Customer Classes

Why and How to Charge Customers Different Rates

December 13, 2022

This program is made possible under a cooperative agreement with US EPA.

- Enhance the ability of governments and other organizations to provide environmental programs and services in fair, effective, and financially sustainable ways
- Interdisciplinary center focused on resource and tool development, direct technical assistance, and applied research
- Work closely with partners in North Carolina and across the country

UNC | SCHOOL OF GOVERNMENT
Environmental Finance Center

https://efc.sog.unc.edu

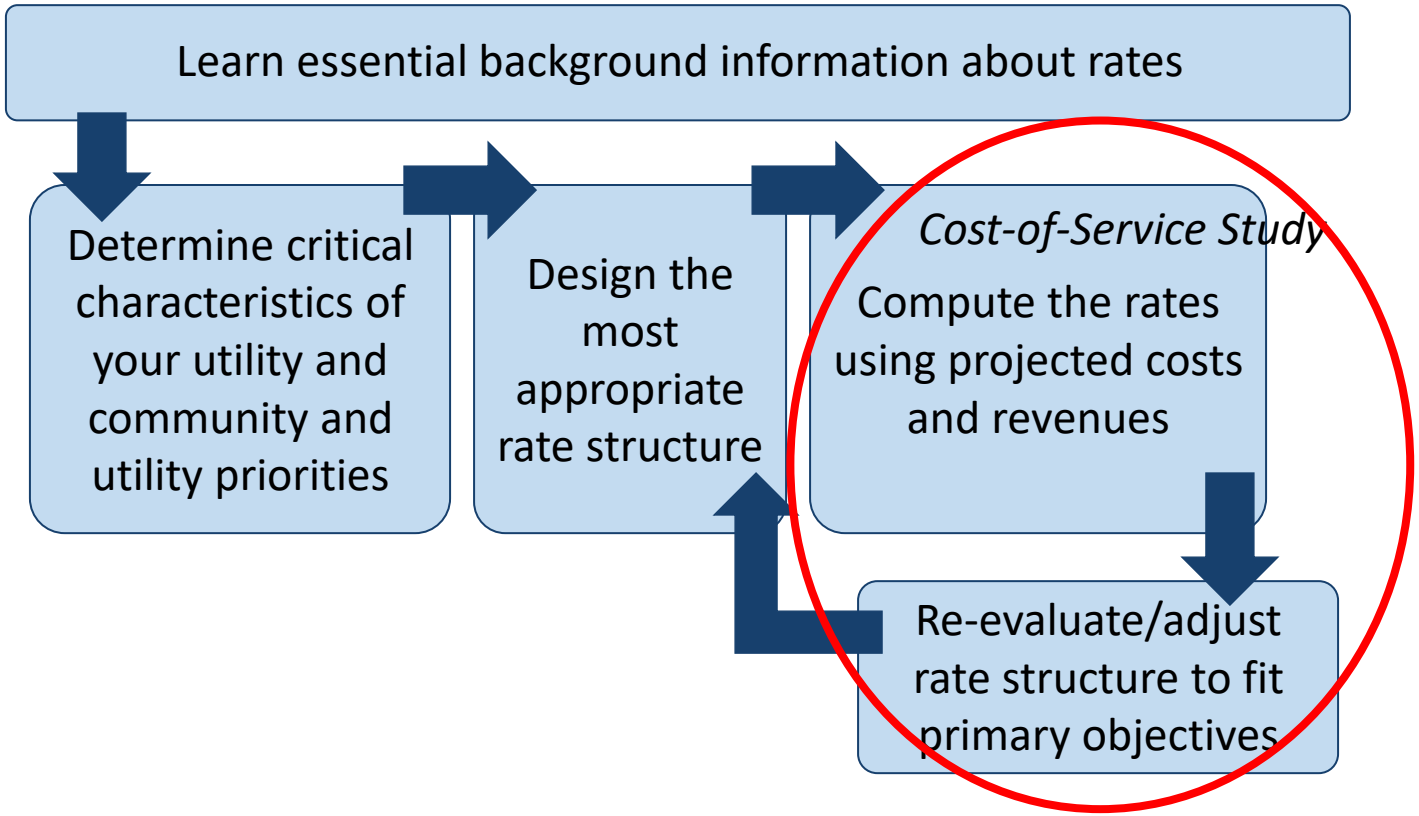
Agenda

- Rate setting objectives
- Rate setting philosophies
- Customer classes – what & why?
- Customer classes – how?
- Questions

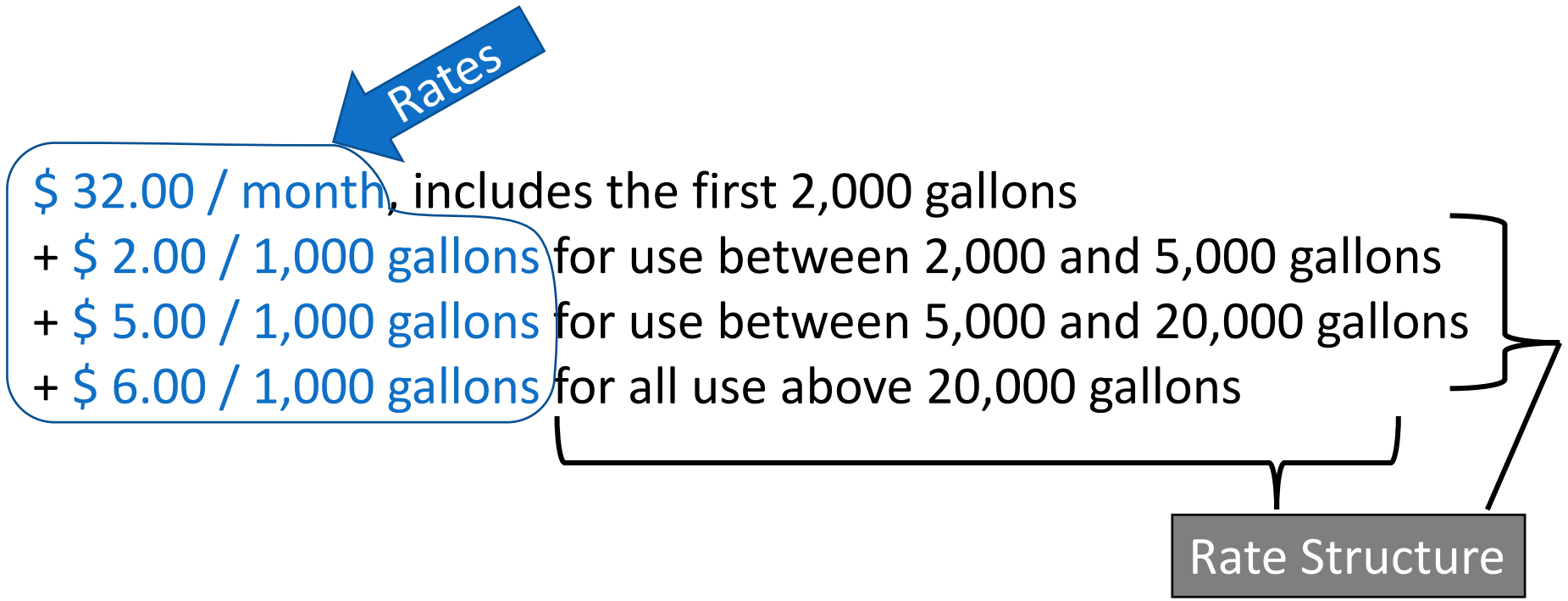
Introductions

- Name
- Organization
- State

The Process of Setting Rates



Terminology: Rates vs. Rate Structure



Terminology for Rate Structure

Base Charge

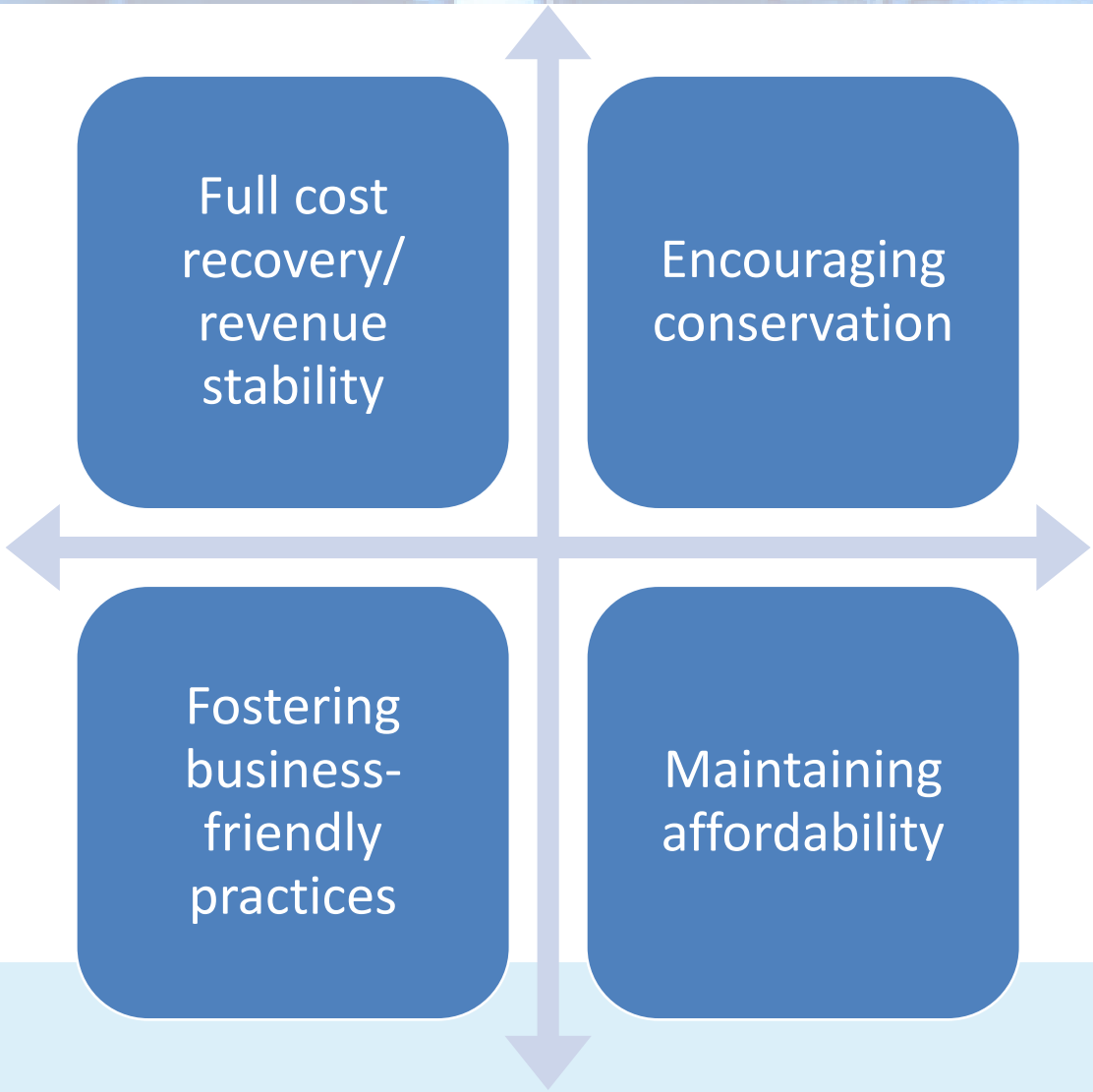
Consumption Allowance

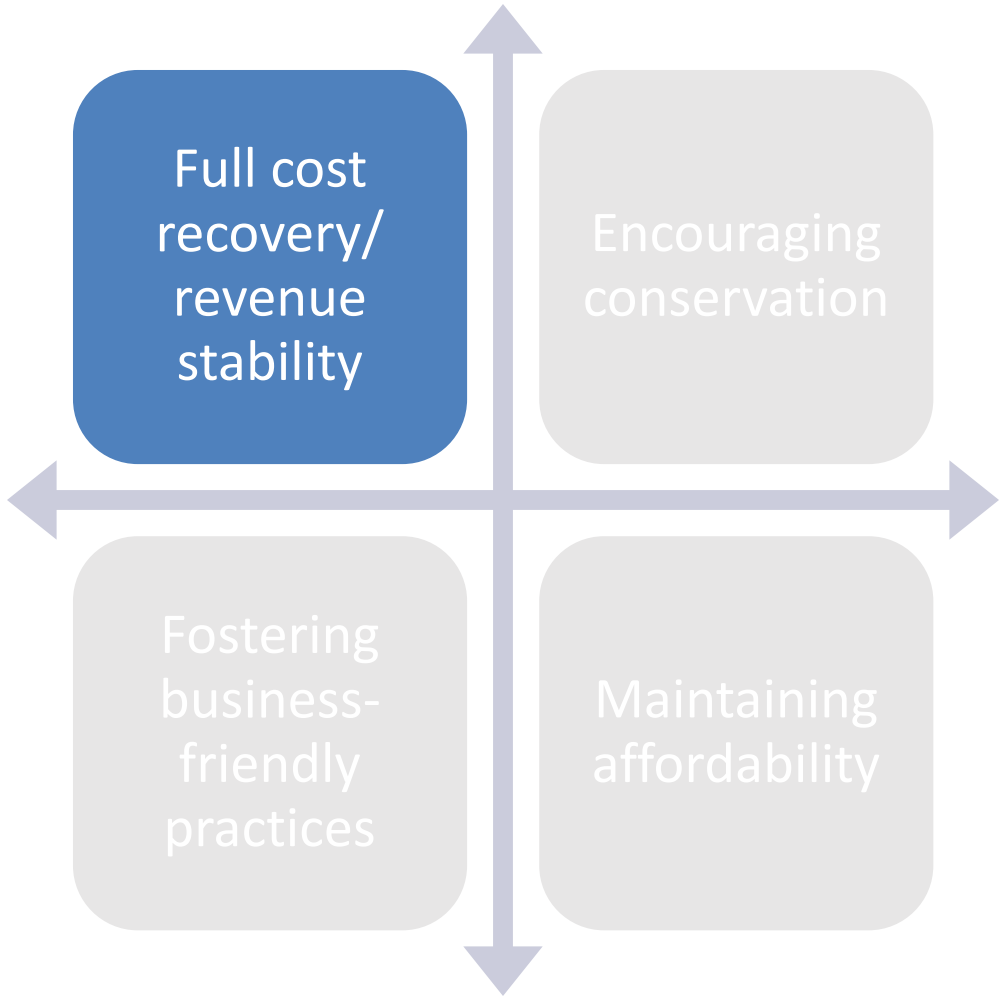
$ 32.00 / month, includes the first 2,000 gallons
+ $ 2.00 / 1,000 gallons for use between 2,000 and 5,000 gallons
+ $ 5.00 / 1,000 gallons for use between 5,000 and 20,000 gallons
+ $ 6.00 / 1,000 gallons for all use above 20,000 gallons

Volumetric Rates

Blocks

Water system objectives when setting rates:

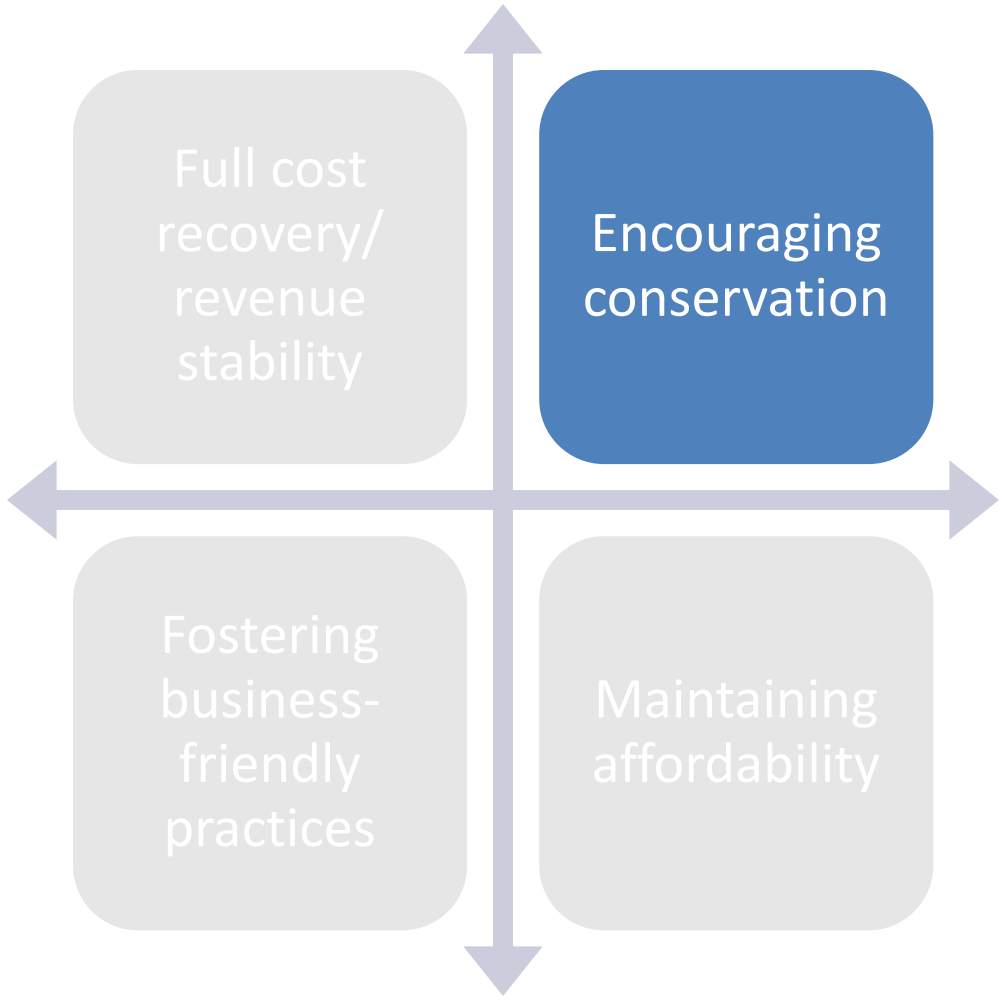




Bring in enough revenue to cover the full cost of running the water system:

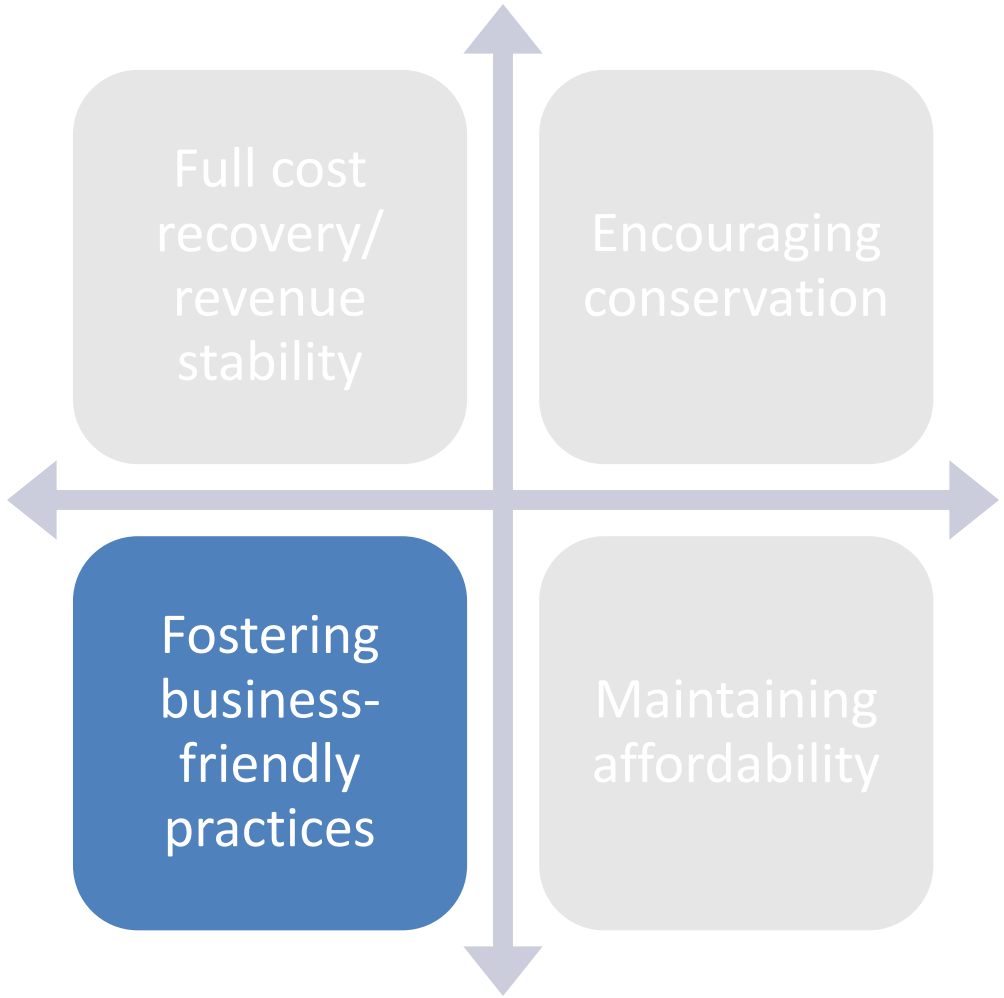
- O&M
- Capital needs
- Debt service

Why do this?



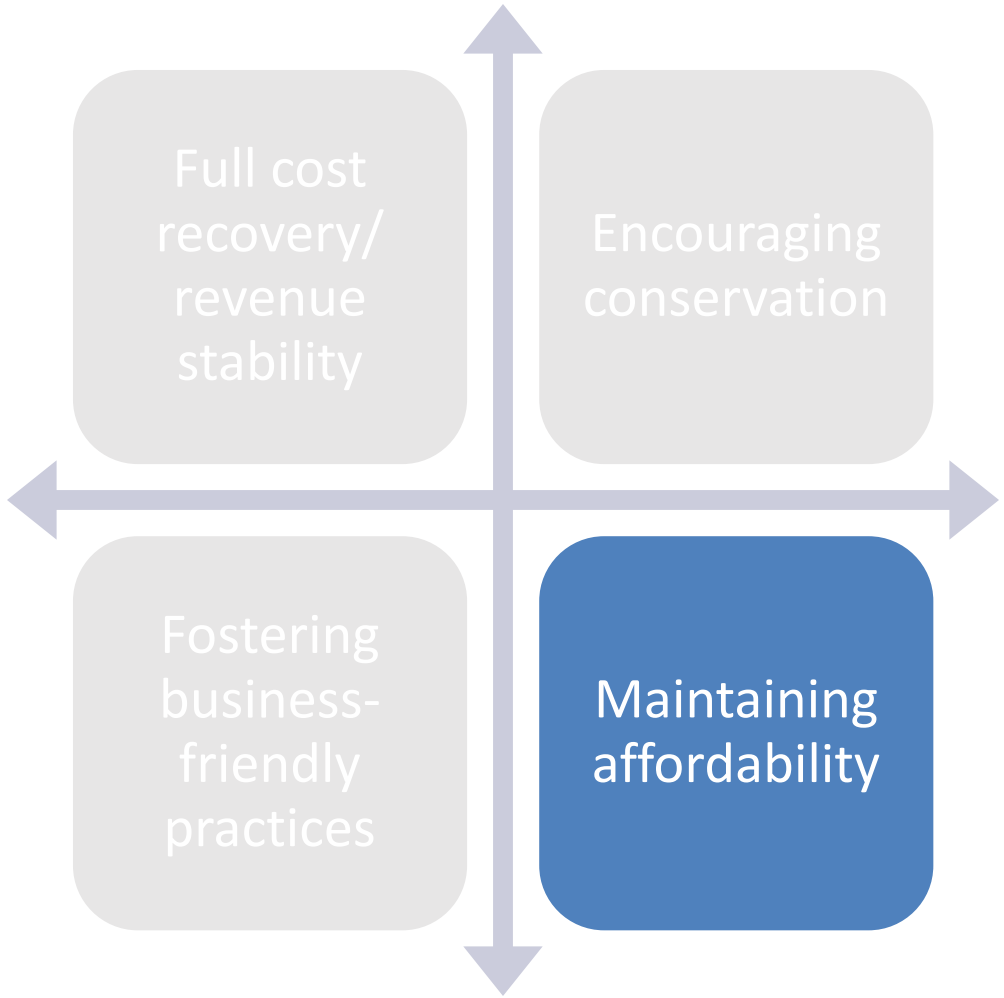
Use pricing to encourage customers to reduce their water consumption

Why do this?



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

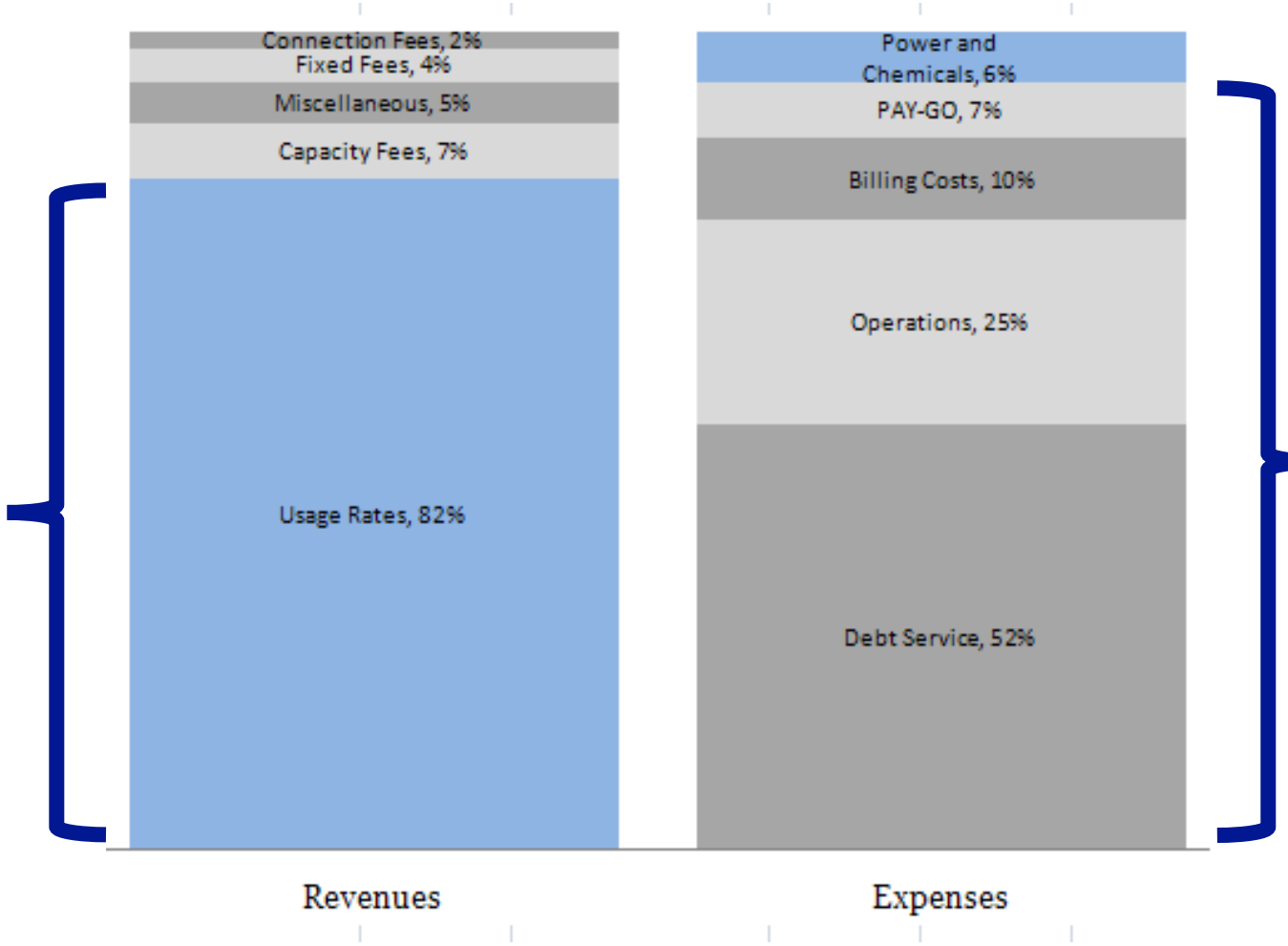
Why do this?

Full Cost Pricing

- Have the charges for water cover the entire cost of running the water system today and into the future

- Many paths to get to the right dollar figure
  - Payment for access versus payment for volume received
  - Payment for fixed versus variable costs

Revenues change with the amount of water used



Expenses stay constant

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.

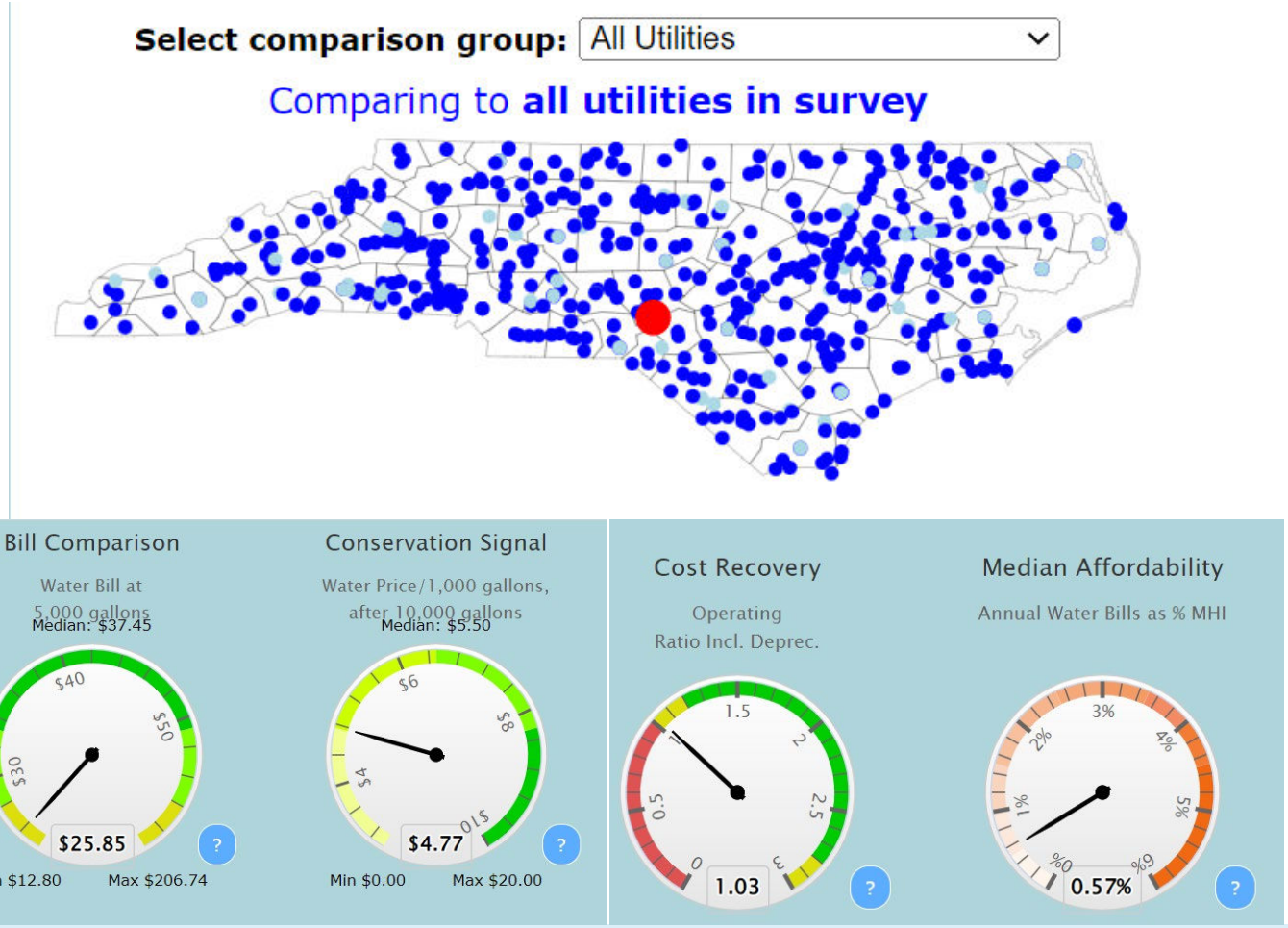
Table 1). These numbers are impressive. However, the projected numbers are staggering. According to a study by the North Carolina Rural Economic Development Center, the state will need more than $11 billion in investments to meet its capital needs for water and sewer infrastructure over the next twenty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

- There are many paths to the same revenue requirement
- Let your rate setting objectives be your guide
- No 2 utilities are the same—compare with caution!
- Make sure you meet your revenue requirement

Water/Wastewater Rates in North Carolina



- Surveyed nearly all utility rates in NC
  - 95.7%
- Useful benchmarking tool when budgeting
- Communication tool
- Interactive dashboard
- Read a summary report

Terminology for Rate Structure

$ 32.00 / month, includes the first 2,000 gallons
+ $ 2.00 / 1,000 gallons for use between 2,000 and 5,000 gallons
+ $ 5.00 / 1,000 gallons for use between 5,000 and 20,000 gallons
+ $ 6.00 / 1,000 gallons for all use above 20,000 gallons

Terminology for Rate Structure

$ 32.00 / month

Terminology for Rate Structure

Base Charge

Consumption Allowance

$ 32.00 / month, includes the first 2,000 gallons
+ $ 2.00 / 1,000 gallons for use above 2,000 gallons

Volumetric Rate

Terminology for Rate Structure

Base Charge

Consumption Allowance

$ 32.00 / month, includes the first 2,000 gallons
+ $ 2.00 / 1,000 gallons for use between 2,000 and 5,000 gallons
+ $ 5.00 / 1,000 gallons for use between 5,000 and 20,000 gallons
+ $ 6.00 / 1,000 gallons for all use above 20,000 gallons

Volumetric Rates

Blocks

Example rate

Base rate: $20.00

Volumetric rate: $6.00/thousand gallons

Total revenue: $1.45 mil/year

2,052 connections

Customer Classes

	Base	Volumetric
Residential	$18.65	$5/kgal
Nonresidential	$25.00	$7/kgal

Customer Class

	Base	Volumetric	2,000	5,000	12,000	20,000
One class	$20	$6/kgal	$32.00	$50.00	$92.00	$140.00

Customer Class

	Base	Volumetric	2,000	5,000	12,000	20,000
One class	$20	$6/kgal	$32.00	$50.00	$92.00	$140.00
Residential	$18.65	$5/kgal	$28.65 -10.4%	$43.65 -12.7%	$78.65 -14.5%	$118.65 -15.3%

Customer Class

	Base	Volumetric	2,000	5,000	12,000	20,000
One class	$20	$6/kgal	$32.00	$50.00	$92.00	$140.00
Residential	$18.65	$5/kgal	$28.65 -10.4%	$43.65 -12.7%	$78.65 -14.5%	$118.65 -15.3%
Nonresidential	$25	$7/kgal	$39.00 +22%	$60.00 +20%	$109.00 +18.5%	$165 +17.9%

General Authority Behind User Fees in NC
§ 160A-314. Authority to fix and enforce rates

(a) A city may establish and revise from time to time schedules of rents, rates, fees, charges, and penalties for **the use of or the services furnished or to be furnished by any public enterprise.** Schedules of rents, rates, fees, charges, and penalties **may vary according to classes of service**, and **different schedules may be adopted for services provided outside the corporate limits of the city**.

For Counties: § 153A-277. Similar authority but more about different areas of the County.

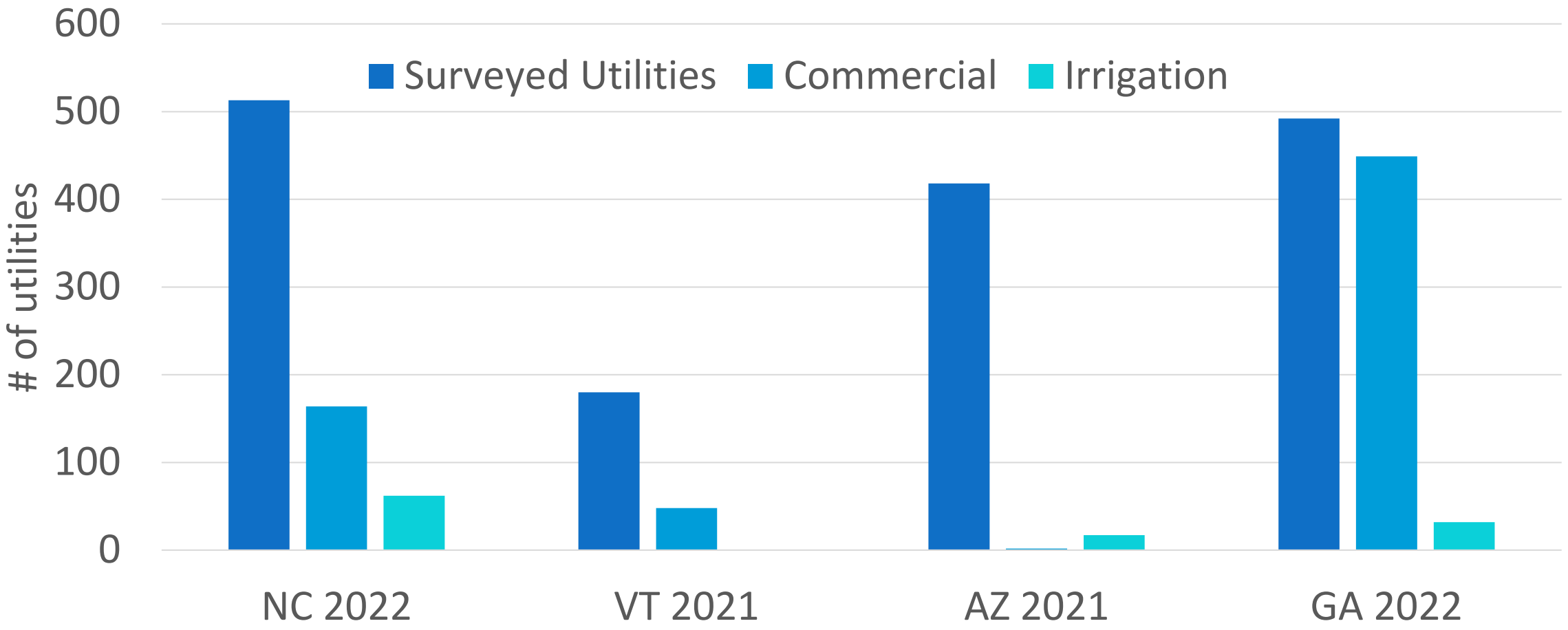
Customer class options

- Residential
- Commercial
- Industrial
- Outside limits

- Wholesale
- Fire protection
- Irrigation

- Water
- Sewer

How common are customer classes?



Poll: Do you use customer classes?

- Yes
- No
- Unsure
- Not a system/not applicable

Poll: What customer classes do you have?

- Residential
- Commercial
- Industrial
- Irrigation
- Other

- Unsure
- Not a system/Not applicable

Please share in the chat!

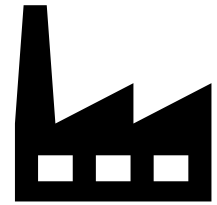
Why have customer classes?

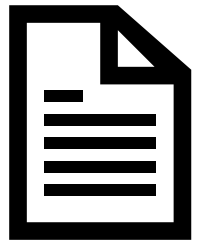
- Cover cost of service provision
  - Industrial and commercial wastewater may be harder to treat than residential
- Meter size or consumption points do not organize your specific customer base well
  - Do these reflect usage patterns? Maybe!
- Accomplish rate setting objectives
  - Full cost recovery
  - Affordability
  - Encourage business friendly practices
  - Conservation

Why have customer classes?

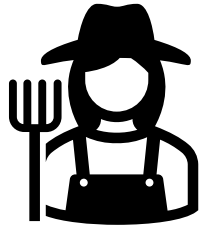
Dos and Don’ts

- DO: Cover costs of differential service
  - A larger customer requires increased O&M, not just upfront capital costs
- DO: Clearly define customer class policies





- DON’T: Charge different amounts to users within the same class
- DON’T: “Ding” a certain user



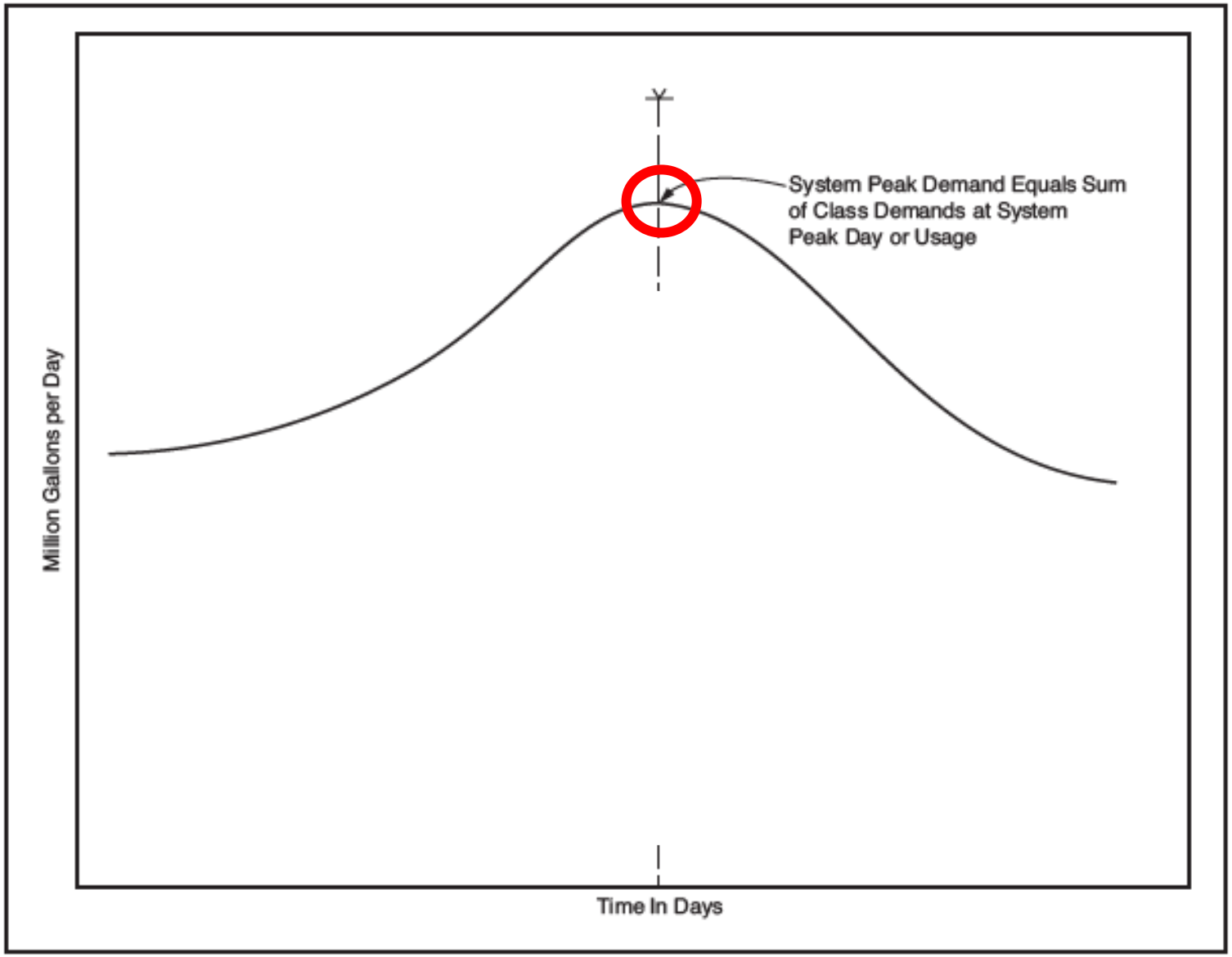


Figure A-2 Peaks that occur at different times

Source: AWWA: Rates, Fees and Charges 7th ed.

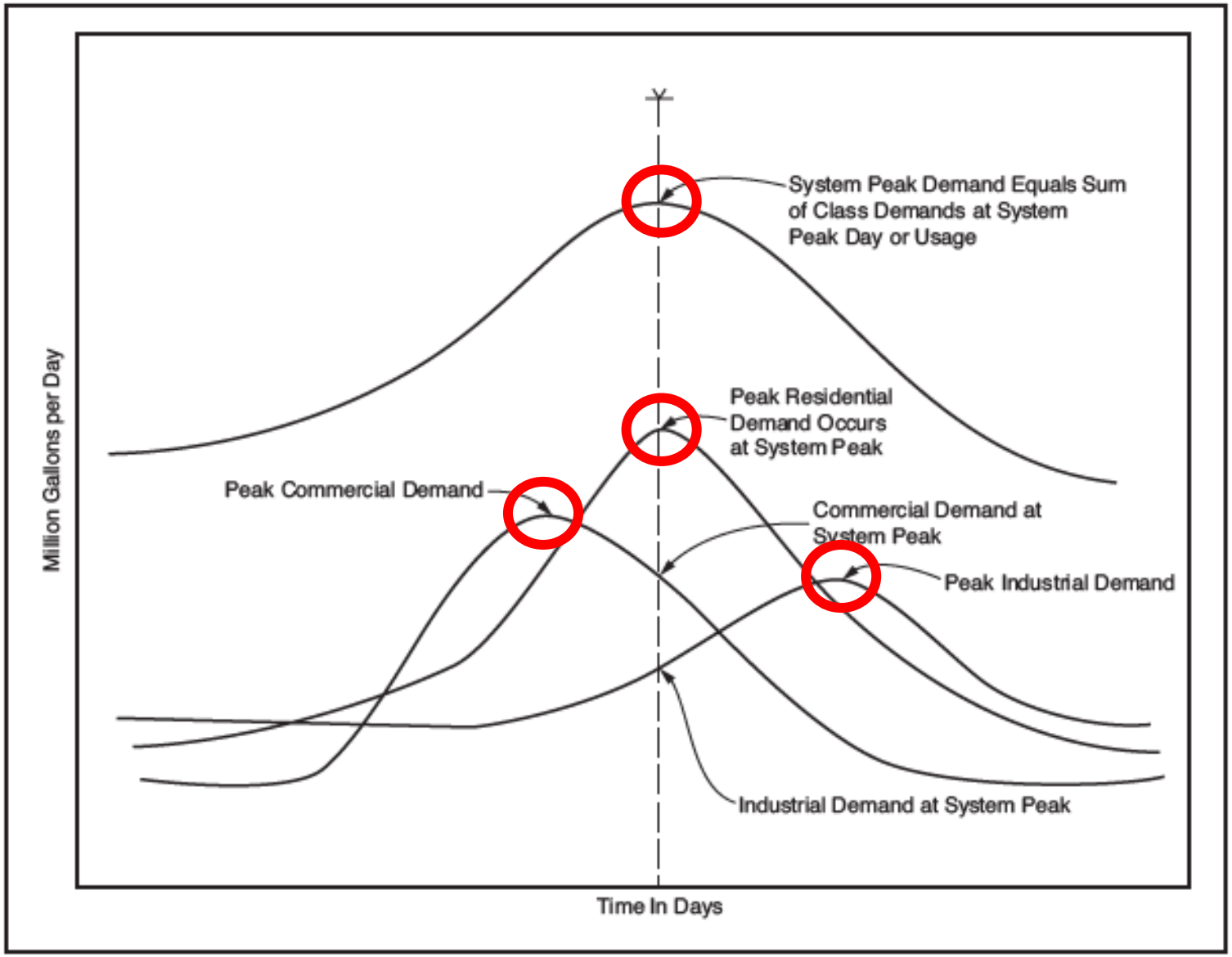
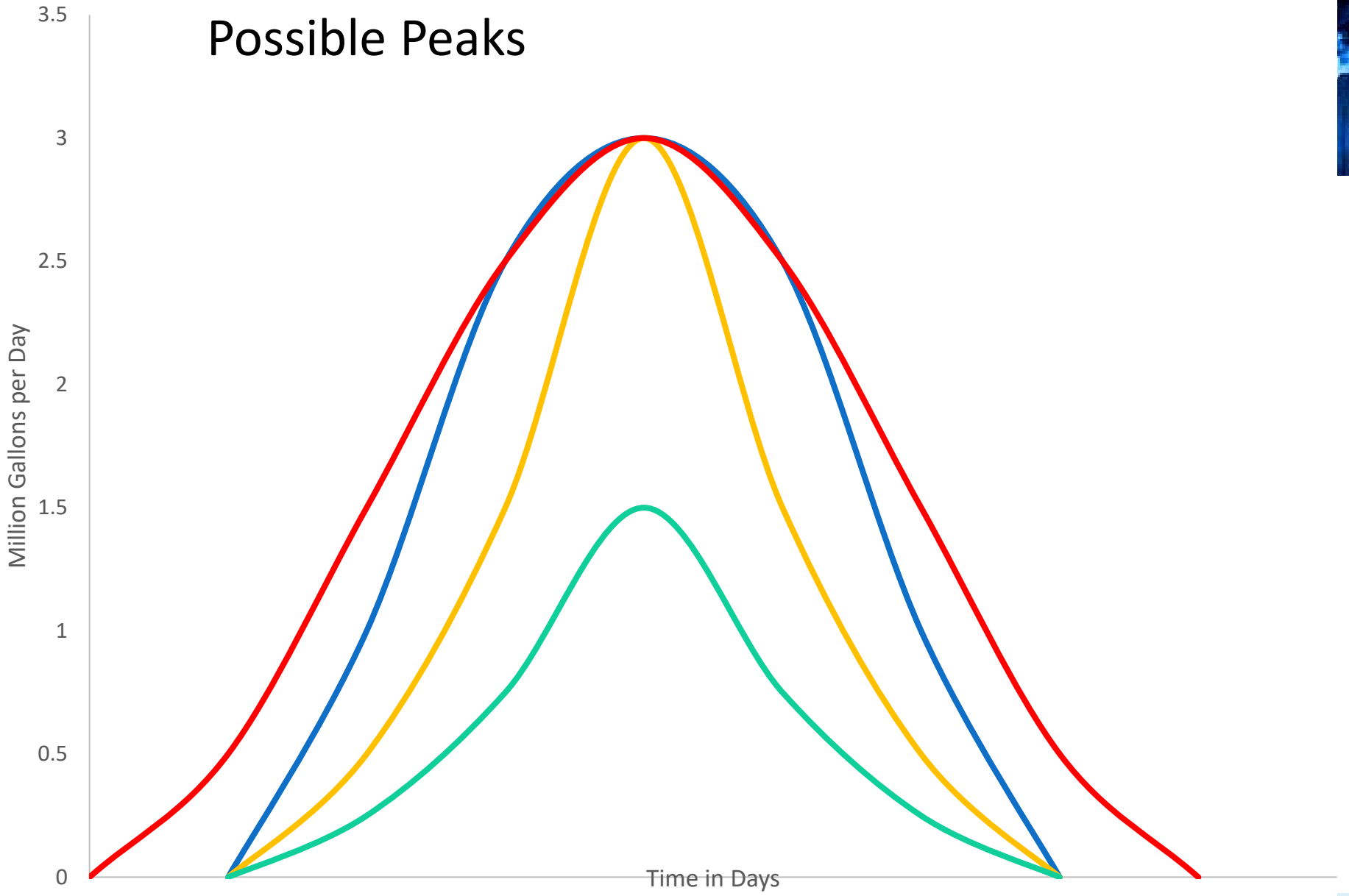


Figure A-2 Peaks that occur at different times

Source: AWWA: Rates, Fees and Charges 7th ed.

Possible Peaks



Customer classes gone wrong

Description
WATER RESIDENTIAL
FLAT RATE
SEWER NON-RESIDENTIAL
WATER BED & BREAKFAST 2"
WATER BED & BREAKFAST
WATER ONLY/INST/OUTSIDE
SEWER ONLY/OUTSIDE
WATER INST 1 1/4"
WATER INST/1 1/2"
WATER INST/2"
WATER NON-RESIDENTIAL 1 1/4"
WATER NON-RESIDENTIAL 1 1/2"
WATER NON-RESIDENTIAL 2"
WATER NON-RESIDENTIAL OUTSID
WATER OUTSIDE RESIDENTIAL
WATER OUTSIDE SENIOR
WATER RESIDENTIAL 1 1/2"
WATER RESIDENTIAL 2"
WATER RESIDENTIAL 4"

SEWER BED & BREAKFAST
SEWER INSTITUTIONAL
SEWER RESIDENTIAL
SEWER SENIOR CITIZEN
WATER INSTITUTIONAL
WATER NON-RESIDENTIAL
WATER SENIOR CITIZEN
No charge
IRRIGATION 2"
IRRIGATION 1"
NON-RES SEWER/OUTSIDE
SEWER RESIDENTIAL/OUTSIDE
SEWER/INST/OUTSIDE
IRRIGATION 3"
WATER RESIDENTIAL-QTR
SEWER NON-RESIDENTIAL QTR
WATER BED & BREAKFAST 2"-QTR
WATER BED & BREAKFAST-QTR
WATER ONLY/INST/OUTSIDE-QTR
SEWER ONLY/OUTSIDE-QTR

Customer classes gone wrong

Description
WATER RESIDENTIAL
FLAT RATE
SEWER NON-RESIDENTIAL
WATER BED & BREAKFAST 2"
WATER BED & BREAKFAST
WATER ONLY/INST/OUTSIDE
SEWER ONLY/OUTSIDE
WATER INST 1 1/4"
WATER INST/1 1/2"
WATER INST/2"
WATER NON-RESIDENTIAL 1 1/4"
WATER NON-RESIDENTIAL 1 1/2"
WATER NON-RESIDENTIAL 2"
WATER NON-RESIDENTIAL OUTSID
WATER OUTSIDE RESIDENTIAL
WATER OUTSIDE SENIOR
WATER RESIDENTIAL 1 1/2"
WATER RESIDENTIAL 2"
WATER RESIDENTIAL 4"

SEWER BED & BREAKFAST
SEWER INSTITUTIONAL
SEWER RESIDENTIAL
SEWER SENIOR CITIZEN
WATER INSTITUTIONAL
WATER NON-RESIDENTIAL
WATER SENIOR CITIZEN
No charge
IRRIGATION 2"
IRRIGATION 1"
NON-RES SEWER/OUTSIDE
SEWER RESIDENTIAL/OUTSIDE
SEWER/INST/OUTSIDE
IRRIGATION 3"
WATER RESIDENTIAL-QTR
SEWER NON-RESIDENTIAL QTR
WATER BED & BREAKFAST 2"-QTR
WATER BED & BREAKFAST-QTR
WATER ONLY/INST/OUTSIDE-QTR
SEWER ONLY/OUTSIDE-QTR

Customer classes gone wrong

Description	Customer Count
WATER RESIDENTIAL	479
FLAT RATE	0
SEWER NON-RESIDENTIAL	115
WATER BED & BREAKFAST 2"	2
WATER BED & BREAKFAST	2
WATER ONLY/INST/OUTSIDE	1
SEWER ONLY/OUTSIDE	1
WATER INST 1 1/4"	2
WATER INST/1 1/2"	2
WATER INST/2"	6
WATER NON-RESIDENTIAL 1 1/4"	3
WATER NON-RESIDENTIAL 1 1/2"	2
WATER NON-RESIDENTIAL 2"	2
WATER NON-RESIDENTIAL OUTSID	1
WATER OUTSIDE RESIDENTIAL	50
WATER OUTSIDE SENIOR	1
WATER RESIDENTIAL 1 1/2"	1
WATER RESIDENTIAL 2"	0
WATER RESIDENTIAL 4"	0
SEWER BED & BREAKFAST	5
SEWER INSTITUTIONAL	31
SEWER RESIDENTIAL	486
SEWER SENIOR CITIZEN	50
WATER INSTITUTIONAL	23
WATER NON-RESIDENTIAL	103
WATER SENIOR CITIZEN	50
No charge	3
IRRIGATION 2"	3
IRRIGATION 1"	5
NON-RES SEWER/OUTSIDE	1
SEWER RESIDENTIAL/OUTSIDE	0
SEWER/INST/OUTSIDE	0
IRRIGATION 3"	0
WATER RESIDENTIAL-QTR	506
SEWER NON-RESIDENTIAL QTR	23
WATER BED & BREAKFAST 2"-QTR	0
WATER BED & BREAKFAST-QTR	0
WATER ONLY/INST/OUTSIDE-QTR	0
SEWER ONLY/OUTSIDE-QTR	0

How – Cost of Service Analysis

- Examination of customer usage patterns and demands on the system

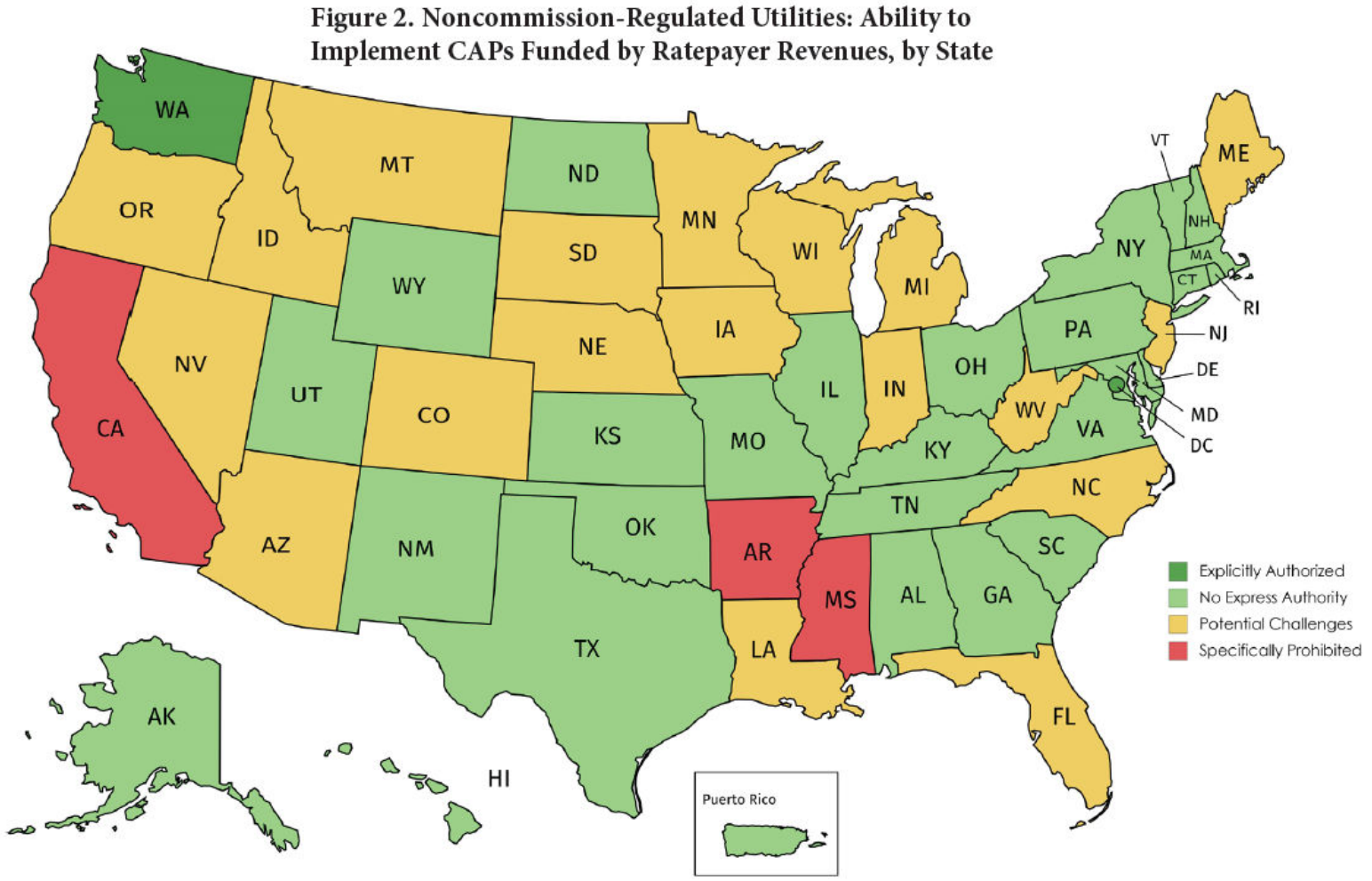
- Total usage
- Peak rates of use – *peaking factor*
  - Maximum-day use
  - Maximum-hour use
- Number per class
  - Meters
  - Services
  - Bills

$$\frac{Maximum\ rate\ of\ use}{Average\ annual\ rate\ of\ use} * 100$$

$$\frac{2.5\ MGD}{1.0\ MGD} = 250\%\ max.day\ peaking\ factor$$

Pumping records
Rates of flow
Studies/interviews with users
Billing information

Affordability – Cross subsidization



- Bill discount is a type of customer assistance program (CAP)
- Implementing an "affordability" relevant customer class – requires cross subsidization
- State specific rules

Example – Washington State

- Allows provision of “aid to low-income persons in connection with services” both water and sewer
- Authorizes discounted rates specifically – requires explanation of how those costs are shifted to other rate payers
- Eligibility can be defined by jurisdictions

This Photo by Unknown Author is licensed under CC BY-NC-ND

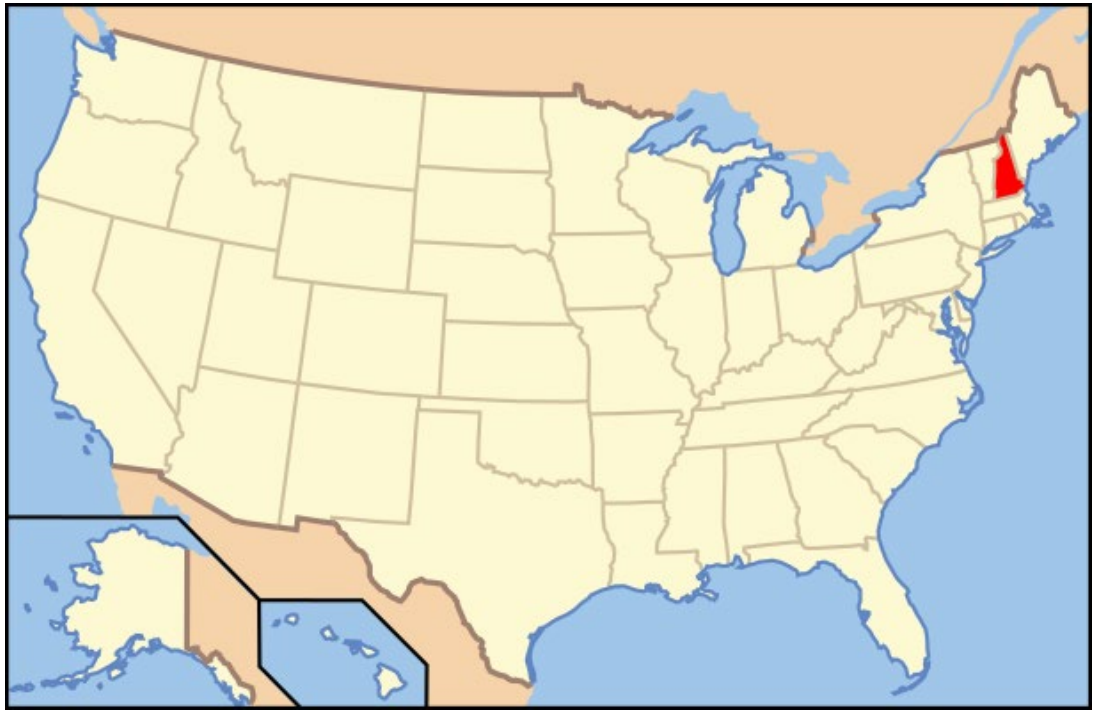
RCW 35.92.020 RCW 36.94.140
RCW 35.67.020 RCW 57.08.014
RCW 74.38.070

Affordability – Designing Classes

- Use legal classes with specific structure
  - Can’t change class by customer income levels
  - Can change class based on house attributes

Special Cases

- Short term rentals, i.e., Airbnb
  - Differential usage
  - Residence functioning as a business
  - Changes in peak flow
    - Weekends
    - Seasonally
  - Novel case for many communities – check your state!
    - New Hampshire vs. Texas



This Photo by Unknown Author is licensed under CC BY-SA

Special Cases

- Multifamily housing (MFH)
  - Differential usage
  - Changes in peak flow
- North Carolina – its complicated
  - Are they commercial?
  - Can there be minimum fees per each unit?
  - Discrimination concerns

Special Cases

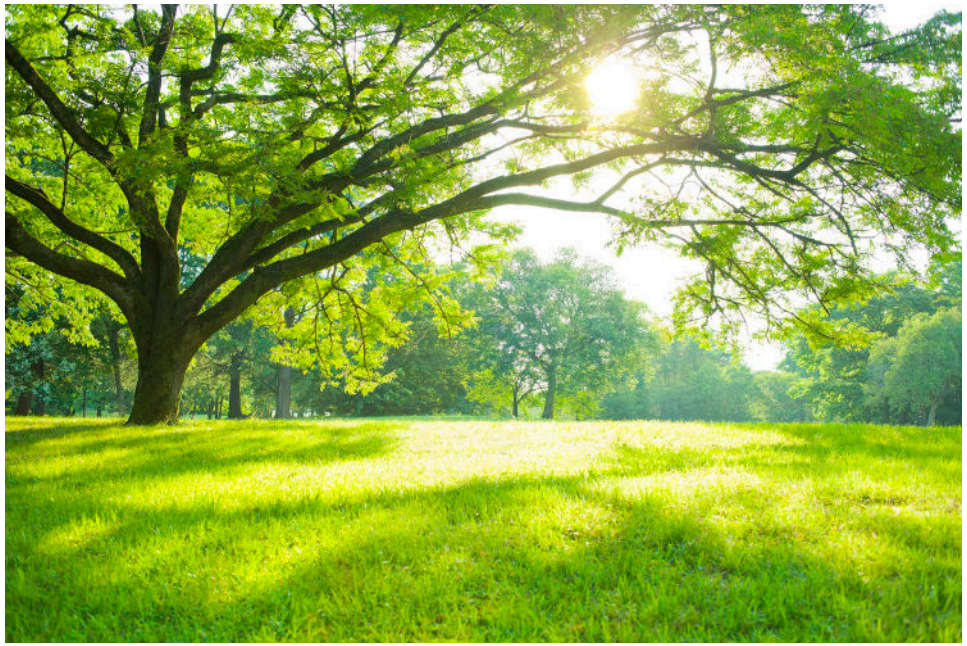
- Seasonal usage
  - Changes in peak demand
  - Off season capacity remains idle
- Fire protection fees
  - Calculated in a specific way
  - Allocates cost of increased fire protection flow across customers
    - Public (i.e., hydrants)
    - Private (i.e., sprinklers)

Best Practices

- Select classes legal within your state
- Set up clear and fair policies to define your classes
- Design rates to reflect cost of services
- Reevaluate annually to confirm class assignments
- Communicate proactively! → think about customer impacts

Other Considerations

- Do rates reflect your priorities?
  - Full cost recovery
  - Conservation
  - Fostering business friendly practices
  - Affordability
- Will any specific customers be deterred or heavily impacted by customer classes?
  - Will your policies get you in the news?
- Do you have vulnerabilities?
  - Is most of your revenue coming from one place?



Technical Assistance Available

- Rates Analysis Tool;
  - Consumption data from small systems
  - Keep total revenue consistent
  - Model various scenarios for altering rates, structures

Base % increase	5%	5%	5%	5%	5%	
Volumetric % increase	5%	5%	5%	5%	5%	

Rate Structure(s)	Fiscal Year:	2020	FY2021	FY2022	FY2023	FY2024	FY2025
		Existing	New				
Rate Structure 1:	5/8 by 3/4 Single Family						
Monthly Base Charge:		$17.04	$17.89	$18.79	$19.73	$20.71	$21.75
Consumption allowance included with the base charge (gallons/month):							
	Block Start:	Block End:					
Block rate 1 ($/1,000 gal)	- gal/mo	7,480 gal/mo	$2.45	$2.57	$2.70	$2.84	$2.98	$3.13
Block rate 2 ($/1,000 gal)	- gal/mo	gal/mo						
Block rate 3 ($/1,000 gal)	- gal/mo	gal/mo						
Block rate 4 ($/1,000 gal)	- gal/mo	gal/mo						
Block rate 5 ($/1,000 gal)	- gal/mo	gal/mo						
Block rate 6 ($/1,000 gal)	- gal/mo	gal/mo						
Block rate 7 ($/1,000 gal)	- gal/mo	gal/mo						
Block rate 8 ($/1,000 gal)	- gal/mo	gal/mo						
Block rate 9 ($/1,000 gal)	- gal/mo	gal/mo						
Final block rate ($/1,000 gal)	7,481 gal/mo	and beyond	$3.86	$4.05	$4.26	$4.47	$4.69	$4.93

Back to top

Monthly Consumption that was Charged Volumetric Rate
All Volume Above Consumption Allowance in FY2020, by Block
See example of how to determine volumes by blocks

5/8 by 3/4 Single Family

	Gallons/month in FY2020
Block 1 sales	6,691,574
Final block sales	1,440,062
Total:	*8,131,637*

Questions?

Thank you!

Hope Thomson

Project Director

hope.thomson@sog.unc.edu

http://efc.sog.unc.edu