



Smart Management for
Small Water Systems

Financial Management for Small Water Systems: How to Plan for the Next Five Years and Secure Funding

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www.efcnetwork.org



This program is made possible under a cooperative agreement with the U.S. EPA.



Generating Needed Revenue – Rates

© 2004 Ted Goff



“This part of the plan will be funded with all the unused money we must have laying around someplace.”



Session Objectives

- Understand how to pay for the costs of running your water system
- Look more closely at your rates



How much money do you need?



Will it provide sufficient
cost recovery?

Are we
following the
applicable
laws?

What exactly
does this
include?

Will revenues be
resilient to changing
water demands?

Are we allocating
the costs to the
right customers?

Do these rates send
the right signals to
our customers,
based on our
objectives?

Will our customers
understand these
rates?

Will our customers
be able to pay
these rates?





Learn essential background information about rates

Determine critical characteristics of your utility and community

Design the most appropriate rate structure

Cost-of-Service Study

Compute the rates using projected costs and revenues

Re-evaluate/adjust rate structure to fit primary objectives

The Process of Setting Rates

A blue-tinted photograph of industrial machinery, likely a water treatment plant, featuring large pipes and mechanical components.

Basic Principles

- Aim at full cost pricing
- Set equitable rates
- Share rate structure with customers
- Rate should be easy to understand
- Rates should be examined annually
- Consider fixed costs vs. variable costs
- Allow for reserve account(s)
- *Promote water conservation?*
- *Promote economic development?*



“Full Cost Pricing”

- Operations & maintenance expenditures
- Taxes and accounting costs
- Contingencies for emergencies
- Principal and interest on long-term debt
- Reserves for capital improvement
- Source water protection

A blue-tinted photograph of industrial machinery, possibly a large pipe or valve, serves as the background for the top portion of the slide.

Ways To Pay

- Pay as you go (current receipts)
- Save in advance and pay
- Pay later (someone loans you money)
- Grants (let someone else pay)

A blue-tinted photograph of industrial machinery, possibly a large pipe or valve, serves as the background for the top portion of the slide.

Grants Aren't Completely Free Money

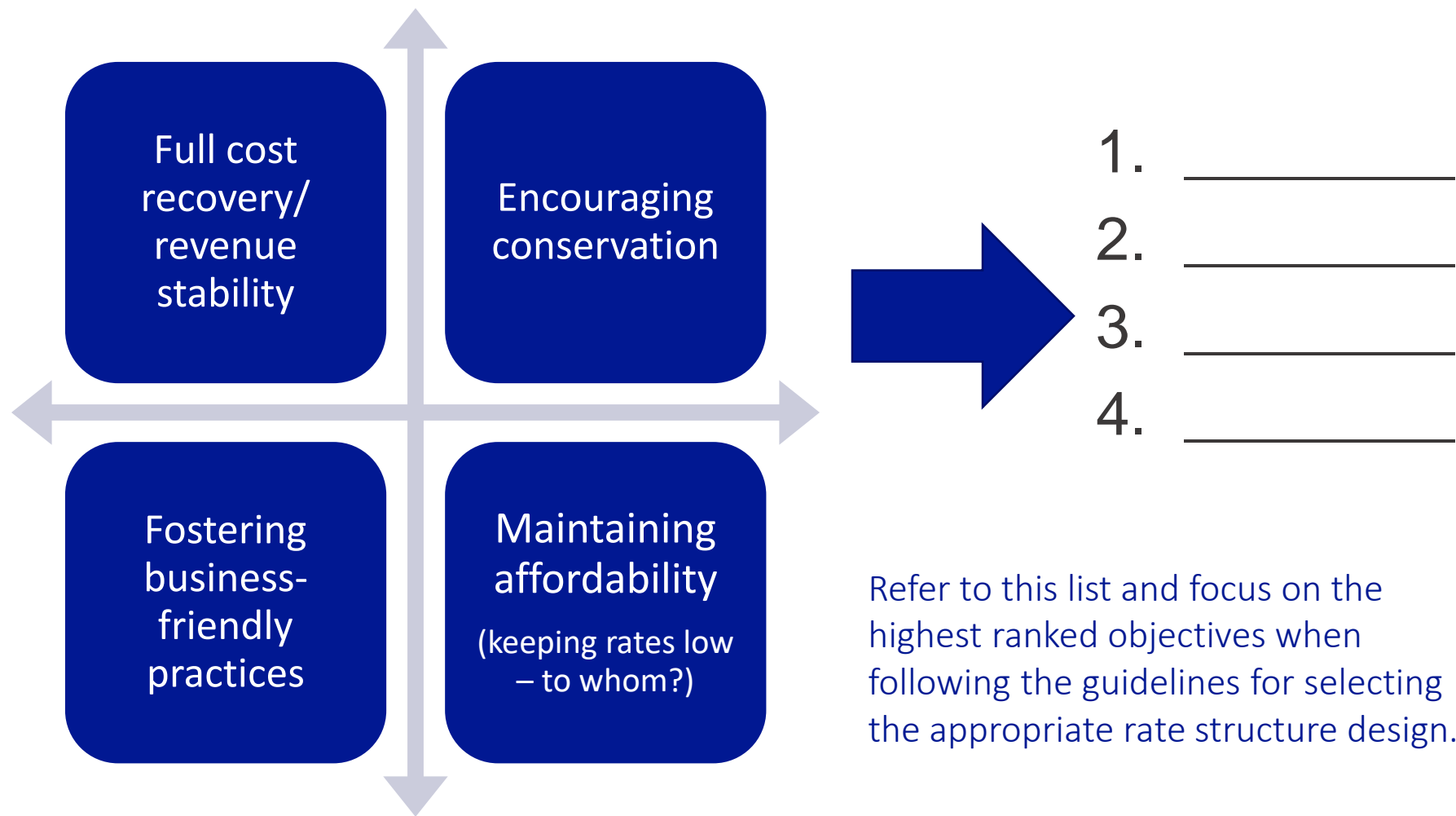
- Application for the grant can be expensive – staff time and money
- Applications can take months to process
- Often lots of strings attached
- Often require a percentage match
- Lots of competition
- Difficult to sustain



Rates & Monthly Charges

- What type of rates and monthly charges do you levy?
 - Charges based on metered usage?
 - Flat monthly charges?
 - Something else?
 - Nothing?

Rank Your Rate Setting Objectives





What are your rate setting objectives?



Elements of Rate Structure Designs

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

A blue-tinted photograph of industrial machinery, possibly a large pump or engine, with various pipes, valves, and mechanical components visible.

Customer Classes/Distinctions

- One rate structure for all
- Target: All are equal



Customer Classes/Distinctions

- Separate rate structure for residential, irrigation, commercial, industrial, governmental, or wholesale customers
- Target: Specific type of customer



Customer Classes/Distinctions

- One rate structure, but with different base charges based on meter size
- Target: Non-residential or multi-family housing



Customer Classes/Distinctions

- One rate structure for all, but with blocks that implicitly only target non-residential use
- Target: Non-residential



Customer Classes/Distinctions

- Different rates for customers outside municipal limits/service area boundaries
- Target: “Outside” customers

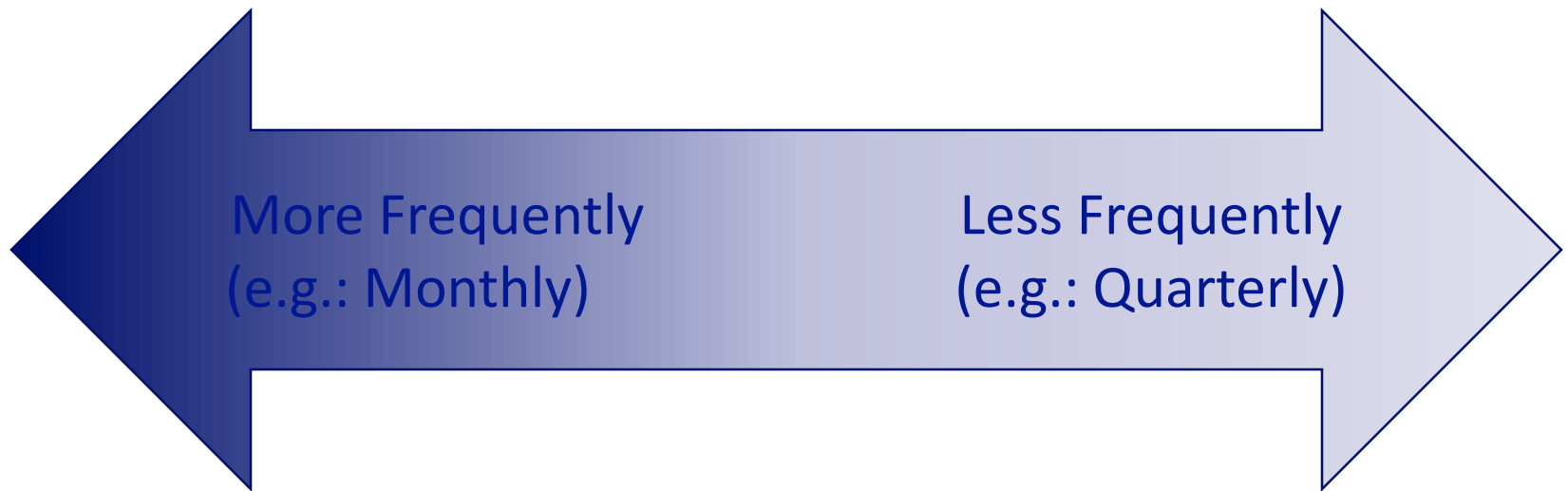


Customer Classes/Distinctions

- Negotiated rate structure with individual high-use customers (typically an industrial customer)
- Target: Only one customer



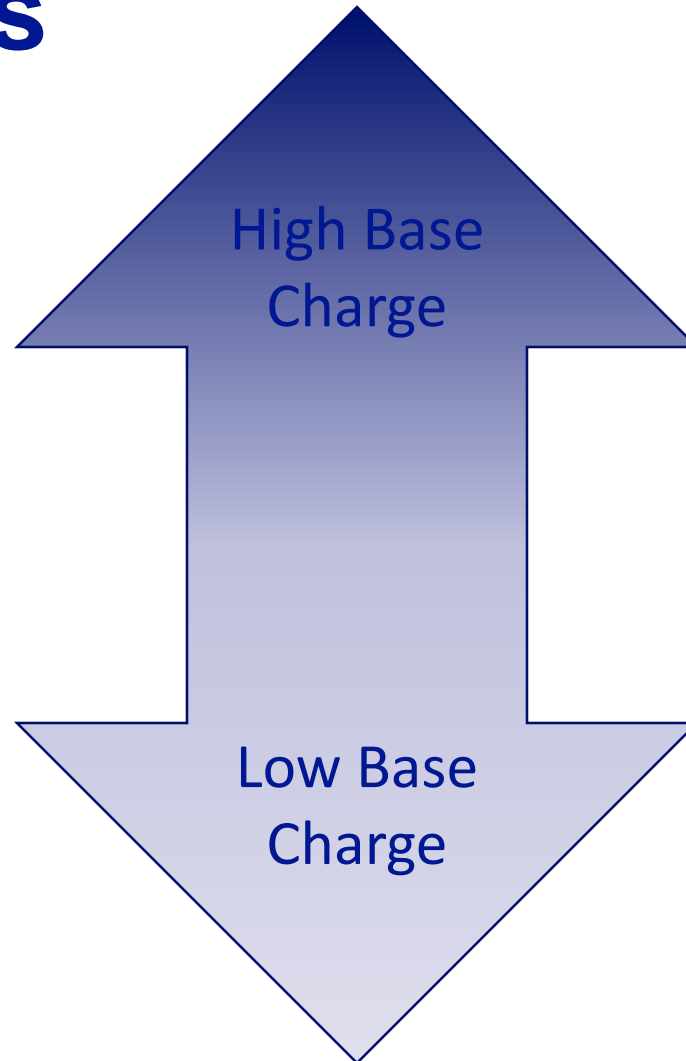
Billing Period



Suggestion: Use a monthly billing period if you can afford it

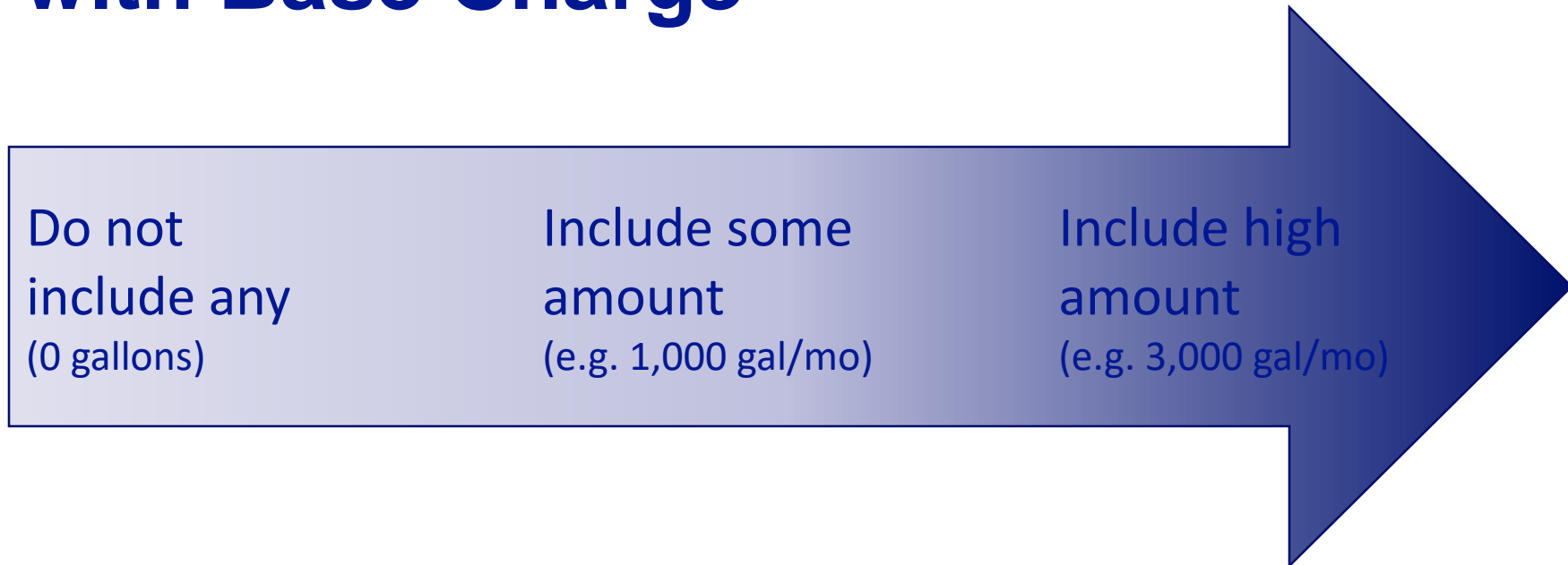
Base Charges

*Suggestion:
Smaller utilities
should lean
towards higher
base charges*





Consumption Allowance with Base Charge

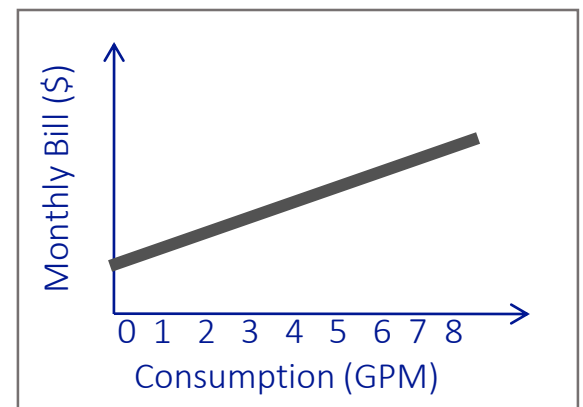
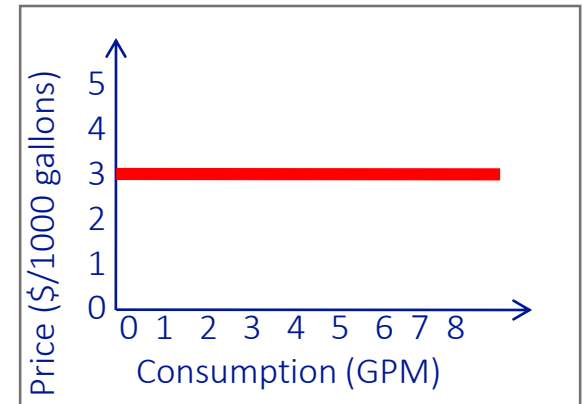


Suggestion: For systems with low base charges, do not include any consumption allowance. For systems with high base charges but wish to encourage conservation, keep consumption allowance low, if any.

Volumetric Rate Structure

Uniform (“Flat”) Rates

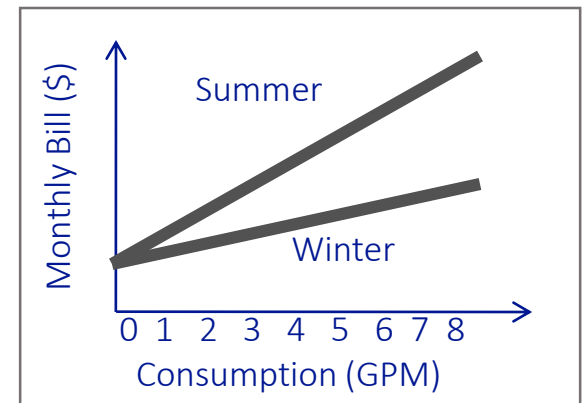
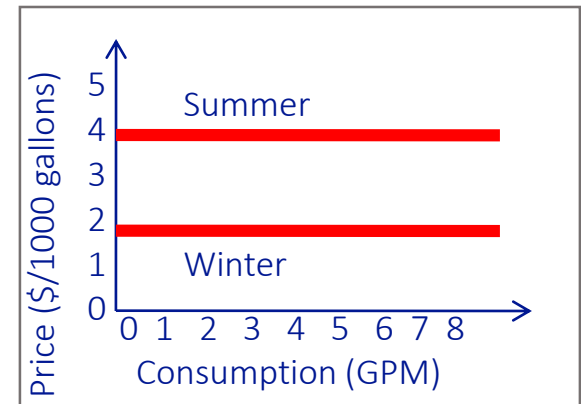
- Fair and simple



Volumetric Rate Structure

Seasonal (Uniform) Rates

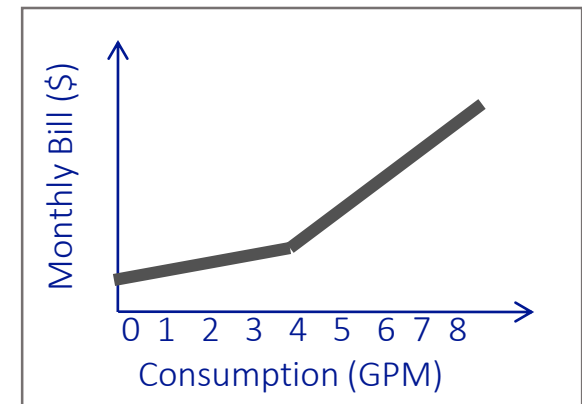
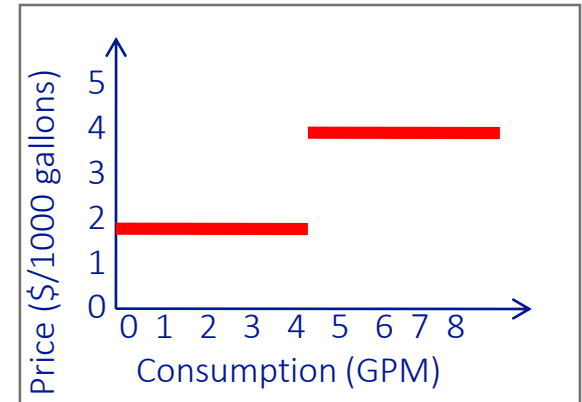
- Conservation-oriented, good for seasonal communities



Volumetric Rate Structure

Increasing Block Rates

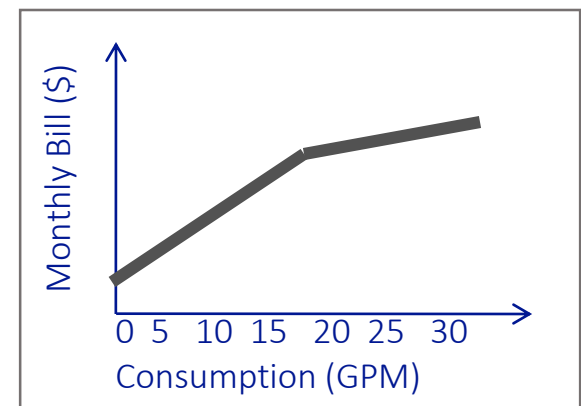
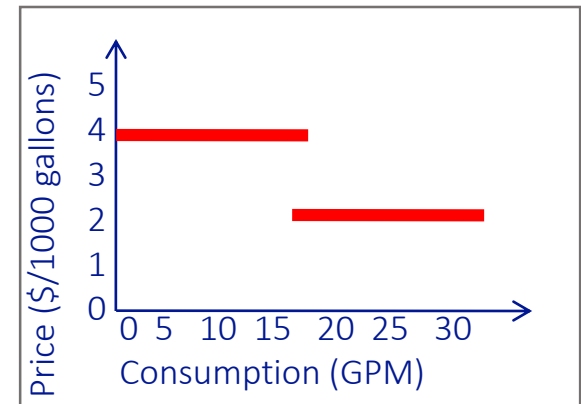
- Conservation-oriented
- Consider large families



Volumetric Rate Structure

Decreasing Block Rates

- Provide price break for large users (e.g.: commercial)
- Do not use for residential





(If Applicable) 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

A blue-tinted photograph of industrial machinery, possibly a water treatment plant, featuring large pipes and mechanical components.

(If Applicable) Block Designs

For block rate structures to be effective:

- Keep in mind your base charge and consumption allowance
- Meter reading must be punctual, and meters must be replaced frequently
- Think about large families



(Optional) Drought Rates

- Prepare for drought in advance: create an ordinance *in advance* to give the utility the ability to raise rates temporarily during a water shortage scenario (sometimes called “drought surcharges”).

How Rates and Usage Interact

Set rates based on projected water use



Raising rates lowers water use

Rule of thumb: water use declines ~2-6% as rates increase 10%

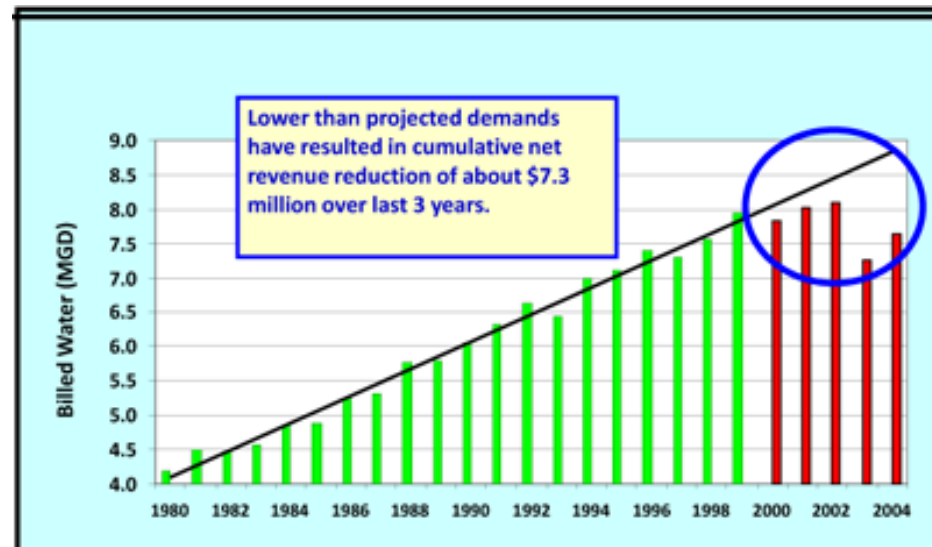
Background Information: How Rates and Usage Interact

Public Perception:



Source: Fayetteville Observer 2/6/2004

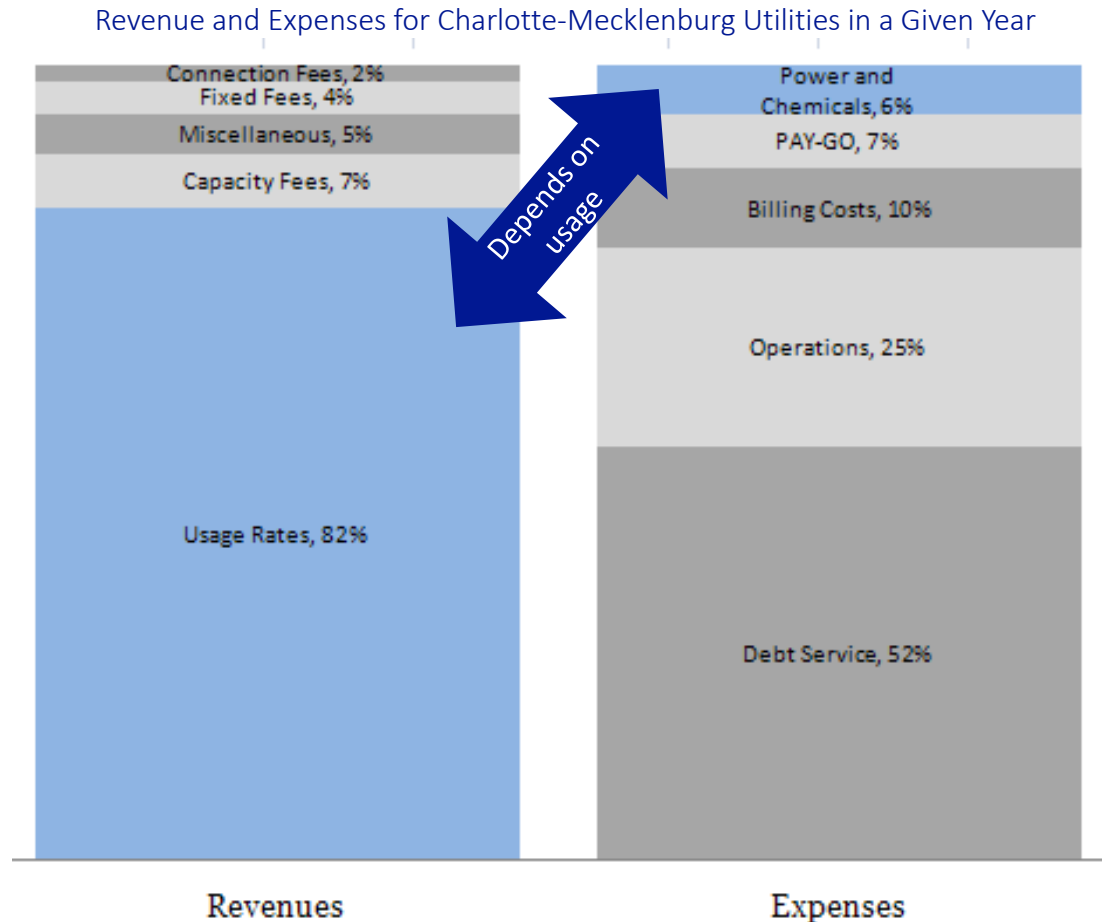
Utility Reality:



Source: Orange Water & Sewer Authority

Why Does this Happen?

Utilities' costs are mostly *fixed*, not dependent on the amount of water sold/used by the customers. But the majority of revenues come from the amount of water sold. If customers conserve, revenues drop significantly but not costs.



Source: CMU Director Doug Bean's presentation to the Charlotte City Council on December 1, 2008.



Frequency of Rate Changes

- Always review your rates annually (recommended)
- Review your financial health indicators annually, and then review your rates if any of the indicators reflect poor financing
- Perhaps less politically charged option: Raise rates each year automatically based on inflation



Frequency of Rate Changes

- *Important: Avoid maintaining low rates at the expense of your utility's financial health. It will either lead to a sudden, massive rate increase in the future or to failing systems and endangering public health.*




Look at your rate setting objectives. Look at your rate structure. Do they line up? What changes do you want to consider?



Water and Sewer Rates Analysis Model

Free, rate-setting tool using only MS Excel, developed by the Environmental Finance Center at UNC.



Water and Sewer Rates Analysis Model

Version 2.7 (updated March 24, 2014)

20-year fund balance estimates under proposed new rates vs. existing rates; compare side-by-side
Uniform or block rates Residential and non-residential rates Changes to customers and demands

INSTRUCTIONS

- 1) Click on tabs at bottom of screen to navigate to different pages.
- 2) On the **"Data Input 1"** tab enter current and new rate details in the dark green cells.
- 3) On the **"Data Input 2"** tab enter current consumption levels, utility finances, and other assumptions in the dark green cells.
- 4) On the **"Charts"** tab, see projections of the End of Year Fund Balance, and input a Fund Balance Policy in the dark green cell at the top of the page.
- 5) Compare new rates to existing rates in **"Compare Monthly Bills"** and their impacts on costs and revenues in **"Existing Rates"** or **"New Rates"**.

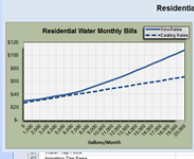
Rate Structure

Block	Start	Block End	Block Rate
Block Rate 1 (\$/1,000 gal)	0	2,000	\$1.00
Block Rate 2 (\$/1,000 gal)	2,001	5,000	\$2.00
Block Rate 3 (\$/1,000 gal)	5,001	7,000	\$3.00
Block Rate 4 (\$/1,000 gal)	7,001	12,000	\$4.00
Final Block Rate (\$/1,000 gal)	12,001		\$5.00

Sewer Base Rate

Block	Start	Block End	Block Rate
Block Rate 1 (\$/1,000 gal)	0	2,000	\$1.00
Block Rate 2 (\$/1,000 gal)	2,001	5,000	\$2.00
Block Rate 3 (\$/1,000 gal)	5,001	7,000	\$3.00
Block Rate 4 (\$/1,000 gal)	7,001	12,000	\$4.00
Final Block Rate (\$/1,000 gal)	12,001		\$5.00

Residential Bills



Residential Water Monthly Bill

Month	Consumption (gals)	Base Rate (\$)	Block Rate (\$)	Total (\$)
1	1,000	\$1.00	\$0.00	\$1.00
2	2,000	\$2.00	\$0.00	\$2.00
3	3,000	\$3.00	\$0.00	\$3.00
4	4,000	\$4.00	\$0.00	\$4.00
5	5,000	\$5.00	\$0.00	\$5.00
6	6,000	\$6.00	\$0.00	\$6.00
7	7,000	\$7.00	\$0.00	\$7.00
8	8,000	\$8.00	\$0.00	\$8.00
9	9,000	\$9.00	\$0.00	\$9.00
10	10,000	\$10.00	\$0.00	\$10.00
11	11,000	\$11.00	\$0.00	\$11.00
12	12,000	\$12.00	\$0.00	\$12.00

Utility Expenses Excluding Debt Service (\$ per year)

Category	Existing	During FY2013
Salaries and Wages, Including Part-Time and Contract	\$ 200,000	
Supplies	\$ 8,000	
Utilities	\$ 5,000	
Administrative Expenses	\$ 5,000	
Lab	\$ 5,000	
Routine Repairs & Maintenance	\$ 20,000	
Water Purchase	\$ 20,000	
Sewage Availability Service	\$ 150,000	
Other Treatment & Delivery Expenses	\$ 100,000	
Depreciation & Cash Capital Expenses Excluding Debt Service	\$ 15,000	
Miscellaneous Annual Expenses		

Assumptions

Category	Existing	During FY2013
Starting Fund Balance	\$ 1,750,000	
Fund Balance at the Beginning of FY2013	\$ 1,750,000	
During FY2013		
Existing		
12,235,000 (gall/month)		
5,500 (gall/month)		
1,500,000 (gall/month)		
3,000,000 (gall/month)		
1,000,000 (gall/month)		
1,200,000 (gall/month)		
2,400,000 (gall/month)		
1,430,000 (gall/month)		
2,500,000 (gall/month)		

Note: This tool models the impact on a utility's fund balance of a one-time increase in rates, rather than an ongoing series of rate increases. Update this tool **every year** and do not rely on analysis conducted more than one year ago.

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Funded by the Public Water Supply Section, Division of Water Resources at the NC Department of Environment and Natural Resources, and the U.S. Environmental Protection Agency
[Download the latest version of this tool at http://efc.sog.unc.edu](http://efc.sog.unc.edu). Find it in Resources / Tools.
Provide feedback or ask questions by emailing Shadi Eskaf at eskaf@sog.unc.edu

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Tool development was funded by the
Public Water Supply Section of
DWR/ NCDENR
and partly by the USEPA.



<http://efc.sog.unc.edu/reslib/item/water-sewer-rates-analysis-model>

Data Input 1

Rate_Analysis-version2 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View

Clipboard Font Alignment Number Styles Cells Editing

Q3 100

Water and Sewer Rates Analysis Model. Version 2.0

Inputs: Rates and Rate Structures

Input current rate and account information in the dark green cells to analyze projected cashflows from rate changes.

Rate Structure

	FY:	2012	2013
Residential Rates		Existing	New
Water Base Rate		\$10.00	\$12.00
Water:			
Block Rate 1 (\$/1,000 gal)	EFC:	\$1.00	\$1.25
Block Rate 2 (\$/1,000 gal)		\$2.00	\$2.25
Block Rate 3 (\$/1,000 gal)		\$3.00	\$3.25
Block Rate 4 (\$/1,000 gal)		\$4.00	\$4.25
Final Block Rate (\$/1,000 gal)	EFC:	\$5.00	\$5.25
Sewer Base Rate		\$10.00	\$12.00
Sewer:			
Block Rate 1 (\$/1,000 gal)		\$1.00	\$1.25
Block Rate 2 (\$/1,000 gal)		\$2.00	\$2.25
Block Rate 3 (\$/1,000 gal)		\$3.00	\$3.25
Block Rate 4 (\$/1,000 gal)		\$4.00	\$4.25
Final Block Rate (\$/1,000 gal)	EFC:	\$5.00	\$5.25

Rate Structure

	2012	2013
Commercial Rates	Existing	New
Water Base Rate	\$10.00	\$12.00
Water:		
Block Rate 1 (\$/1,000 gal)	\$1.00	\$1.25
Block Rate 2 (\$/1,000 gal)	\$2.00	\$2.25
Block Rate 3 (\$/1,000 gal)	\$3.00	\$3.25
Block Rate 4 (\$/1,000 gal)	\$4.00	\$4.25
Final Block Rate (\$/1,000 gal)	\$5.00	\$5.25
Sewer Base Rate	\$10.00	\$12.00
Sewer:		
Block Rate 1 (\$/1,000 gal)	\$1.00	\$1.25
Block Rate 2 (\$/1,000 gal)	\$2.00	\$2.25
Block Rate 3 (\$/1,000 gal)	\$3.00	\$3.25
Block Rate 4 (\$/1,000 gal)	\$4.00	\$4.25
Final Block Rate (\$/1,000 gal)	\$5.00	\$5.25

Rate Structure

	2012	2013
Irrigation Rates	Existing	New
Irrigation Base Rate	\$0.00	\$0.00
Irrigation:		
Block Rate 1 (\$/1,000 gal)	\$3.50	\$3.50
Block Rate 2 (\$/1,000 gal)		
Block Rate 3 (\$/1,000 gal)		
Block Rate 4 (\$/1,000 gal)		
Final Block Rate (\$/1,000 gal)		

Tap Fees

	2012	2013
	Existing	New
Average Sewer Tap Fee	\$2,000.00	\$2,400.00
Average Water Tap Fee	\$500.00	\$600.00
Average Irrigation Tap Fee	\$2,200.00	\$2,500.00

Data Input Color Explanation:

White:	Data to be entered, can be changed
Black:	Automatically calculated data; do not change!
Red:	Important Results

cubic feet to gallons converter

100 cubic feet = 748 gallons

\$/ccf to \$/1000 gallons converter

\$ 1.00 /hundred cubic feet = \$1.34 /1,000 gallons

Input block sizes (state and end) in gallons/month
Input rates in \$/1000 gallons
Use the converters above for converting from cubic feet units

Number of Accounts

	2012	Growth Rate:
Residential Water	3000	0.50%
Residential Sewer	2500	0.50%
Commercial Water	200	0.50%
Commercial Sewer	80	0.50%
Irrigation Water	3000	0.50%

Miscellaneous

	2012
	Existing
Uncollected Bills	8.0%
Non-revenue Water	15.0%

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Funded by the NC Department of Environment and Natural Resources and the U.S. Environmental Protection Agency

Instructions Data Input 1 Data Input 2 Charts Fund Balance - Existing Rates Fund Balance - New Rates

Ready Calculate Scroll Lock 100%



Water and Sewer Rates Analysis Model - Results

- Results are Excel Spreadsheet with:
 - The Fund Balance Under **Existing** Rates
 - The Fund Balance Under **Proposed** Rates
- ...Projected for the next 20 years



LUNCH



PRESENTATIONS FROM INDIVIDUAL FUNDERS



BREAK