



Pricing Water for Conservation

Glenn Barnes

Environmental Finance Center

The University of North Carolina at Chapel Hill

919-962-2789

glennbarnes@sog.unc.edu



Webinar Objectives

- Understanding conservation as a water system objective
- Explore ways that water can be priced to encourage conservation
- See how different rate structures impact different types of customers

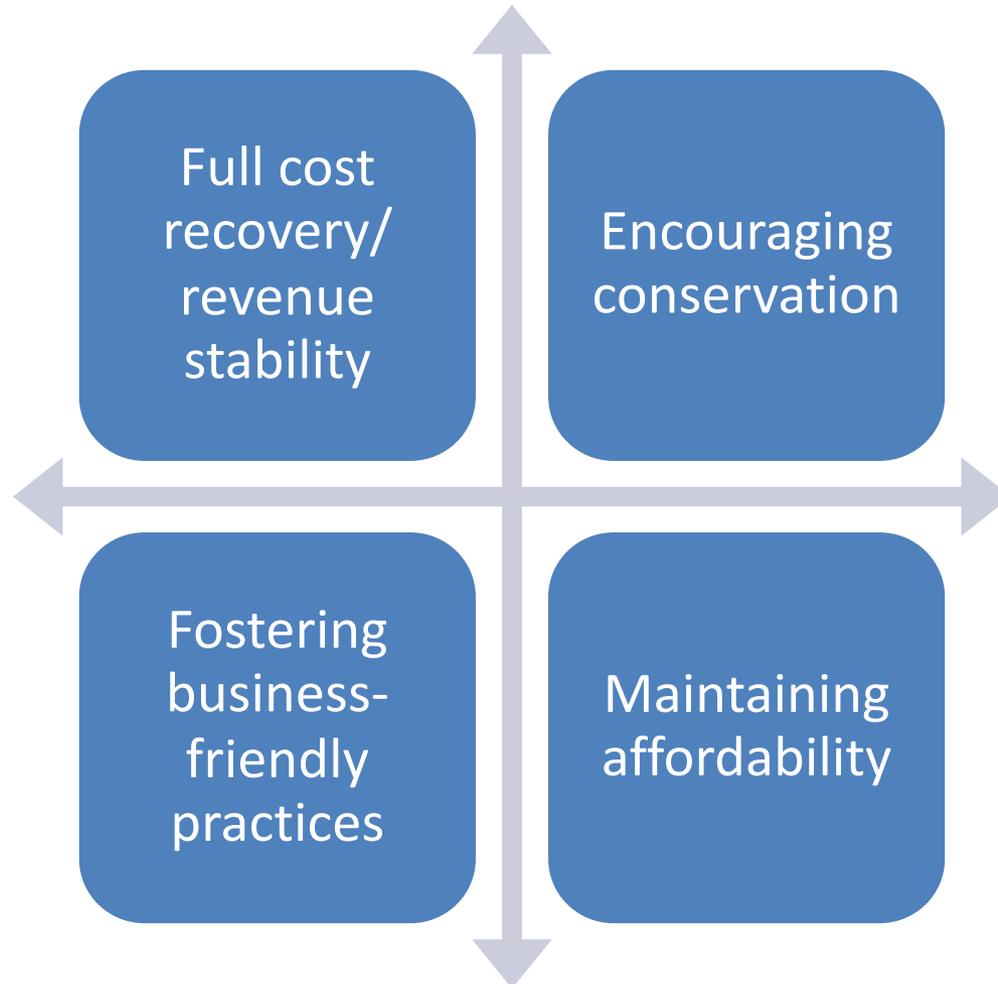
<http://efcnetwork.org/events/webinar-encouraging-customers-to-conserve-pricing-and-non-pricing-approaches/>



The image shows a YouTube video player interface. The video title is "Encouraging Customers to Conserve Pricing and Non-Pricing Approaches". The video is from the "Energy Efficiency Fundamentals" channel. The video description includes the date "Thursday, May 14, 2014" and the duration "1:00:00". The video features several logos of participating organizations, including UNC, NAE, and others. The video player shows a thumbnail image of the webinar content.



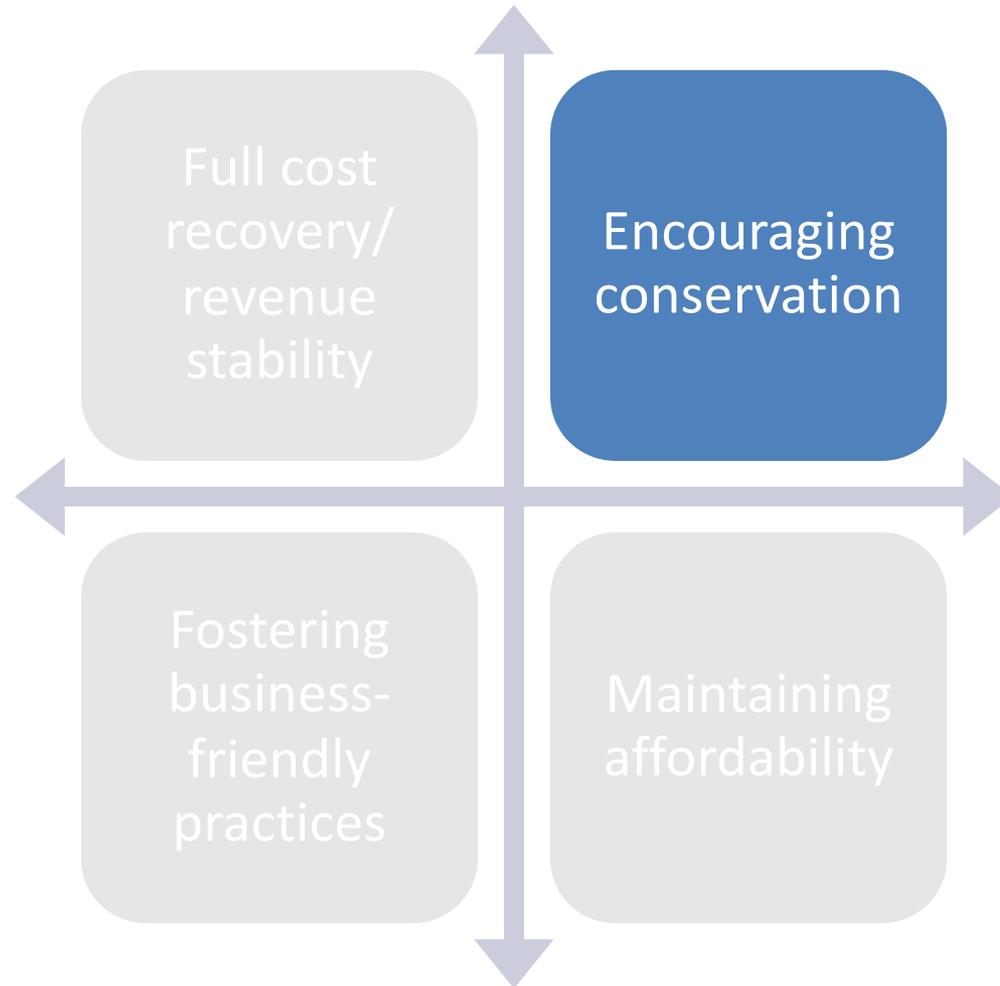
Water System Objectives





Polling Questions

Encouraging Conservation

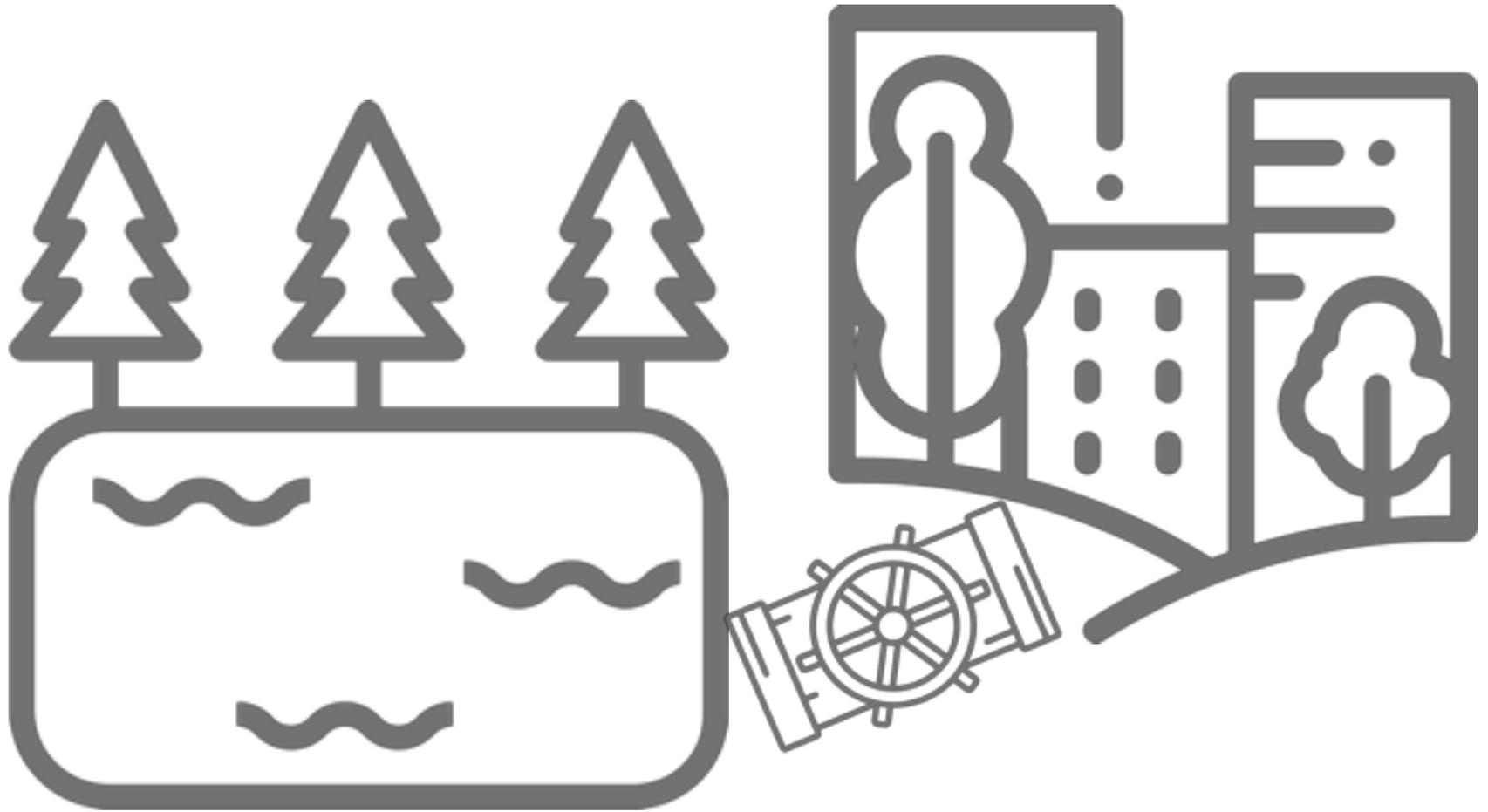


Environmental benefits

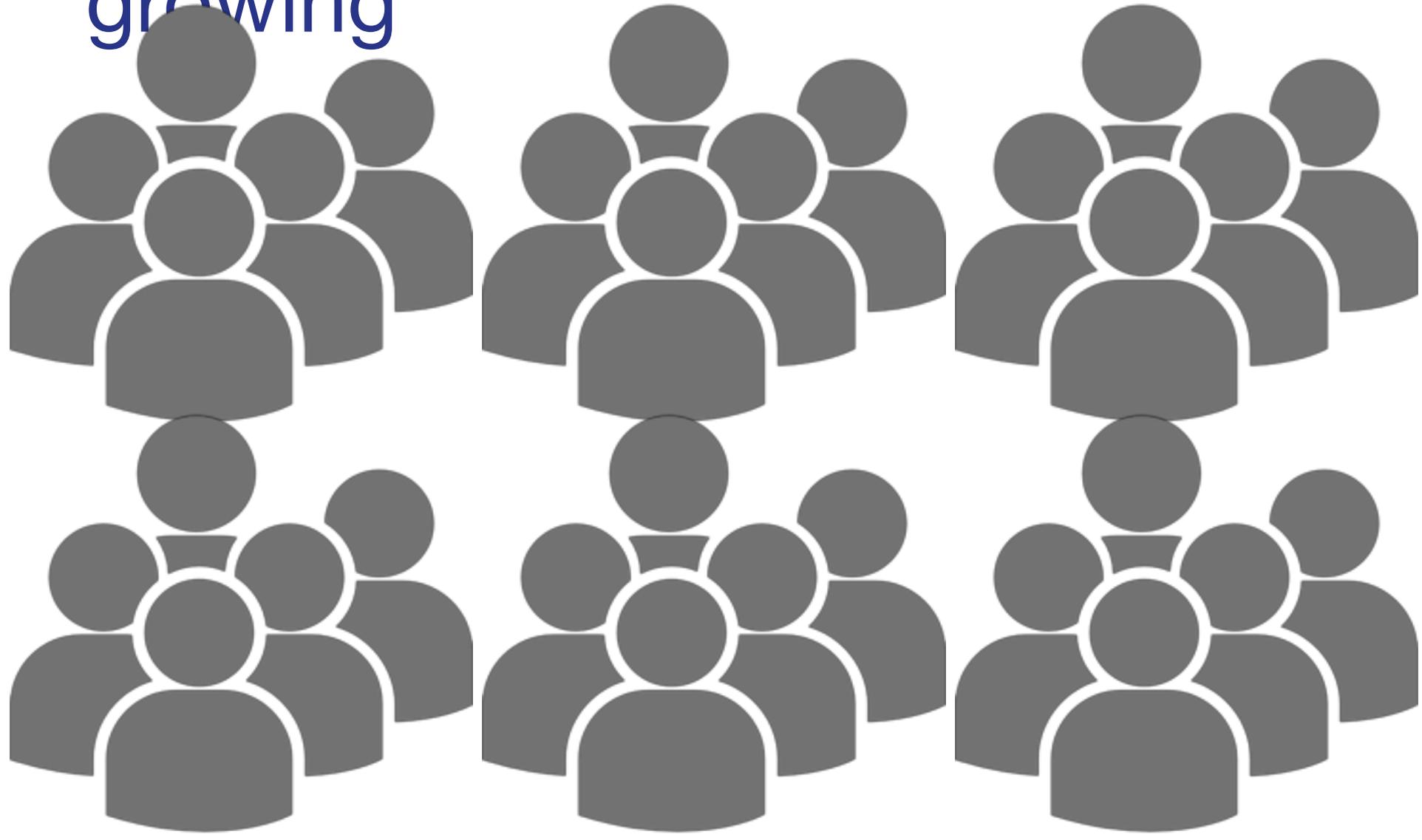




Lack of adequate supply for the population served



Your service population is growing



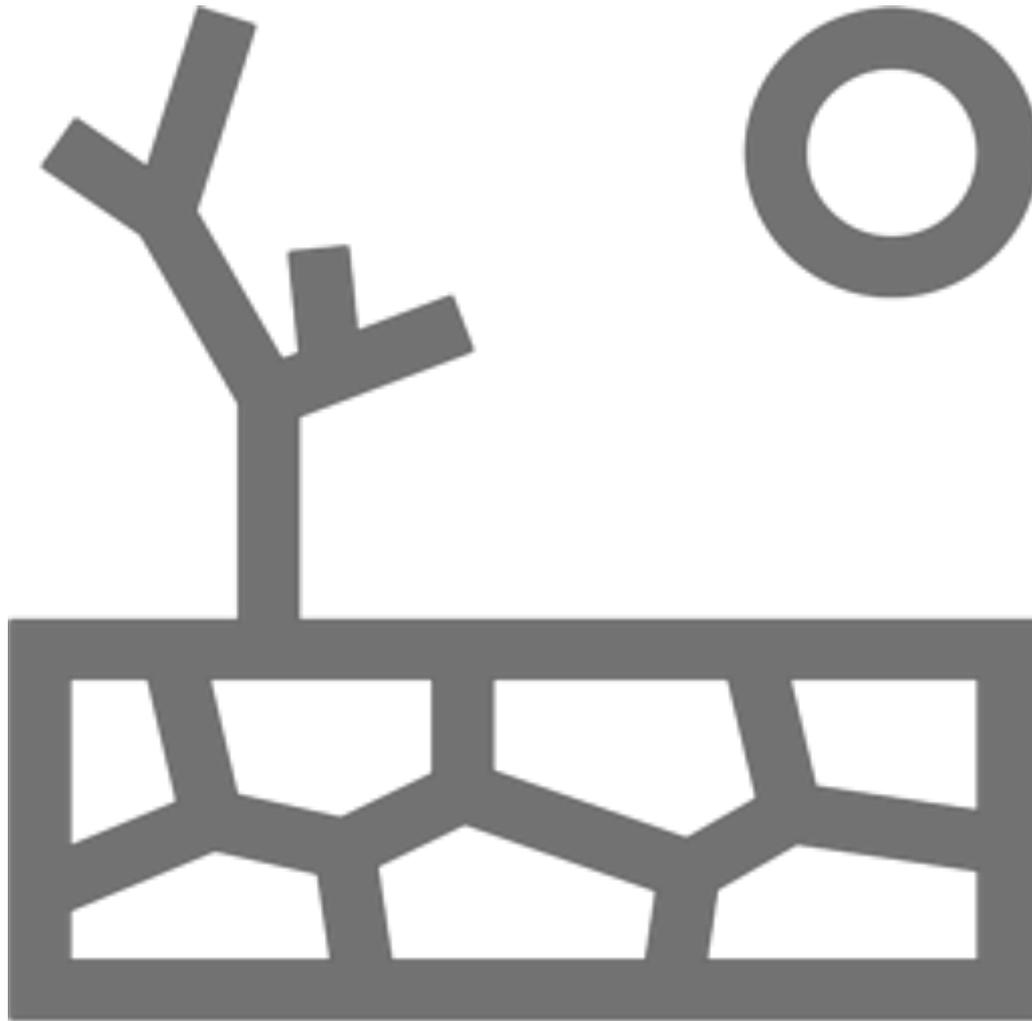


Nearing your storage or treatment capacity, or the limits of your withdrawal permit or water rights





Drought



Emergency



Montgomery County Environmental Services - Ohio



13 February at 19:36 · 🌐

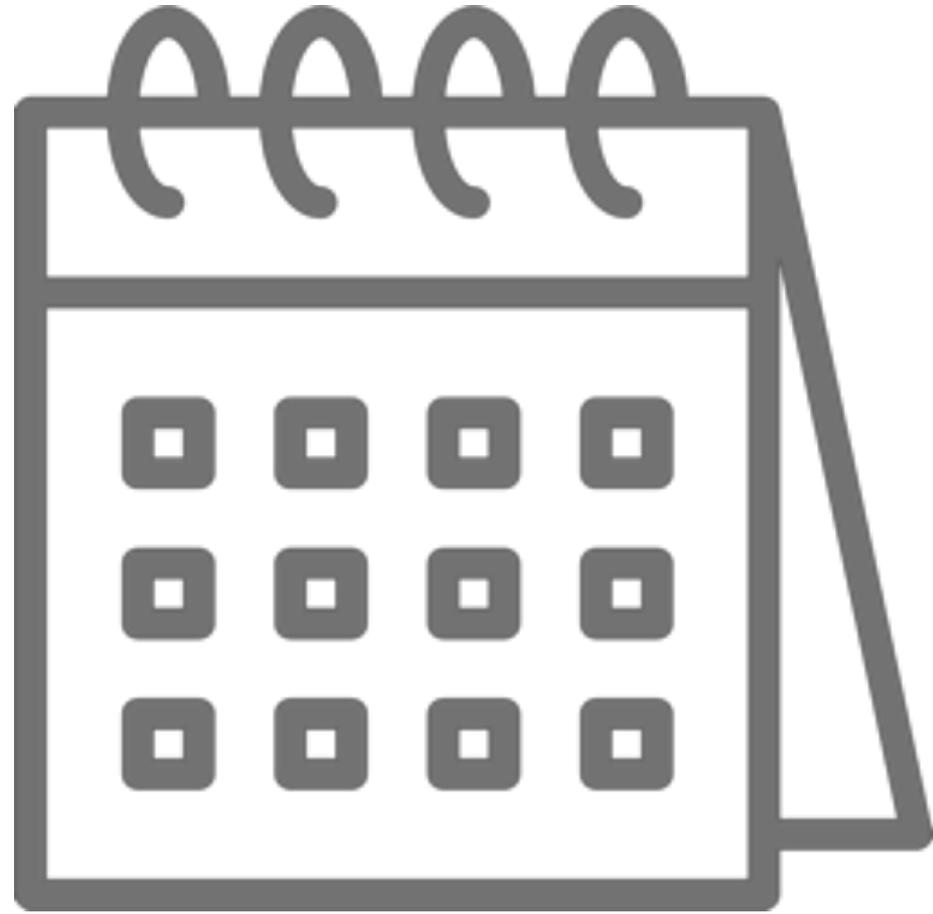
Due to the widespread water service interruption, all Montgomery County and city of Dayton residents are urged to conserve water or avoid using water while the system is under evaluation.

👍 🙄 😬 20

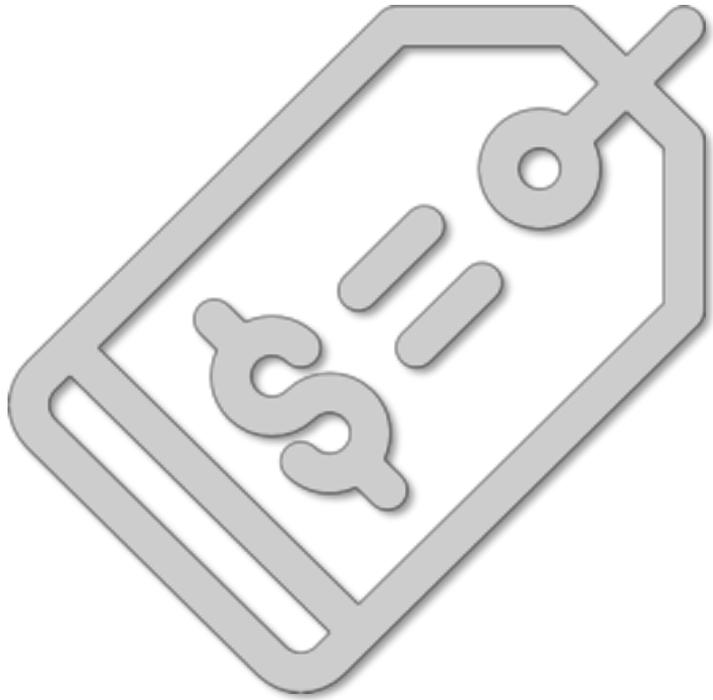
13 Comments 65 shares



Short Term vs. Long Term



Two Approaches to Conservation



Pricing signals
through your rates



Non-price strategies



Non-Pricing Strategies



<https://efcnetwork.org/events/webinar-encouraging-conservation-an-in-depth-look-at-non-pricing-approaches/>

WEBINAR | Encouraging Conservation – An In-Depth Look at Non-Pricing Approaches

Date/Time

Serial - 08/23/2018

2:00 pm - 3:00 pm

[Click to add to your calendar!](#)

Register

Fill out form below to register for this event.

Categories

- Conservation
- Webinars

[View the video recording](#)

[Download the Slides from this Webinar Here](#)

2:00PM-3:00PM EDT

0:00pm-2:00pm CDT, 12:00pm-1:00pm PDT, 1:00am-12:00pm PCT



The Problem with Conservation

- We are in the business of selling water
- If we want customers to use less water, what impact does that have on our revenues?



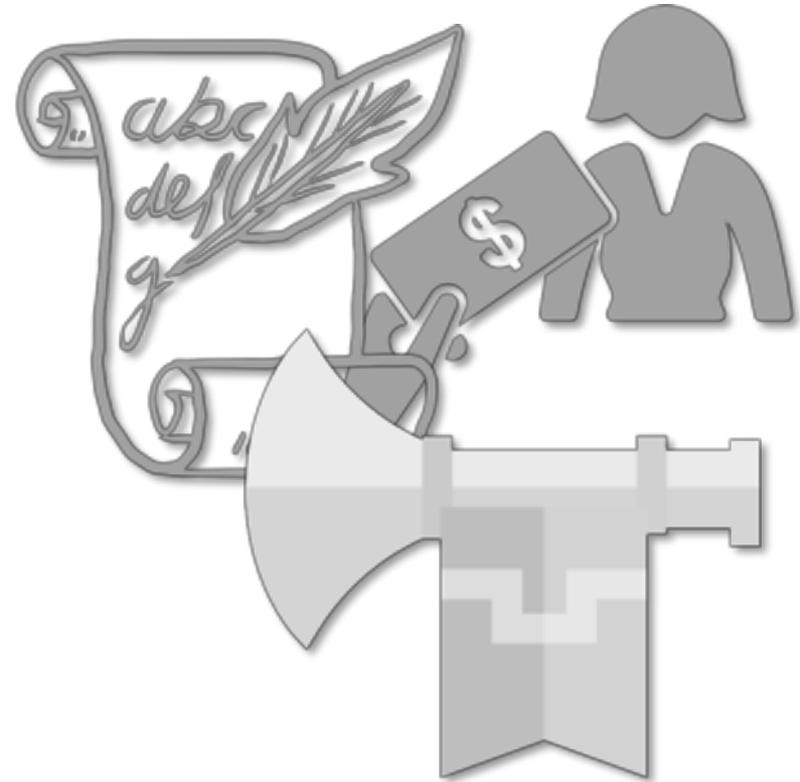
What you deserve water.
We have a deficit. Do I
have to raise your rates?



Two Approaches to Conservation

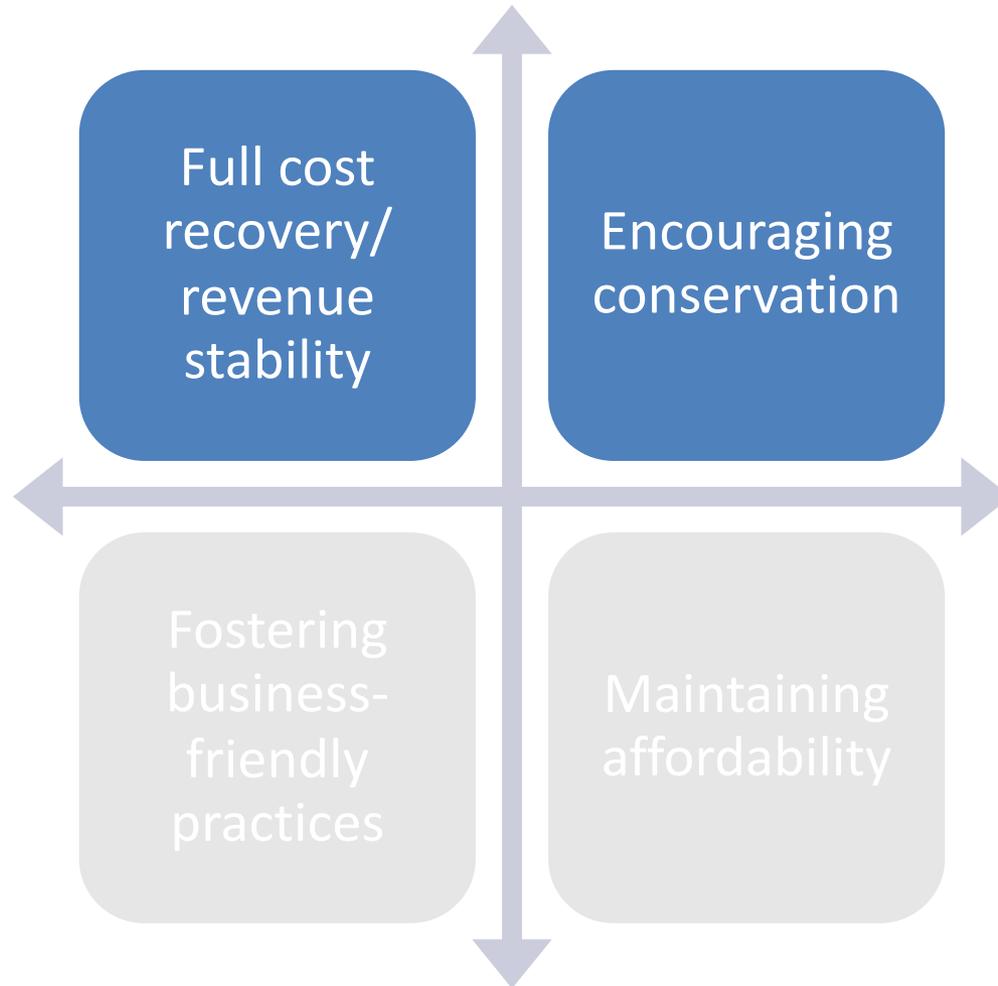


Pricing signals
through your rates



Non-price strategies

Balancing Objectives





Pricing Strategies

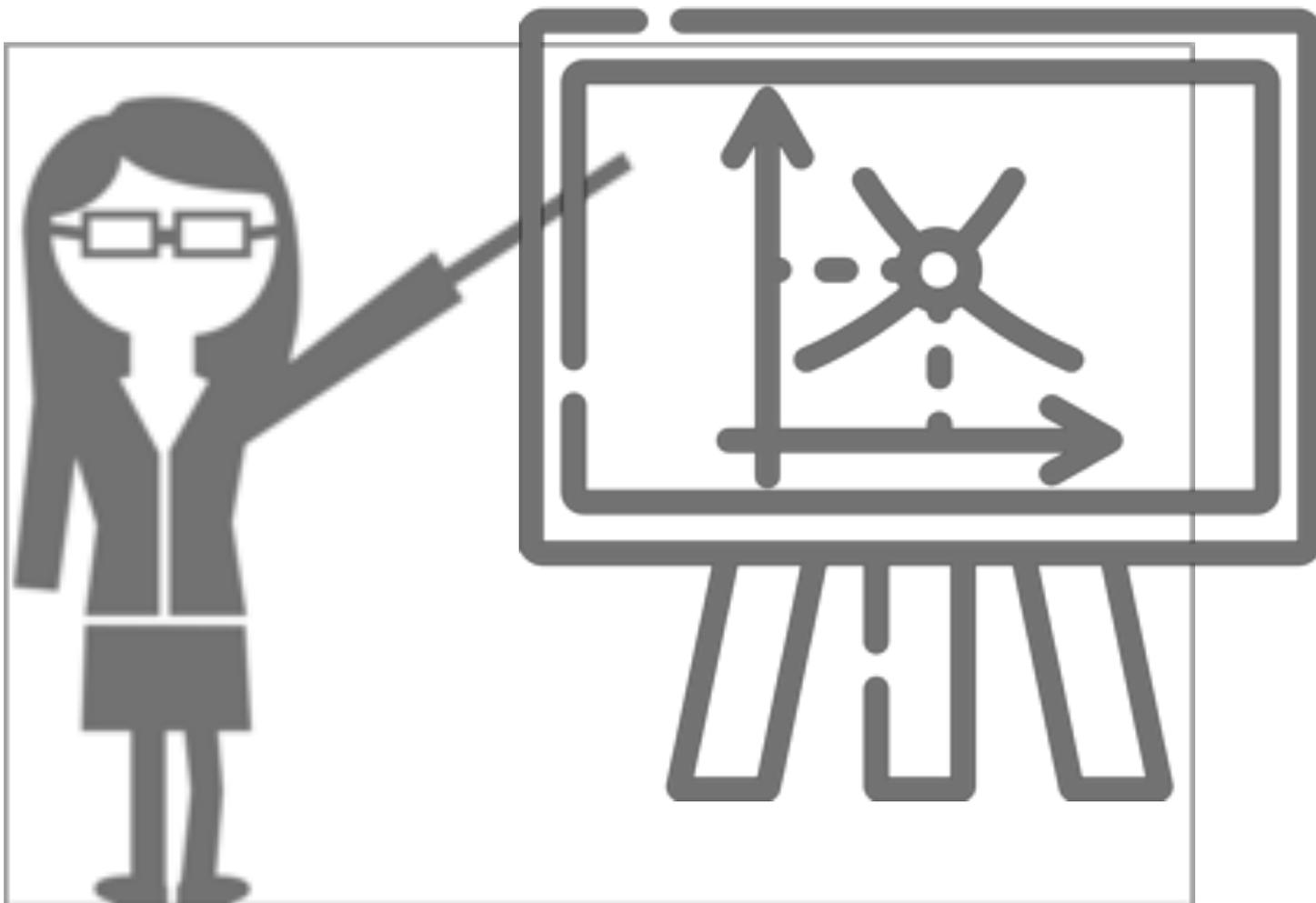
- There is no single rate structure that can be called a conservation rate structure
- Many different rate designs can be used to encourage conservation. The devil is in the details



Pricing Strategies

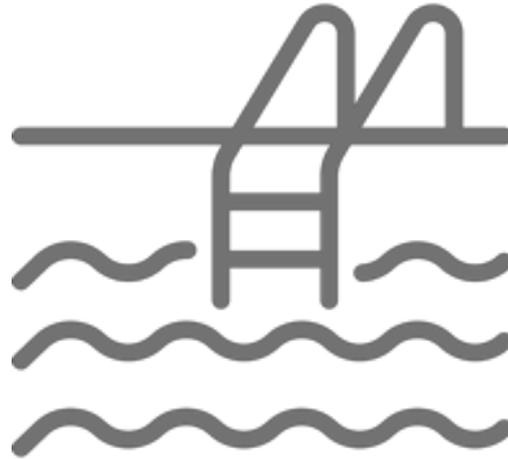
- The rate level may matter more than the rate structure
- Consider higher rates at average usage levels in addition to high levels, though be aware of affordability issues

ECON 101





Discretionary Water Use



<https://efc.sog.unc.edu/project/california-multi-agency-analysis-relationship-between-water-sales-and-pricing-during-drought>



How Important was Water Pricing in Achieving Conservation Goals During the California Drought?



Mar 2018

 UNC UNIVERSITY OF NORTH CAROLINA
Environmental Finance Center



Some Ideas of Rate Structures

- High uniform rates
- Increasing block rates
- Budget based rates
- Irrigation rates
- Seasonal rates
- Surcharges when supply is low/drought



So.....

What does this mean in the real world? What would conservation pricing actually look like?





Irwindale, USA

Small town with a water and wastewater system



Population: 1,100



Service Connections: 450



MHI: \$24,432

Annual Budgeted Revenues

Account	Type	Amount
30-371-01	Water Charges	\$214,423
30-371-02	Sewer Charges	\$262,072
30-373-02	Service Charges	\$12,500
30-378-00	I&I Study Grant - Commerce	\$12,000
30-336-00	Fund Balance Appropriated	\$9,188
30-374-00	Online W/S Payment Fee	\$1,600
30-373-00	Tap Connections	\$1,500
30-373-04	Impact Fees	\$1,000
30-385-00	Sale Of Assets	\$0
30-386-00	Transfer From Other Fund	\$0
Total		\$514,283



Irwindale's Customers



4,000 gallons/month
(all indoor)



15,000 gallons/month
(4K indoor; 11K outdoor)



15,000 gallons/month
(all indoor)



34,000 gallons/month
(all indoor)



Exercise

Let's figure out some rates for Irvindale that promote conservation and see how those rates impact different types of customers



High Volumetric Uniform Rates

- What information do we need to make this calculation?
- Total revenue needed from rates
- Total gallons sold

High Volumetric Uniform Rates

\$214,423

Total Needed Revenue

x 1,000 =

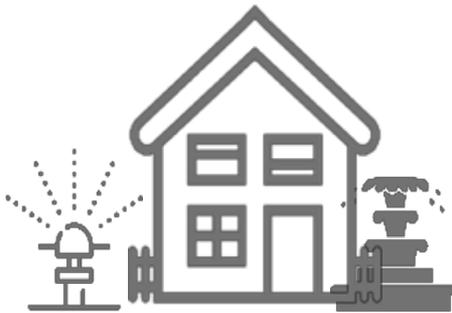
\$6.52

32,877,590

Total Gallons Sold

Price per 1,000 Gallons

All Volumetric Uniform Rates



\$26.09

\$97.83

\$97.83

\$221.74



Increasing Block Rates

- What information do we need to make this calculation?
- Total revenue needed from rates
- Total gallons sold, broken out by customer per billing period for ideally multiple years



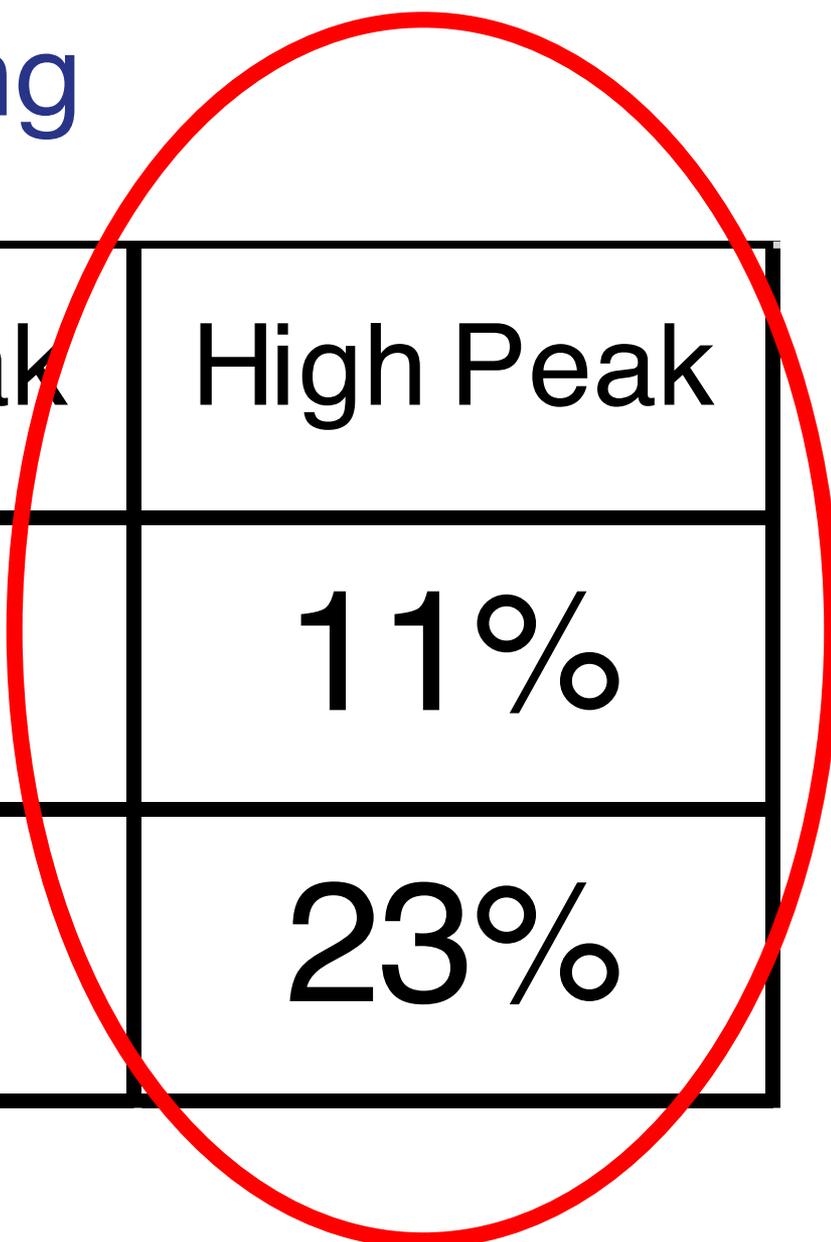
Usage and Peaking

- Determine the average of the lowest non-zero period of usage for all customers, and figure out what percentage of billing periods are above or below this number
- Determine which percentage of customers have a period of usage twice their lowest non-zero period of usage



Usage and Peaking

	Low Peak	High Peak
Low User	27%	11%
High User	39%	23%





Increasing Block Rates

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

Increasing Block Calculations

Water & Wastewater Rates Analysis Model
Version 2.8.2 (last updated August 4, 2015)

UNC
UNIVERSITY OF NORTH CAROLINA
ENVIRONMENTAL POLICY CENTER

Supported by the Environmental Policy Center at the University of North Carolina Chapel Hill
funded by the U.S. Environmental Protection Agency under Public Water Supply Section of the North Carolina Department of Environment and Natural Resources

DESCRIPTION
A do-it-yourself, simplified financial model to assist utility managers and private system owners in setting water and wastewater rates.

FEATURES
Comparisons of annual fund balance projections for up to 20 years under proposed new rates vs. staying with existing rates
Adjust rates for the next 10 years
Up to 12 rate structures
Uniform or block rates (up to 10 blocks)
Model changes to accounts and water use
Customizable list of operating and capital expenses
Building up revenues through rates
Compare monthly bills under new rates vs. existing rates
Assess revenue sufficiency and fund balance
Error notifications

INSTRUCTIONS

1) Navigate using worksheet tabs at bottom of screen or following arrows and clicking on buttons

2) In the green "Data Input" worksheets, input data in the dark green cells

Watch out for red "Error" messages describing where data entry errors

Get Started
Download a copy of the model populated with data from an example utility



Increasing Block Calculations

Upper tiers will be priced above this

\$6.52

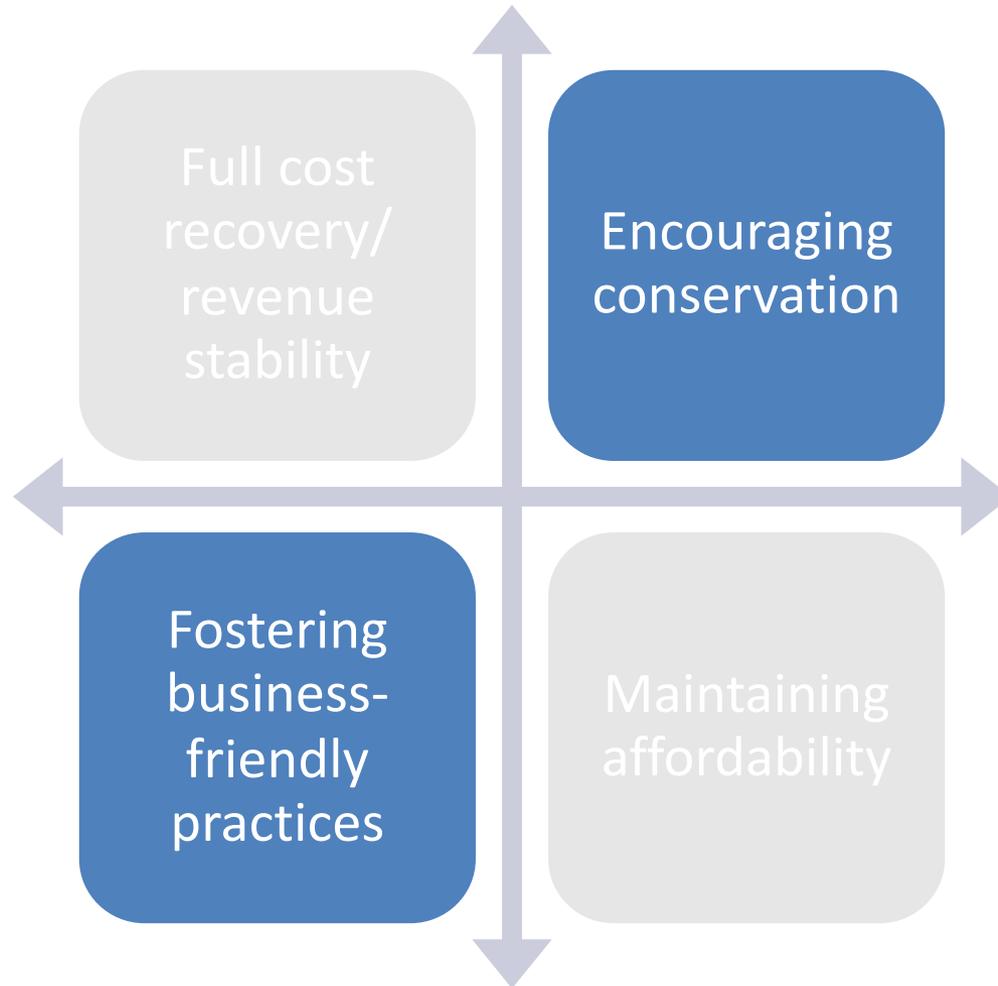
Lower tiers will be priced below this

Increasing Block Considerations



34,000 gallons/month
(all indoor)

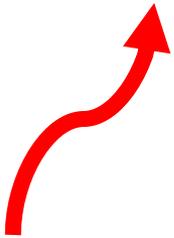
Competing Objectives



Increasing Block Considerations



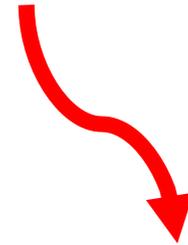
15,000 gallons/month
(all indoor)



High use, low peak

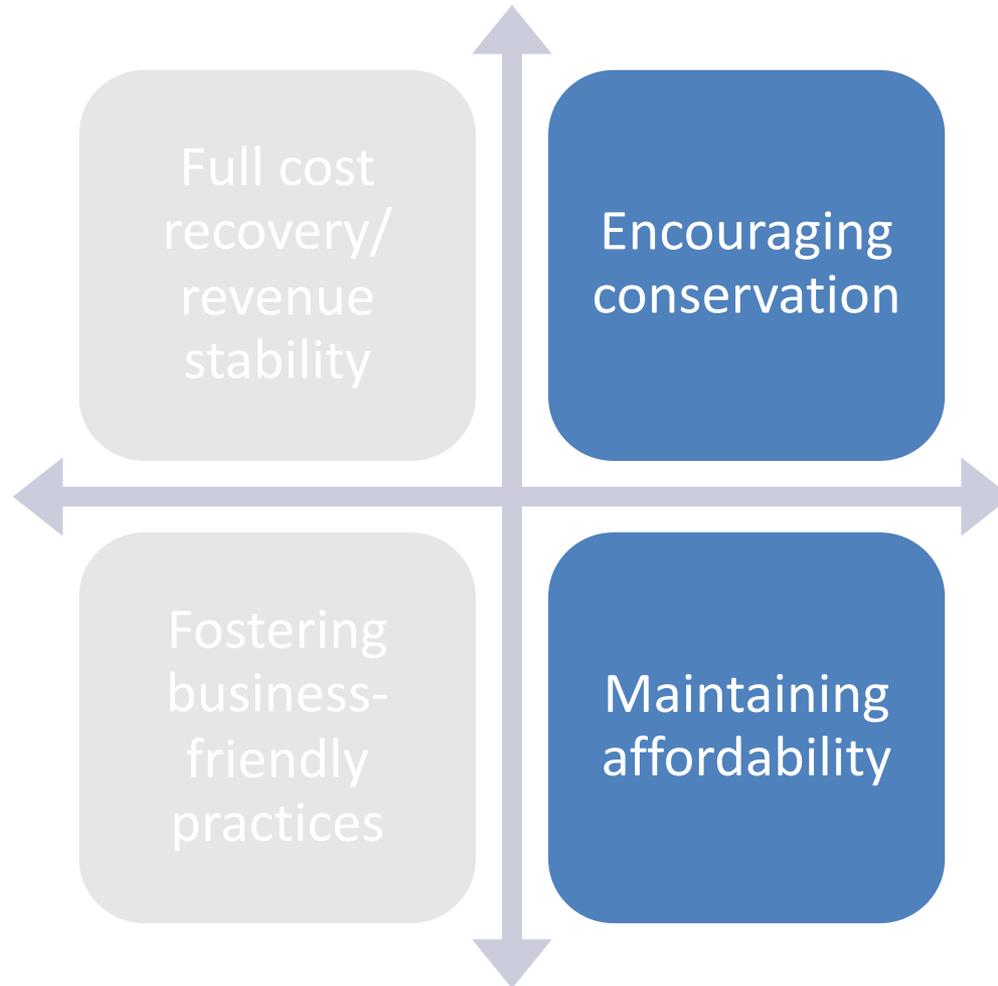
Vs.

High use, high peak



15,000 gallons/month
(4K indoor; 11K outdoor)

Competing Objectives





Possible Solution: Budget Based Rates

- Works like increasing block. The prices are the same for each customer, but the size of the block varies based on characteristics unique to each account
- For this, you definitely need a spreadsheet tool



Possible Solution: Irrigation Rates

- Meter and charge a higher rate for outdoor water use than you do for indoor water use



Irrigation Rates

- What information do we need to make this calculation?
- Total revenue needed from rates
- Total gallons sold *indoors*
- Total gallons sold *outdoors*



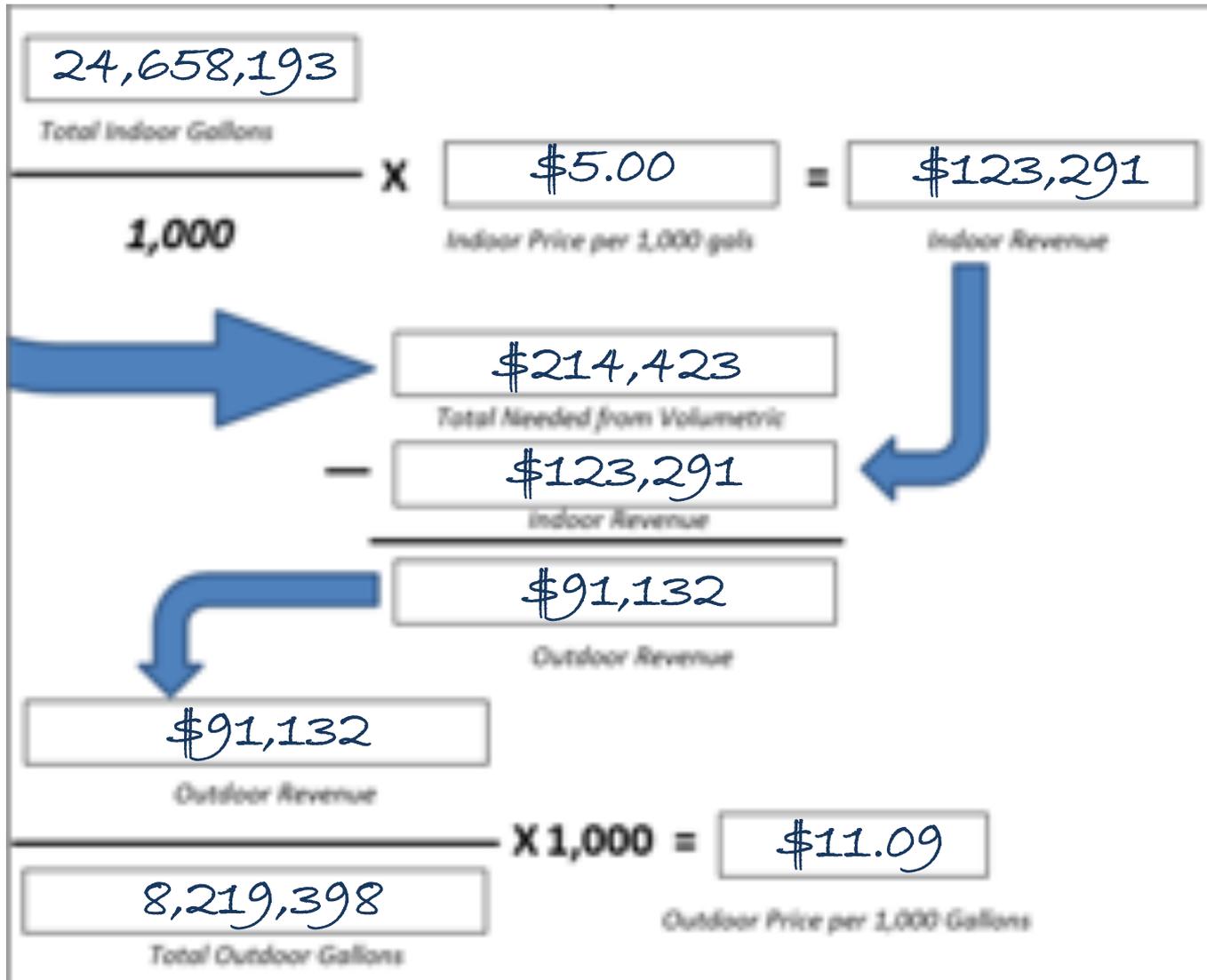
Irrigation Rate Calculations

Outdoor rates will be priced above this

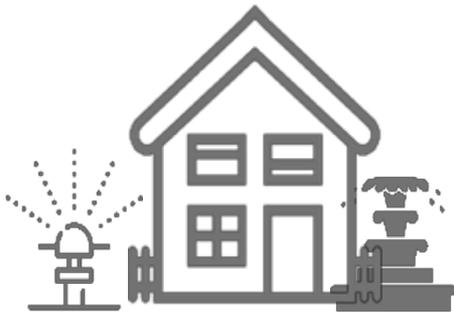
\$6.52

Indoor rates will be priced below this

Irrigation Rates



Irrigation Rates



\$20.00

\$141.99

\$75.00

\$170.00



Seasonal Rates

- Charge a higher price to all customers during the months when overall water use is highest
- Again, watch out for the impacts on businesses and large families



Seasonal Rates

- What information do we need to make this calculation?
- Total revenue needed from rates
- Total gallons sold *during low months*
- Total gallons sold *during high months*



Low Supply and Drought Surcharges

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



Remember!

- If your pricing strategy is successful, and your customers do conserve, your assumptions about revenue may be wrong
- Best to anticipate lower usage when setting the rates, or to build in some contingency into the financial target



<http://efc.web.unc.edu/2015/11/23/key-financial-benchmarks-for-water-systems-conservation-signal/>



Key Financial Benchmarks for Water Systems: Conservation Signal

November 23, 2015 | 10:00 AM EST | 10 minutes

What's New

As we continue to strengthen the nation's water system, being critical to our economy, public health, safety, and the environment, we must also ensure the system is sustainable. How do we do that?

Today, we release our report on "Key Financial Benchmarks for Water Systems."

These benchmarks are designed to provide the industry with a clear, consistent, and comparable "signal" regarding the financial health of water systems.

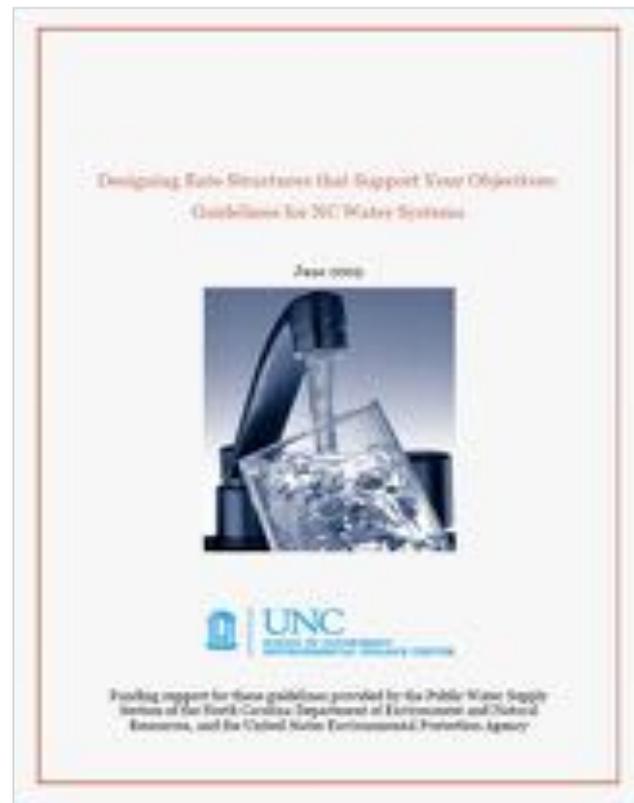


Designing Rate Structures That Support Your Objectives

Free guide
written for
system
managers

Available at:

<http://efc.sog.unc.edu/>



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

The screenshot displays the homepage for the "Water & Wastewater Rates Analysis Model" (Version 2.8.2, last updated August 4, 2015). The page features the UNC Environmental Finance Center logo and logos for the U.S. Environmental Protection Agency and the N.C. Department of Environment and Natural Resources. A "Get Started" button is located in the top right corner, with a link to download a copy of the model pre-populated with data from an example utility.

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