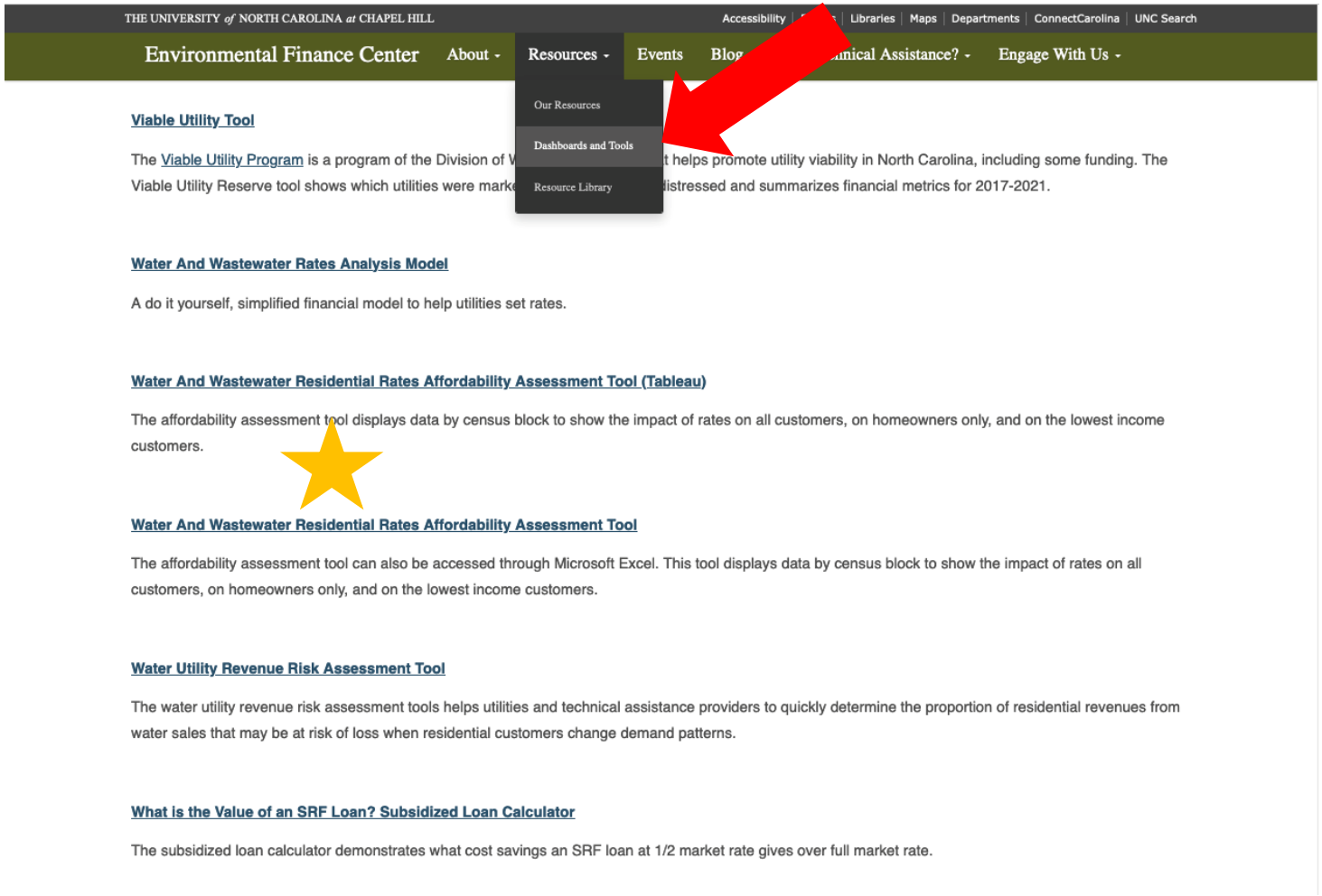
In the "Assessment" worksheet, the tool automatically populates tables and charts to assist you in assessing the affordability of your utility's current and alternative rates for the average customer, low-income customers, and customers of varying ranges of income.





- Water and Wastewater Affordability Assessment Tool helps you track how a rate increase will affect customers across several income buckets by showing:
  - % of annual income spent on water service charges
  - Socioeconomic metrics of selected census place

Check out the tool!



You can find the tool at efc.sog.unc.edu under "Resources", or follow the link here: https://efc.sog.unc.edu/resource/water-and-wastewater-residential-rates-affordability-assessment-tool-2021/

The bottom line

- Rate increases are **necessary** to sustain healthy utility finances and fund future projects
- Rate increases can be **difficult on customers**, especially sudden, large increases
- Rate increases **look different** for every utility, but the most efficient will balance required revenues and customer considerations

What affects your customers will matter

- Customers often take **water quality** for granted
- Showing that additional revenues are required to maintain or improve water quality gives more **context** to rate increases
- Additional service charge dollars are coming right back in the form of higher water service quality

Improving your system with rate increases

- Increased system efficiency
  - This may save your system money in the long run!
- Improved aesthetic water quality

Appeal Based on What's Good

Water has MWRA bubbling with joy

New process said to improve taste

By Michael Levenson
GLOBE CORRESPONDENT

It is flowing, 275 million gallons a day into our homes, and, boy, is it delicious, state officials say.

Tap water flowing to 2.3 million people in Greater Boston is now dramatically better tasting, officials say, thanks to a new treatment plant in Marlborough that uses ozone to remove contaminants with a decrease in chlorine.

"It's clean, and it's crisp, and it's refreshing, and it's a great product; we'd put the taste of our water up against any bottled water," said Frederick A. Laskey, executive director of the Massachusetts Water Resources Authority. "Put our water in the refrigerator, and it's great. And our water is great out of the tap."

The ozone treatment not only affects taste, it also makes the water safer and cleaner than the stuff Greater Bostonians have been quaffing for generations, Laskey said.

A 2001 federal appeals court ruling spurred the MWRA to use ozone as a water purifier. The US Environmental Protection Agency had asked the authority to build a more sophisticated water filtration plant to remove contaminants. But the MWRA successfully argued that an ozone system could be built that would make the wa-

WATER, Page A12

"It's clean, and it's crisp, and it's refreshing, and it's a great product…"

Meeting your utility's goals

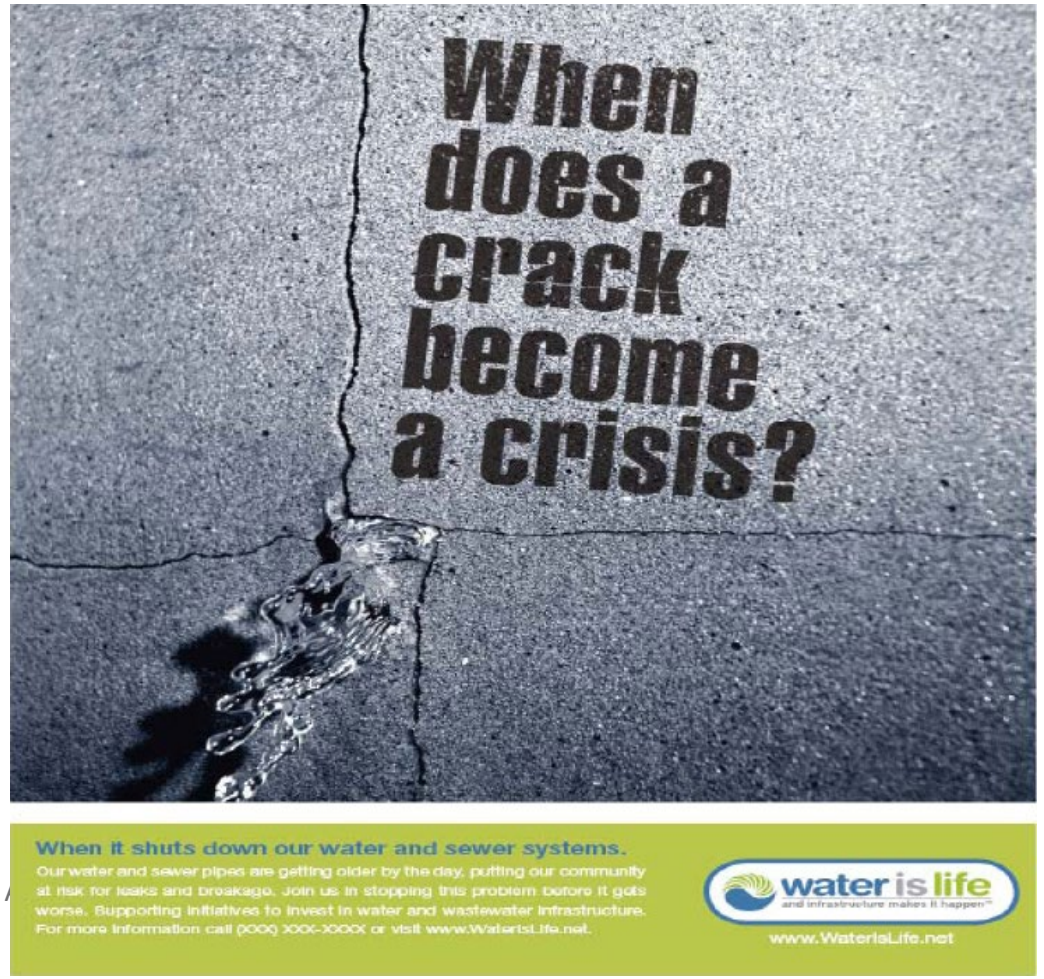
- Are you meeting your utility's goals?
- Are you meeting water quality standards?
- Do you have sufficient capacity to meet current and future needs?

Image by Memed_Nurrohmad on Pixabay

Saving for the future

- Creating (or bulking up) an asset management plan
- Building up reserve funds for leaks, wear and tear
- Having funds stored away in case a major crisis happens
  - Like a water main break!

Warn of Consequences



A crisis may look something like this

Give your stakeholders context

- Often, your board and customers don't know what problems you may be facing in your system
- "Out of sight, out of mind"
- Use personal examples to ground your requests for increases

Use Visuals

Photo Source: http://www.wuc.on.ca/information/distribution.our_watermains.cfm

Questions?