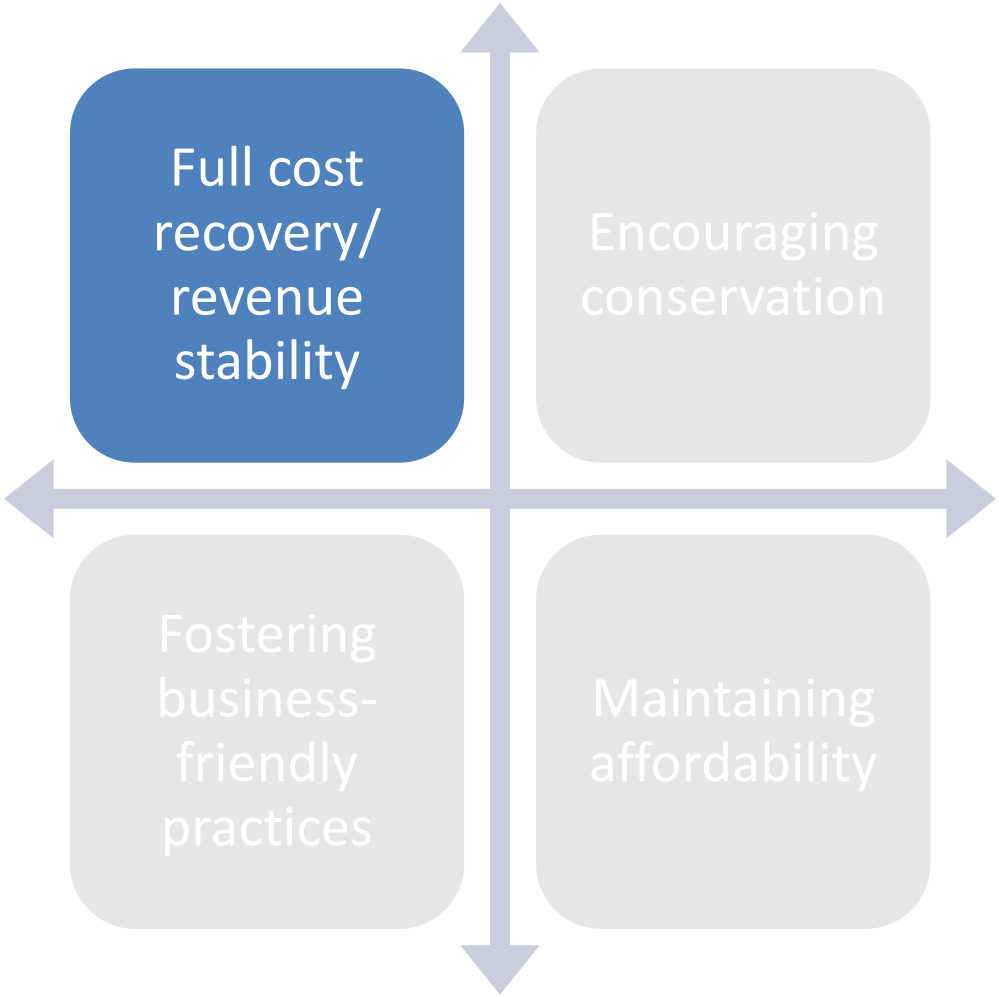
Pricing Water to Achieve Cost Recovery

Water System Objectives



Session Objectives

- Be able to use different approaches to calculate base charges and volumetric charges
- Evaluate the impact of different pricing structures on different customers
- Identify factors that can impact your pricing assumptions

Full(er) Cost Pricing

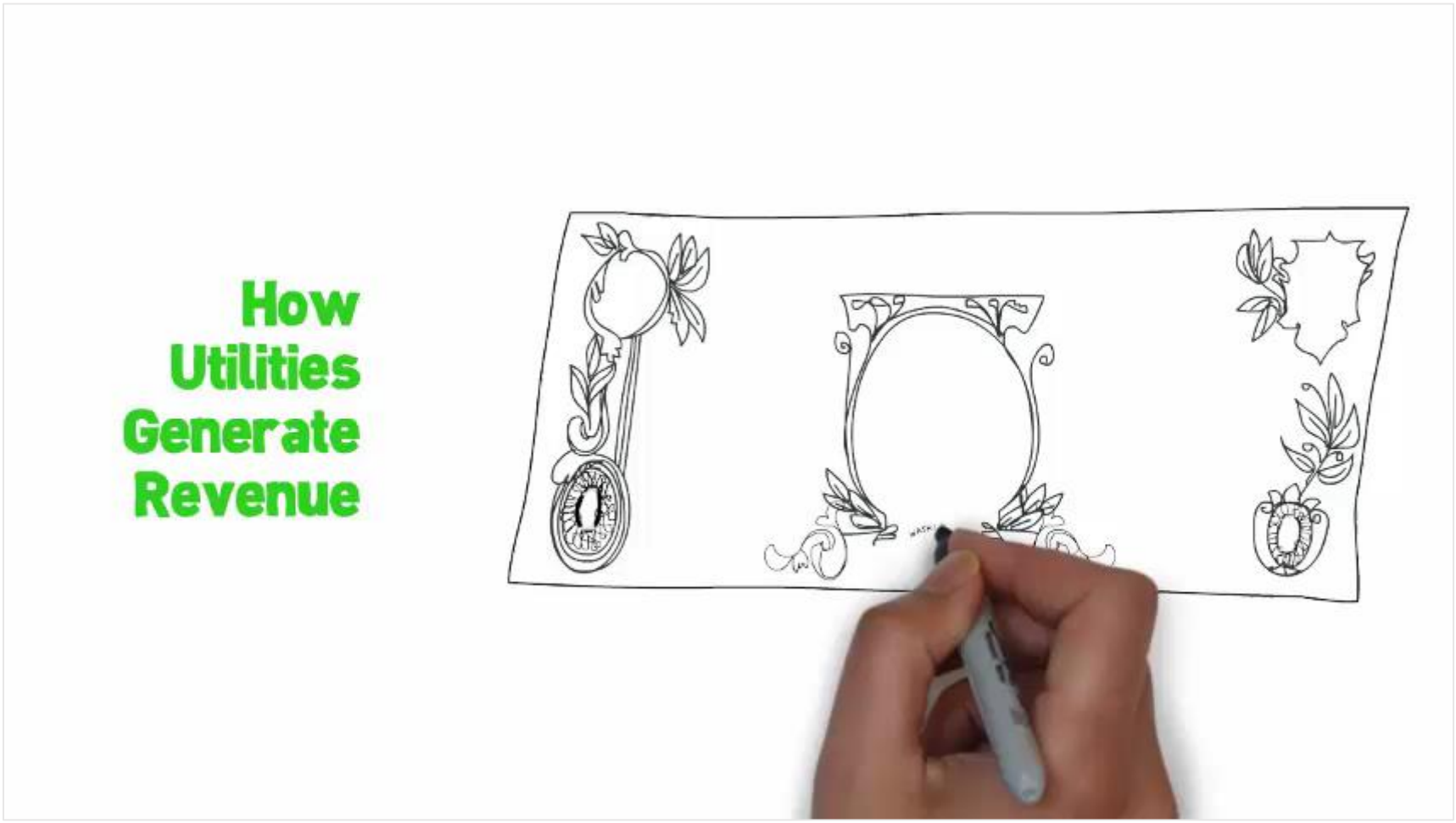
- The goal of full(er) cost pricing is to have the charges for water cover the entire cost of running the water system today and into the future.

- Of course, there are many ways in which you can get to the right dollar figure. Some of it comes down to your rate setting philosophy.

Small System Rate Setting Decisions

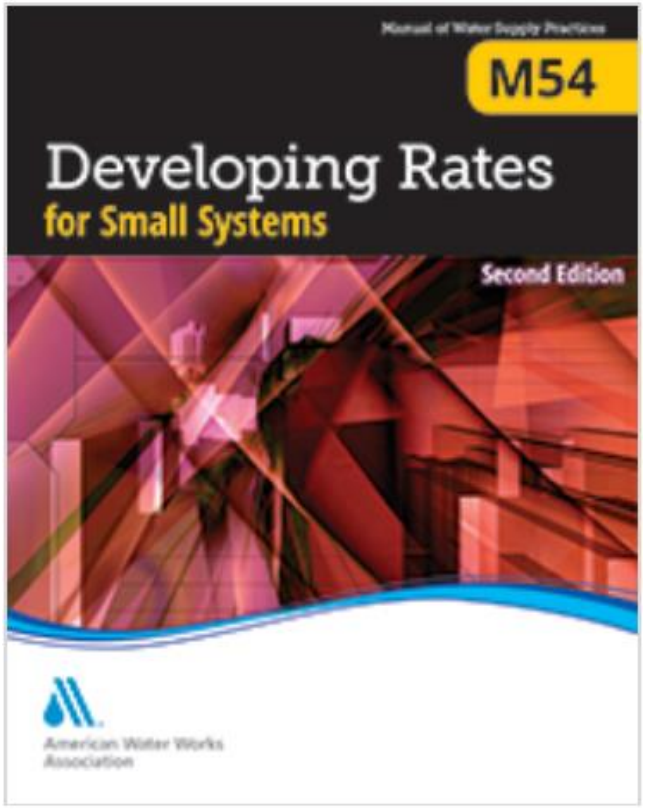
- **Decision on how much of the costs to cover through rates**
- **Revenue to be generated by base charges**
- **Revenue to be generated by volumetric charges**
- Revenue to be generated by different customer classes
- Establishing different prices for water for larger users
- Decision to implement more complex rate structures

Understanding Water Revenues



https://www.youtube.com/watch?v=0jf83mE0Lyk

Rate Study Technique to Determine Rates for Different Customers



M54 Manual by AWWA

1. Determine customer accounts and usage data
2. Project costs, and revenue needs and reserve targets
3. Consider alternative plans for revenue adjustments
4. Decide on appropriate rate structure design
5. Price out rate (by class if applicable)

By customer class if desired

A Few Rate Setting Philosophies

- Customers should pay for having access
- Customers should pay for what they use
- Customers should pay fixed charges to cover the system's fixed costs, and variable charges to cover the system's variable costs
- Some mix of the above ideas

Rate Setting Philosophies

Jeff Hughes

The Science 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

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*
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Exercise

Let’s figure out some rates for Irvindale that cover costs of providing water service.

For simplicity, let’s assume the budgeted rate revenues take into all the actual costs (even though we know they don’t).

How much revenue to generate from rates?

	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
7	30-345-01 SALES TAX REFUND	$0.00
9	30-371-01 W/S CHARGES	$344,445.00
10	30-371-02 W/S ADJUSTMENTS	$0.00
11	30-373-00 TAP CONNECTIONS	$1,500.00
13	30-373-02 SERVICE CHARGES/CUT OFFS	$12,500.00
14	30-373-04 IMPACT FEES	$1,000.00
15	30-373-05 CAPITAL CONTRIBUTIONS	$0.00
16	30-374-00 Online W/S Payment Fee	$1,600.00
17	30-375-80 Contributed Capital - G.R.S.P.	$0.00
18	30-375-81 Contributed Capital Fund	$0.00
19	30-377-00 RBEG - Pump Station	$0.00
20	30-378-00 I&I Study Grant - Commerce	$12,000.00
22	30-385-00 SALE OF ASSETS	$0.00
23	30-386-00 TRANSFER FROM OTHER FUND	$0.00
		$382,932.87

For the Exercise

Total Revenue Target:

$382,932

Revenues to be collected from rates:

$344,445

Payment for Access

- Taken to its limit, everyone in the water system pays the same amount for access to the system, regardless of how much water they use

Payment for Access

We charge a flat rate of $ 15.00 monthly

P.O - Box 133
Jacksonville

We are a small town we do not have sewage

Jacksonville, GA

Payment for Access

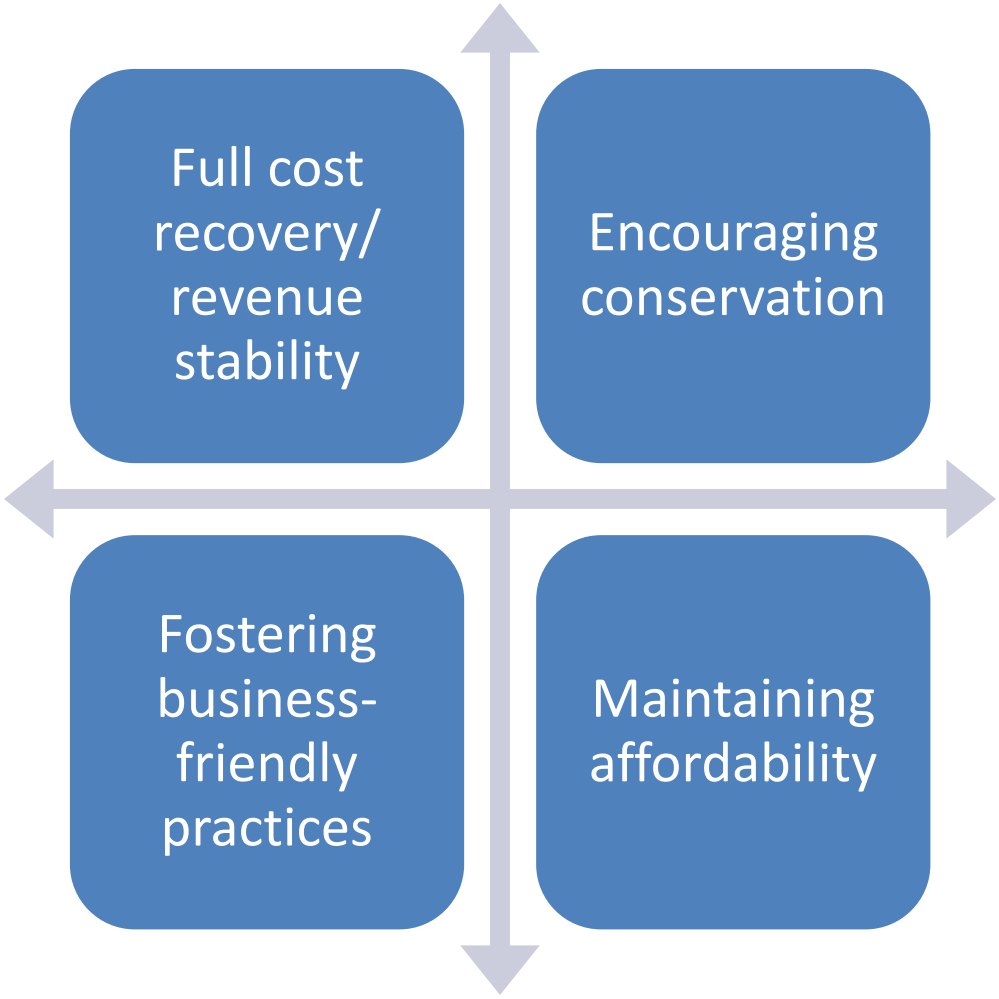
- What information do we need to make this calculation?

- Total revenue needed from rates
- Total number of accounts

Payment for Access

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

Which Water System Objectives?



Payment solely based on volume

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

Payment solely based on volume

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 solely based on volume

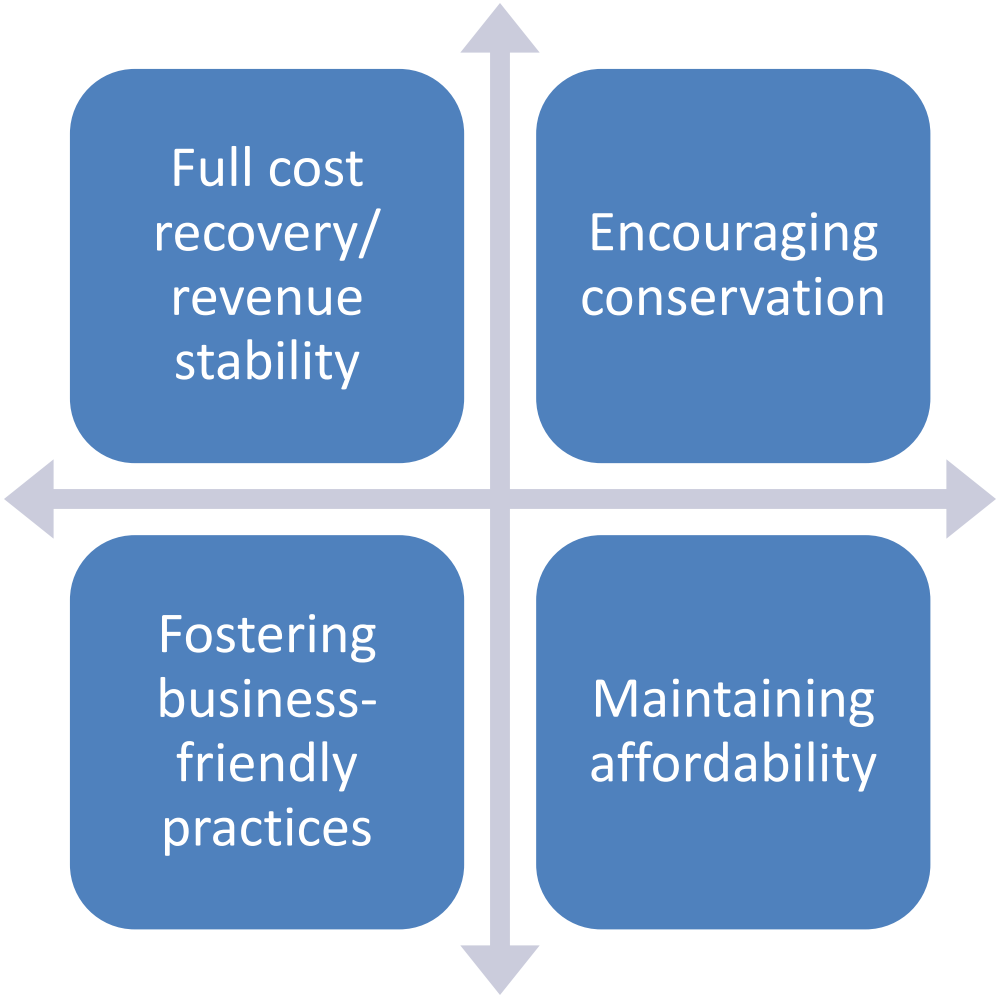
- What information do we need to make this calculation?

- Total revenue needed from rates
- Total gallons sold

Payment solely based on volume

$$\frac{\$344{,}445 \text{ (Total Needed Revenue)}}{32{,}877{,}590 \text{ (Total Gallons Sold)}} \times 1{,}000 = \$10.48 \text{ (Price per 1,000 Gallons)}$$

Which Water System Objectives?



Base Charge for Fixed Costs; Volumetric Charge for Variable Costs

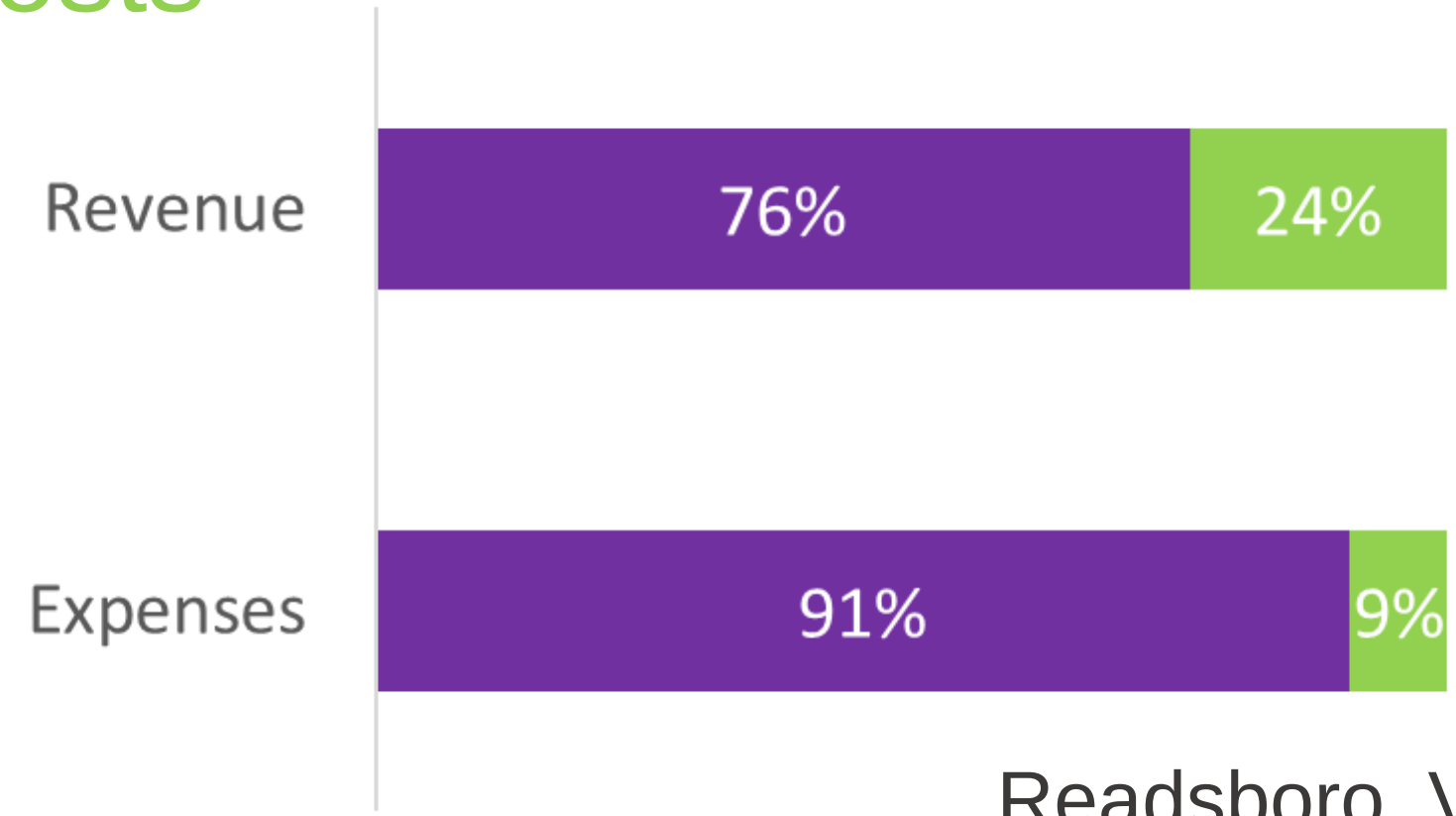
- In its pure form, all of the fixed costs of the water system would be covered by the base charge, and all of the variable costs would be covered by the volumetric rate

Base Charge for Fixed Costs; Volumetric Charge for Variable Costs

Base Chrg	Lower Bound	Rate
38.00	0	0.000000
	4	9.500000

Readsboro, VT

Base Charge for Fixed Costs; Volumetric Charge for Variable Costs



Readsboro, VT

Base Charge for Fixed Costs; Volumetric Charge for Variable Costs

- What information do we need to make this calculation?

- Total revenue needed to cover fixed costs
- Total Accounts
- Total revenue needed to cover variable costs
- Total gallons sold

For the Exercise

Revenues from Rates:

$344,445

Everything else

W/S Utilities
Chemicals & Salt
Purchase Water Bill

$292,045

Fixed Cost

$52,400

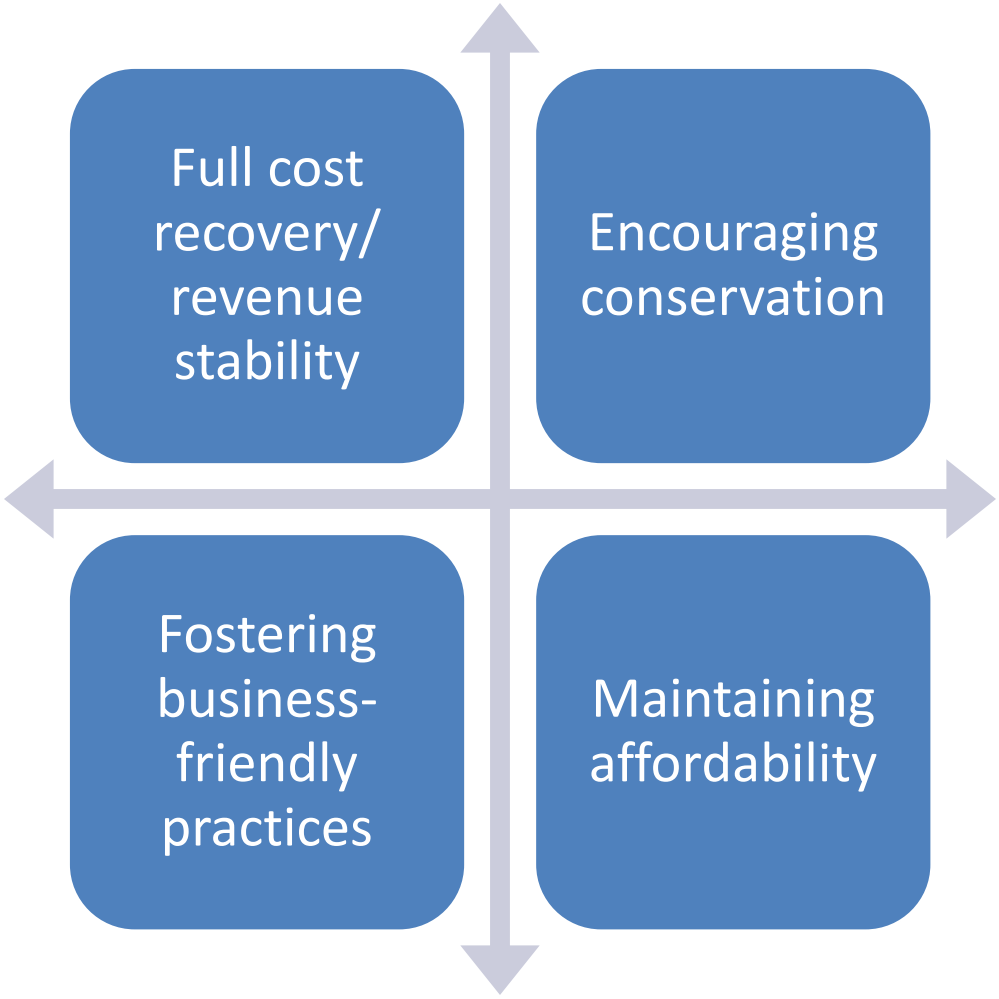
Variable Cost

Base Charge for Fixed Costs; Volumetric Charge for Variable Costs

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

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

Which Water System Objectives?



Common Approaches to Setting Base Charges -- Base Charge Set at:

- All “fixed” costs
- Debt costs
- Customer service costs
- Capped at a “reasonable” amount

- After the base charge is determined, calculate volumetric rate to generate the remainder of the revenue requirement

$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

12 *Months* X $25 *Monthly Base Bill* X 450 *Total Accounts* = $135,000 *Total from Base Bill*

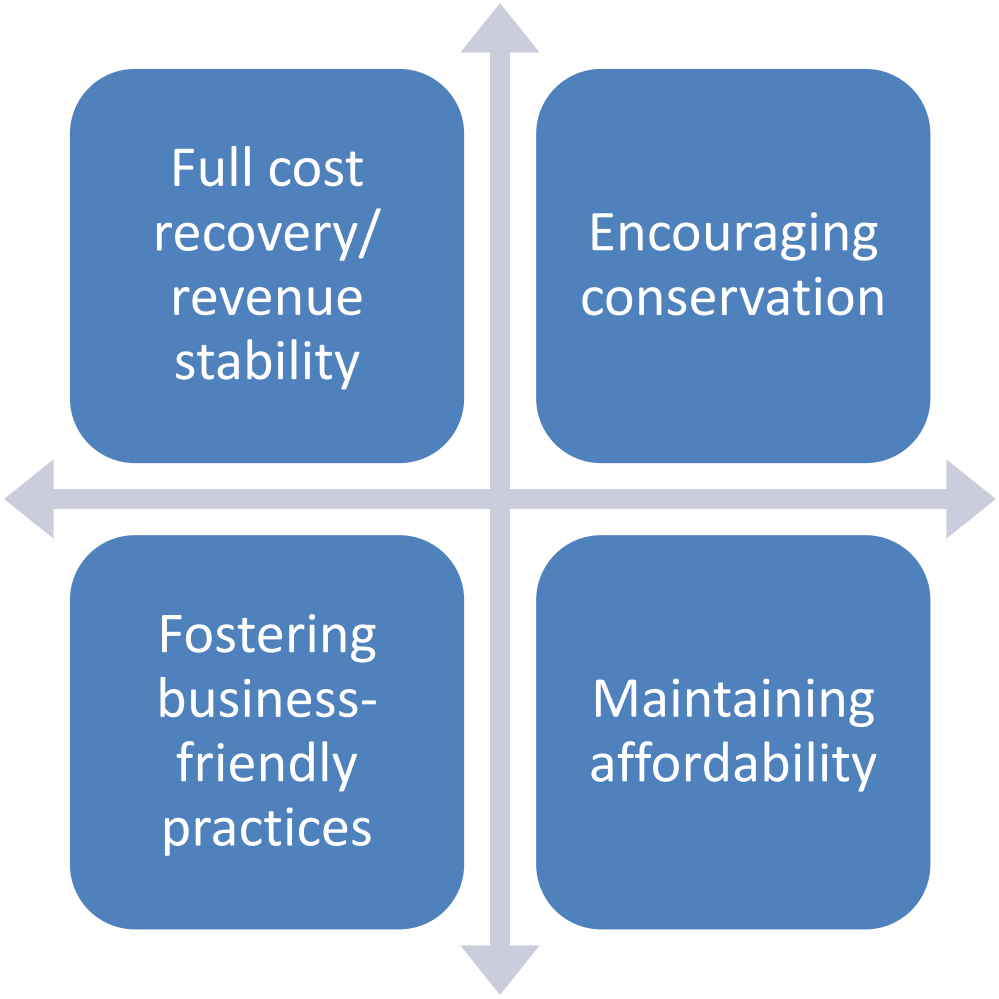
$344,445 *Total Revenue Needed*

— $135,000 *Total from Base Bill*

$209,445 *Total Needed from Volumetric*

$209,445 *Total Needed from Volumetric* / 32,877,590 *Total Gallons Sold* x 1,000 = $6.37 *Price per 1,000 Gallons*

Which Water System Objectives?



How This Impacts Customers

- All four rate structures get us to the same total revenue

- But how does each approach impact different types of customers?

How This Impacts Customers

1,000 gallons/month

4,000 gallons/month

12,000 gallons/month

34,000 gallons/month

Exercise

How much will water service cost per month for different customers under each rate structure?

Payment for Access

$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

	 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

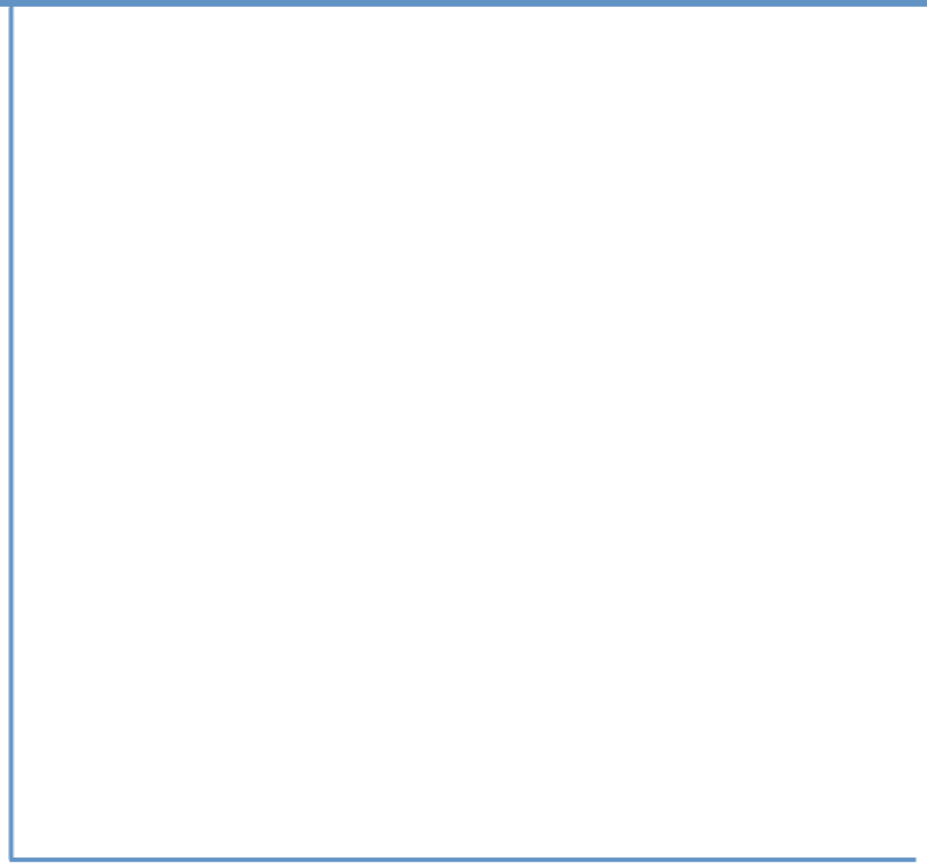
What do you think would work best for your utility?

$63.79 Flat charge for all customers

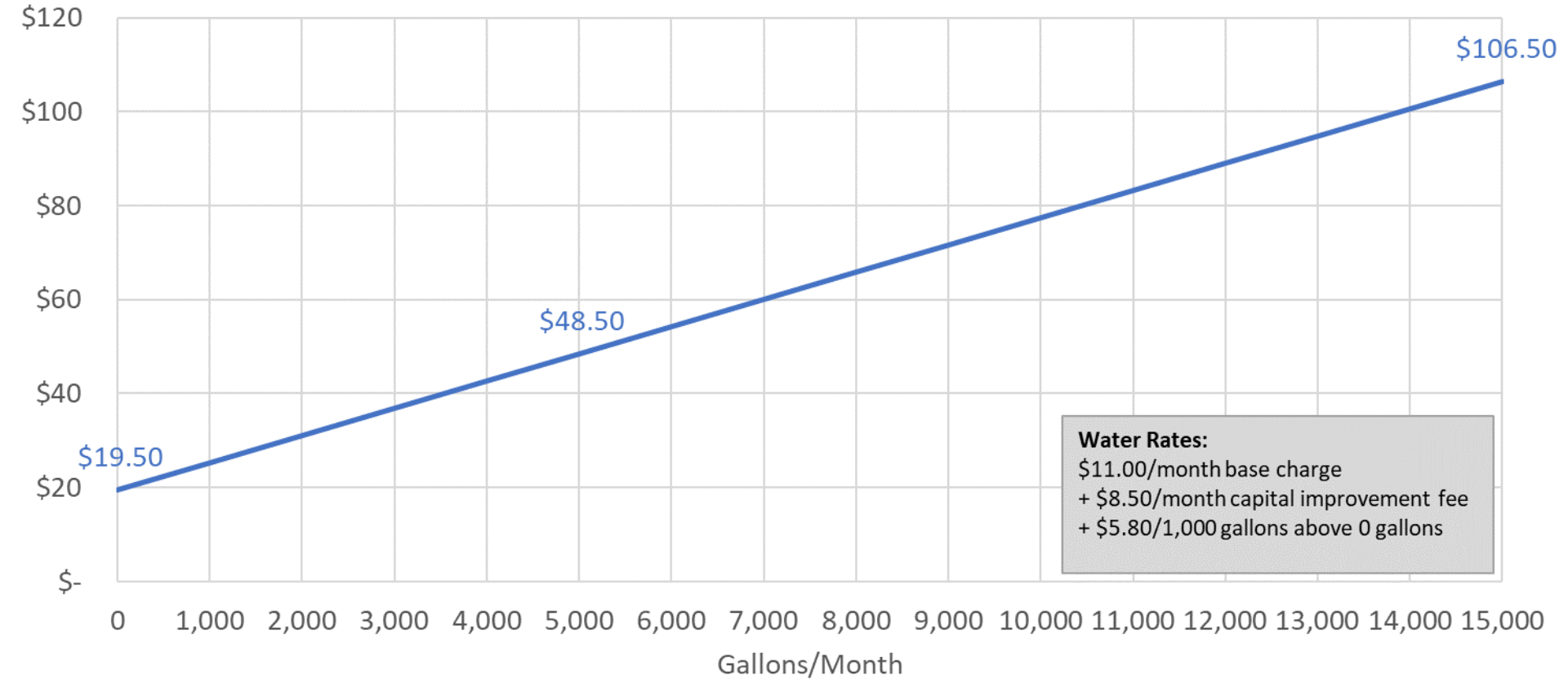
$10.49 per 1,000 gallons

$54.08 base charge plus $1.59/$1000

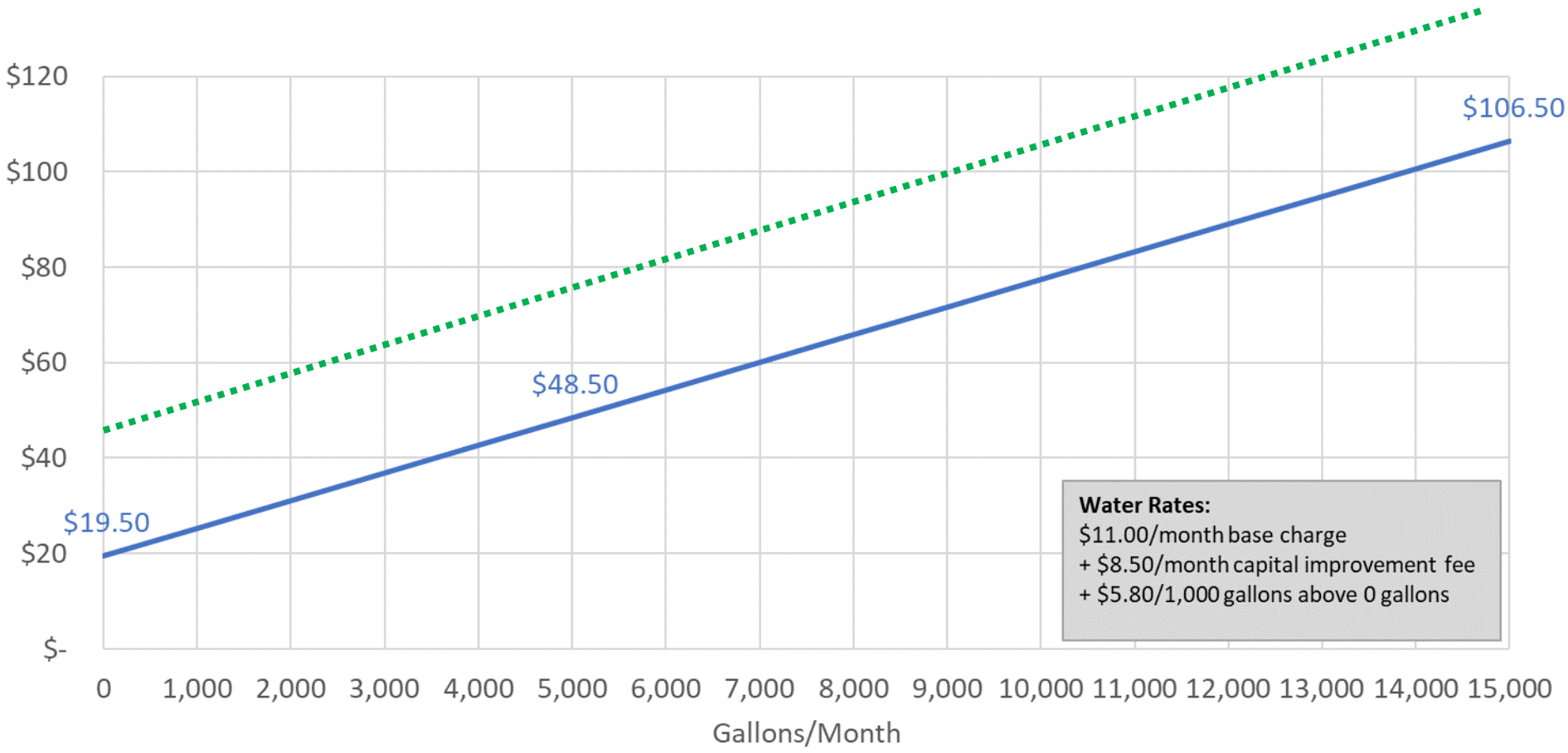
$25.00 base charge plus $6.37/1,000 gallons



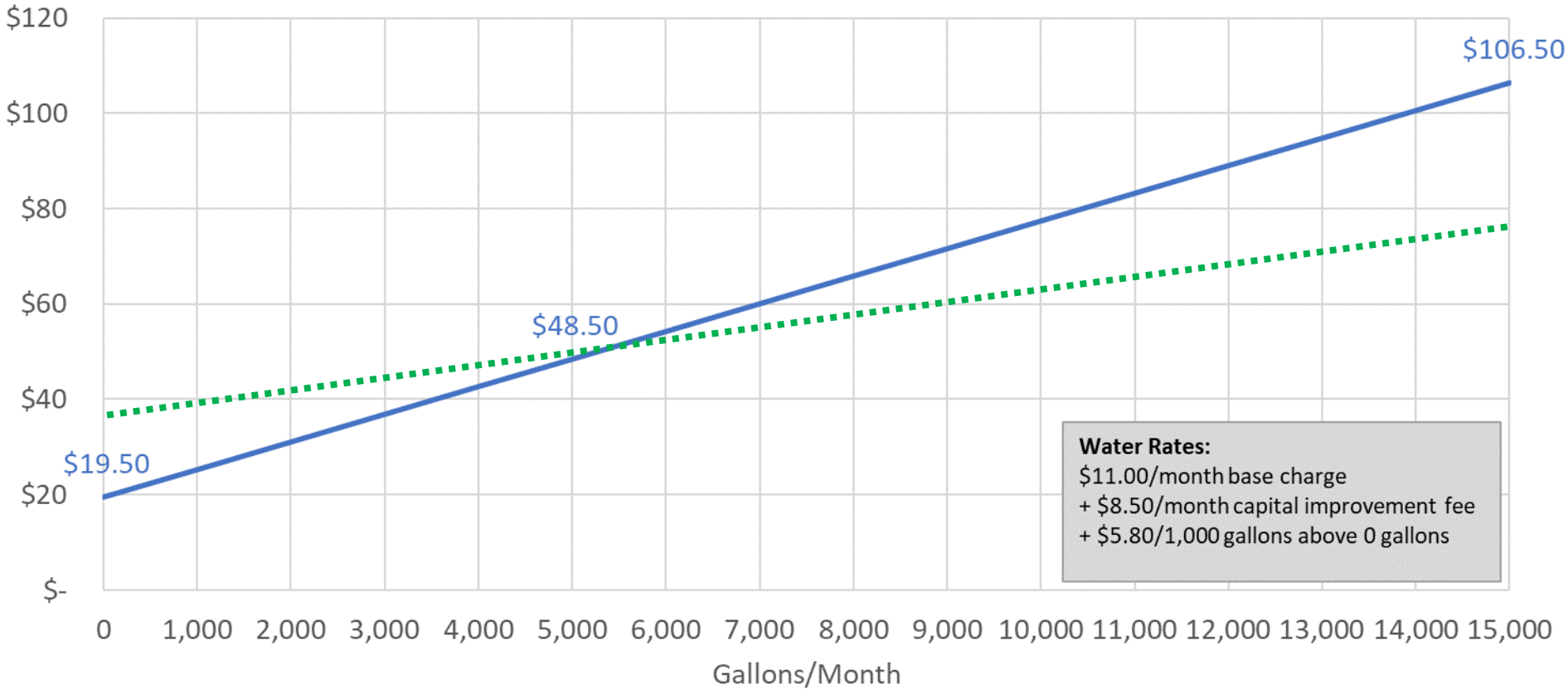
Example of a Uniform Water Rate Structure



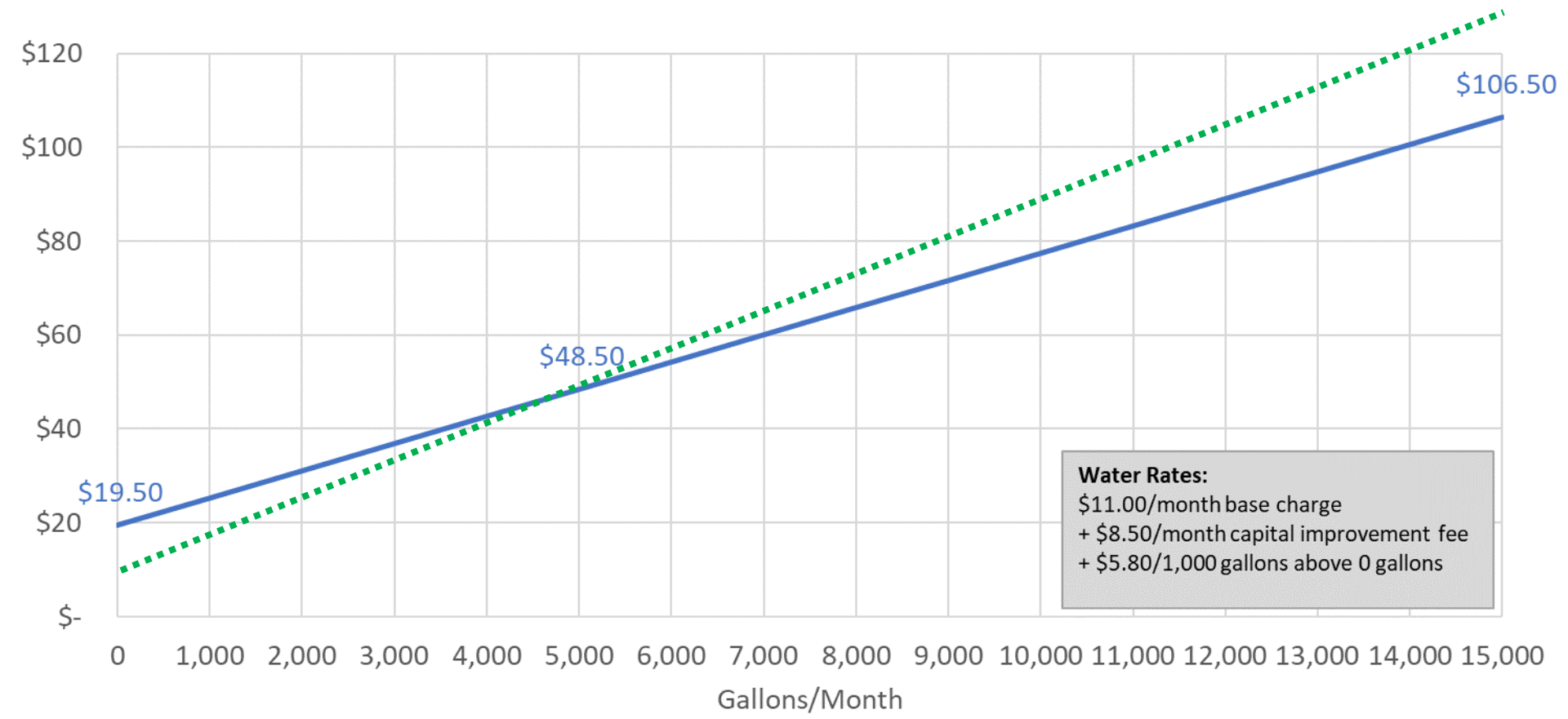
Moving towards a rate structure that generates more revenue for capital



Moving toward a more revenue stable rate structure



Moving toward a more conservation-oriented rate structure



The rates we calculated are based on Irvindale's budget for exactly $344,445.

Will they generate $344,445 next year?

…probably not

What causes variation?

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

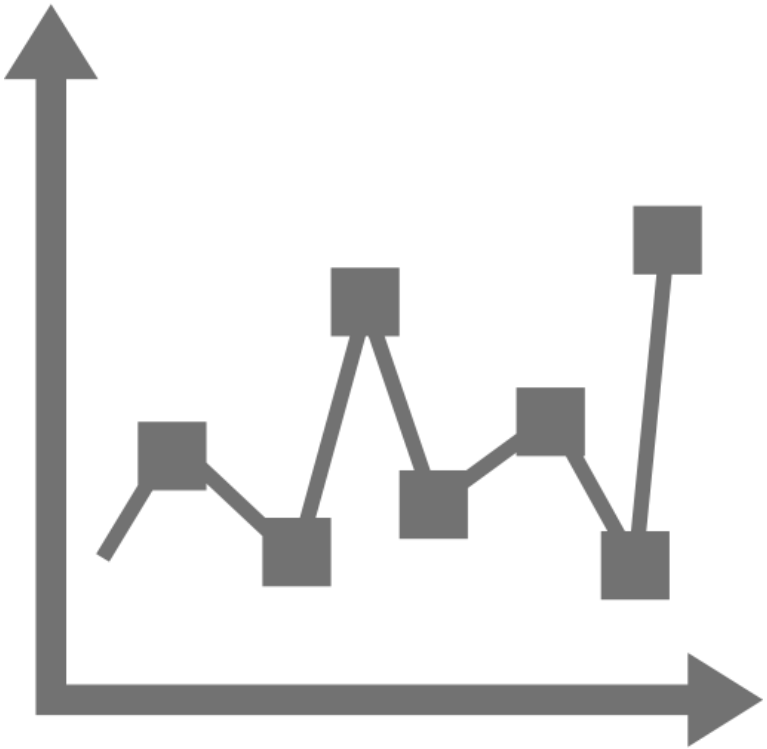
Population Change

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 a single big user can have a disproportionate impact on revenues

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

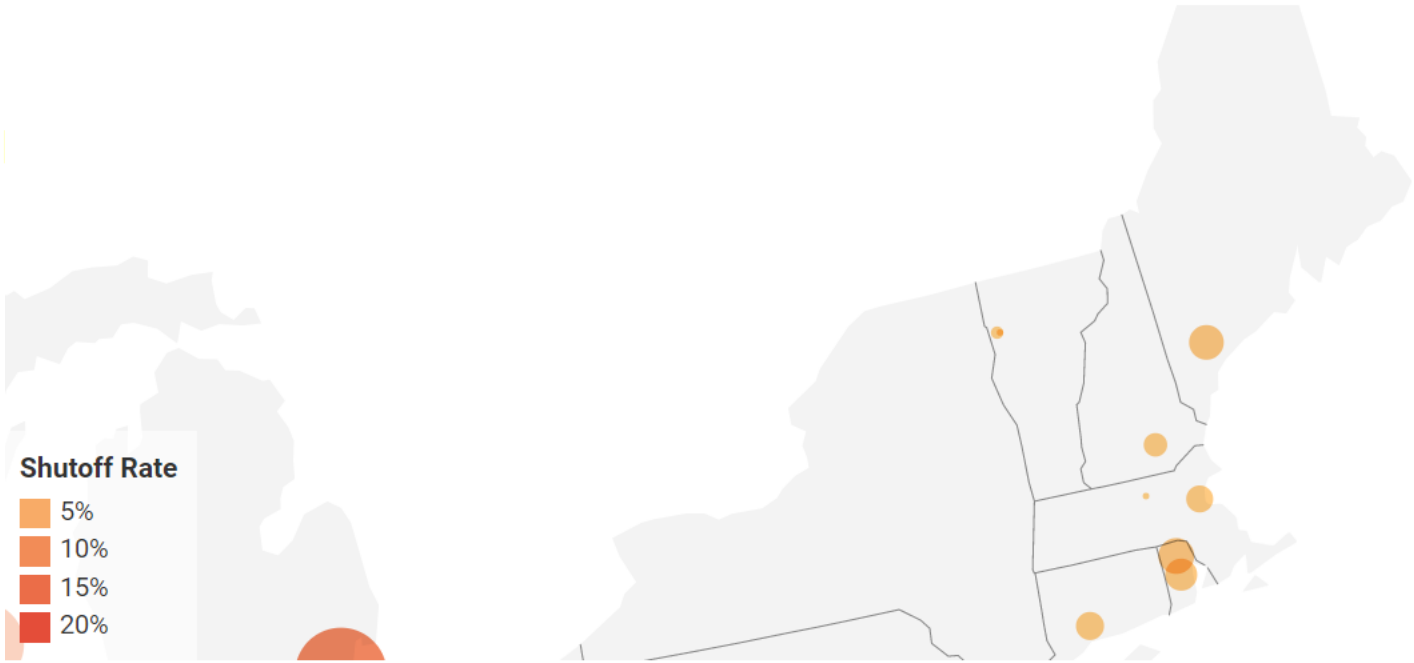
Even if the number of customers doesn’t change, how often they are paying you may be changing

Changes in Collection Rates

Sho ter

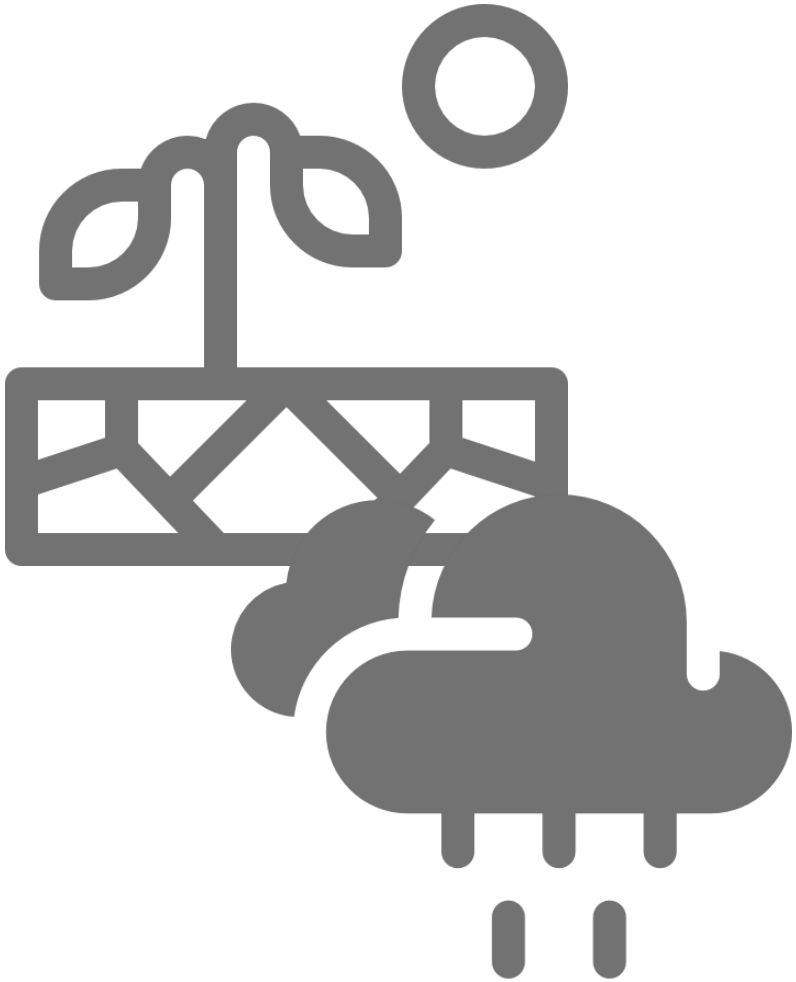
Water Shutoffs in 2016

This survey is a first-of-its-kind nationwide assessment of water shutoffs for nonpayment. Food & Water Watch requested the nun of households shut off for nonpayment in 2016 from the two largest water systems in each state. We received responses back fro 73 utilities.



Notes:
**When the AP contacted the Oklahoma City utility, their spokesperson said they had provided data for both residential and commercial shutoffs in error, instead of just for residential shutoffs. The data in the report reflects the original responses from the utilities.*
***Eau Claire, WI, Champlain, VT, and Leominster, MA each had zero shutoffs.*

Weather

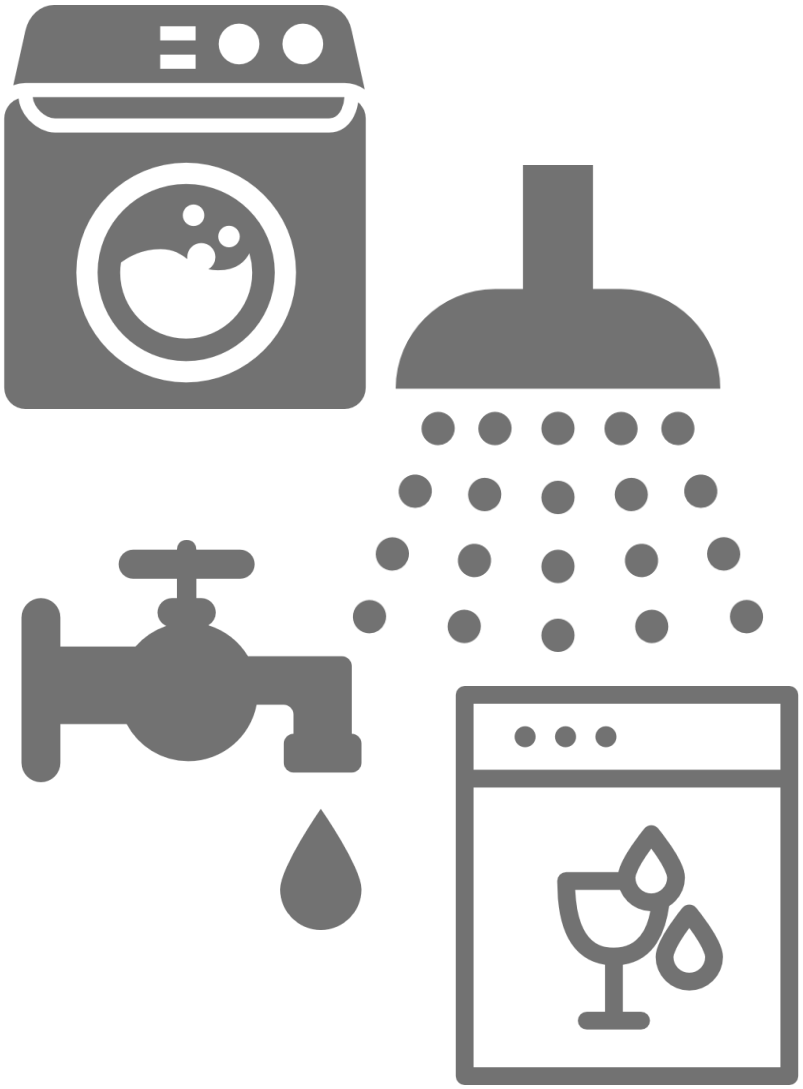


Rainy conditions or dry/drought conditions can impact how much water customers use for outside irrigation

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

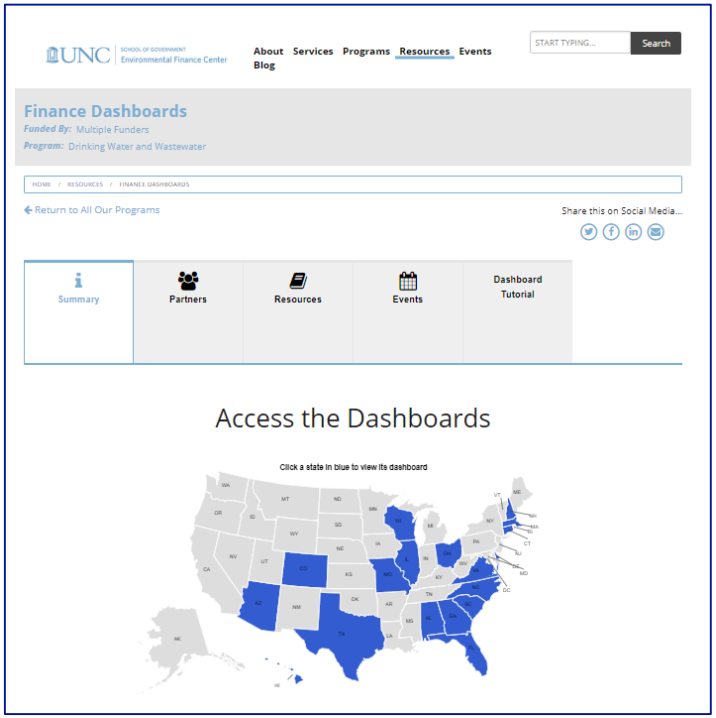
What to do?

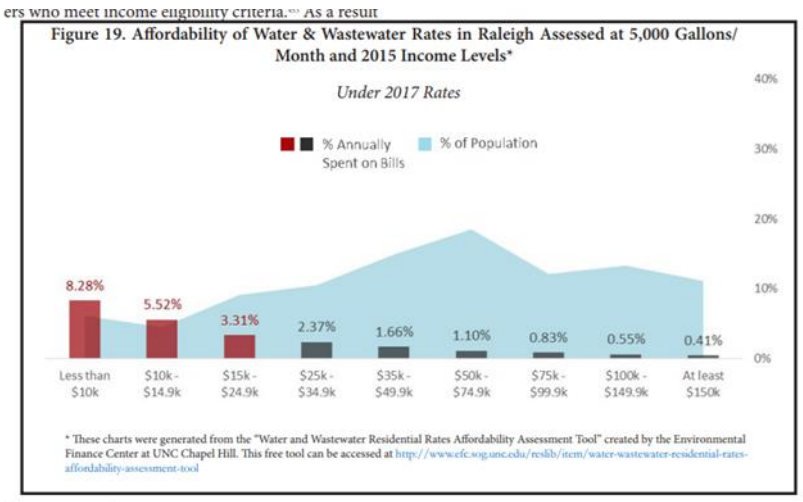
- Multiple forecasts based on different assumptions

- Ideally, be conservative
- Don’t forget that average use will go down when rates go up
- Use tools to stress test projections
- Give board options

Rates analysis and tools environmentalfinance.org

- State level rates surveys and analysis
- Utility rates affordability assessment tools
- Survey results and presentations

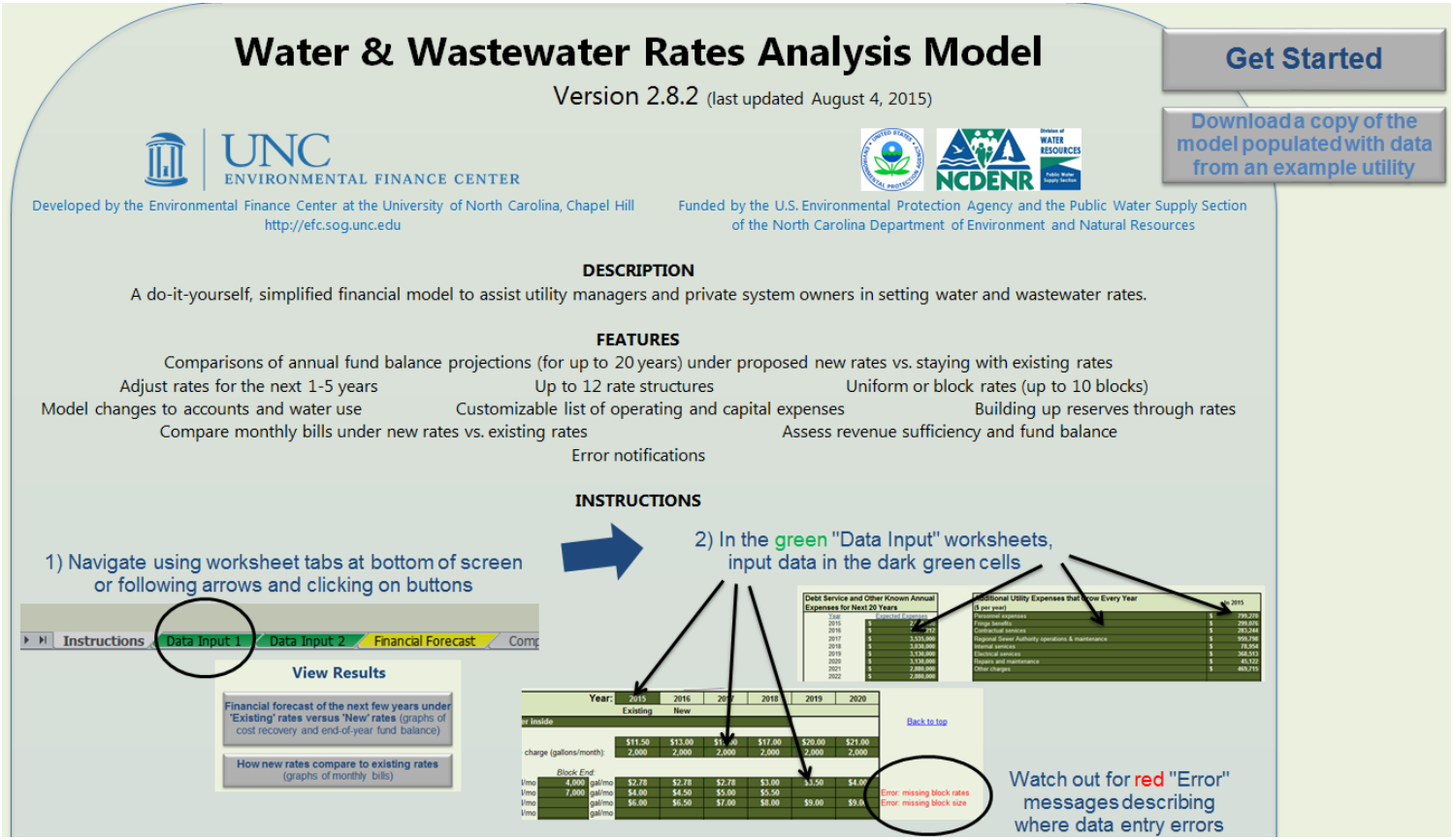




Water and Wastewater Rates Analysis Model

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

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

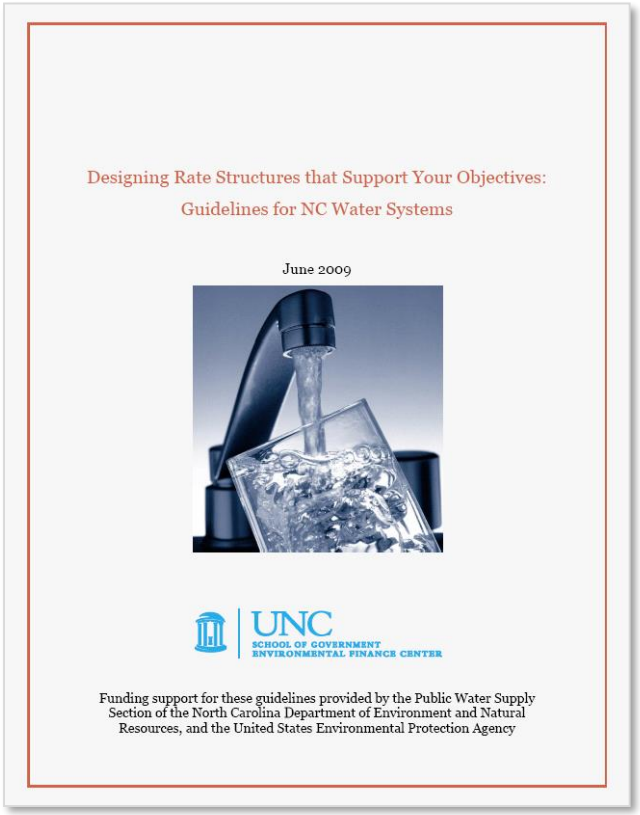


Created by the Environmental Finance Center at the University of North Carolina, Chapel Hill
Funded by the U.S. E.P.A. and the N.C. Department of Environmental Quality

Designing Rate Structures That Support Your Objectives

Free guide written for system managers

Available at: http://efc.sog.unc.edu/



Up Next…

- 2nd Priority Objective
- Dashboard Presentation