# Price & Non-Price Approaches to Promoting Conservation

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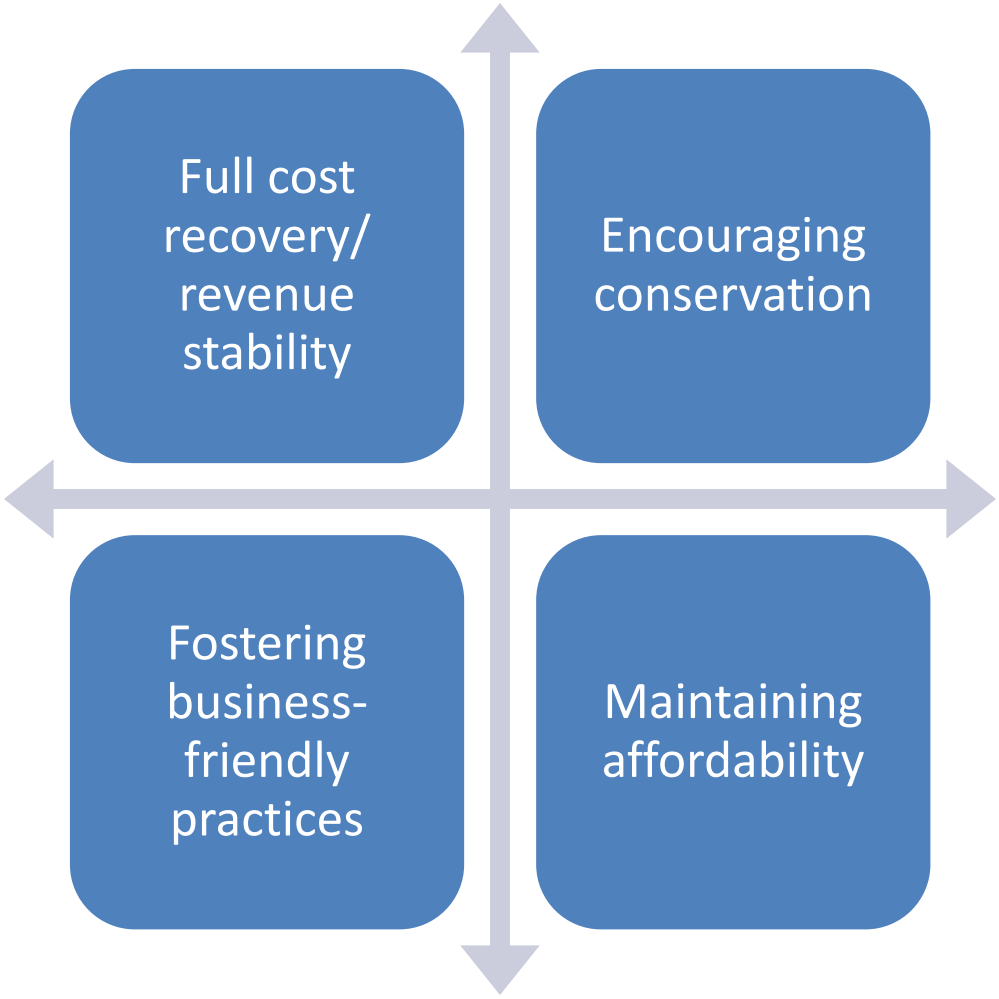
# Water System Objectives



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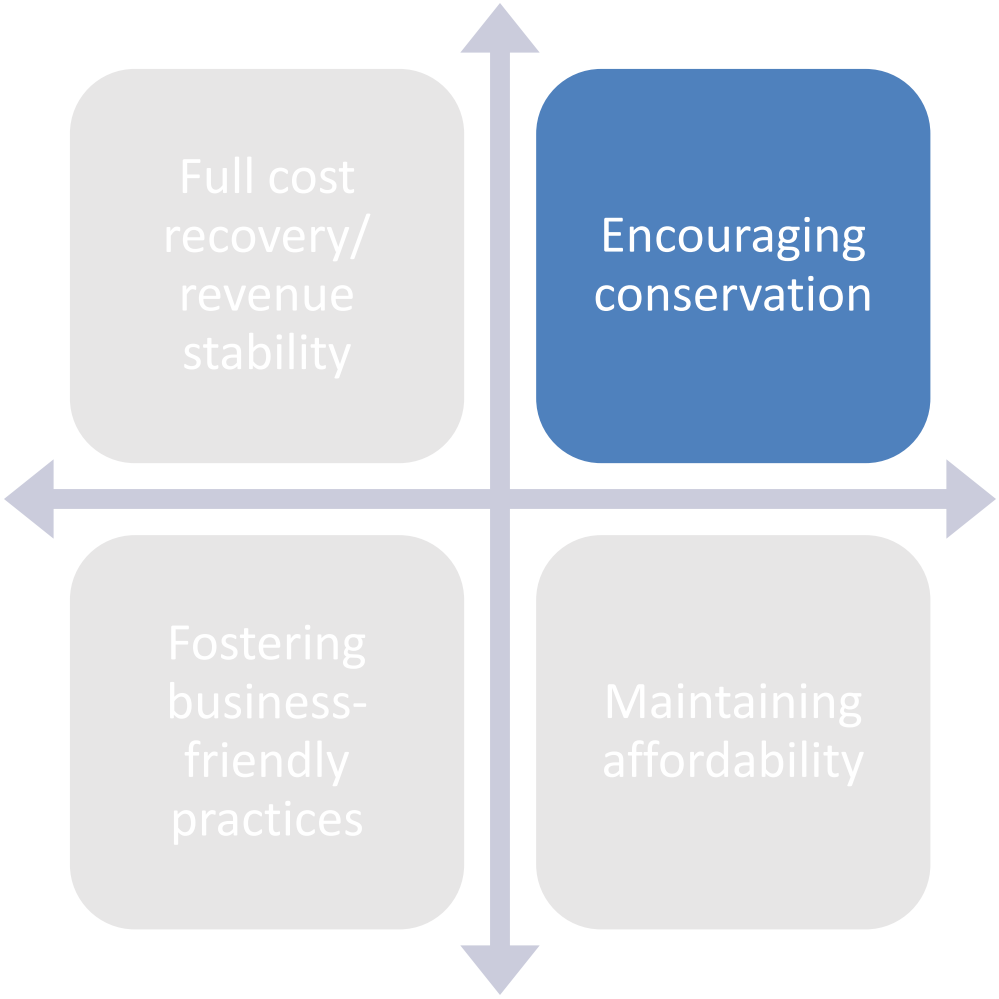
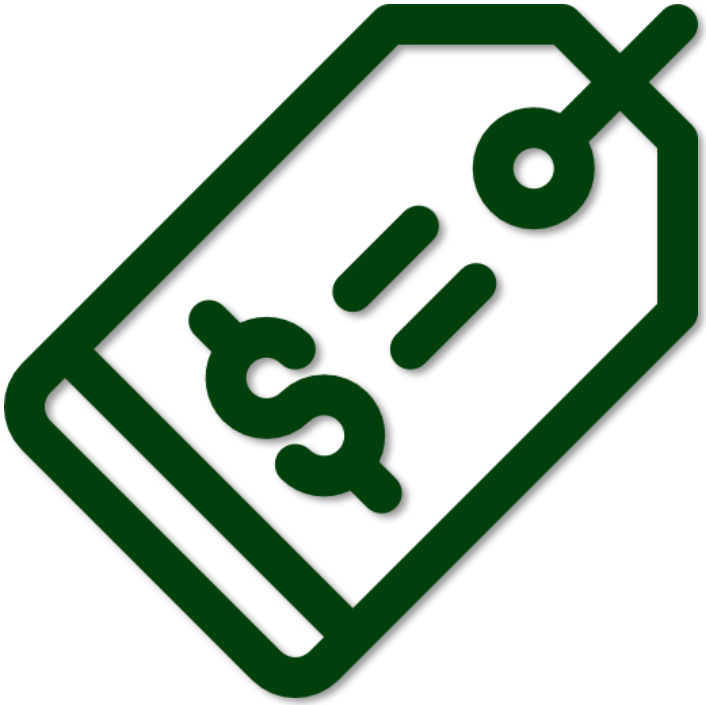


# Why Encourage Conservation?

- Lack of source water
- Growing population
- Nearing storage or treatment capacity
- Drought
- Environmental benefits

# Two Approaches to Conservation



Pricing signals through your rates

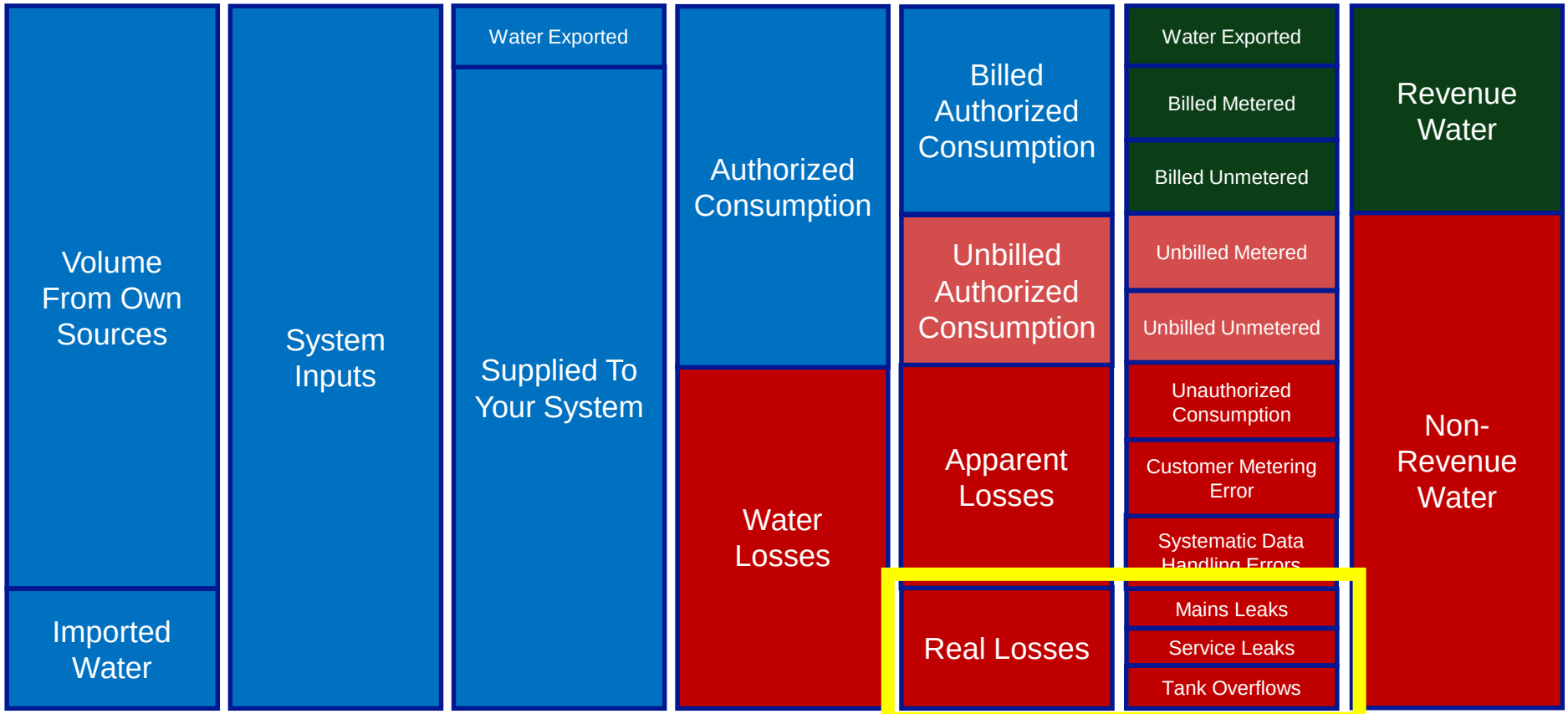
Non-price strategies

# Two Approaches to Conservation

Pricing signals through your rates

Non-price strategies

# System Level—Real Water Loss



# Customer Focused Conservation

- Increase customer information
- Help customers reduce usage
- Alternative sources for outdoor irrigation
- Usage restrictions

# Increase Customer Information

- Use monthly billing
- Provide price and historic usage information on customer bills
- Compare customer usage to local averages


# Increase Customer Information

- Sub-meter multi-family units
- Public conservation notices


EPA United States Environmental Protection Agency

https://www.epa.gov/watersense/understanding-your-water-bill

Environmental Topics | Laws & Regulations | About EPA | Search EPA.gov

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# WaterSense

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- Product Search

## Understanding Your Water Bill


The first step in changing the way you use water in the future is by understanding how much water you use today. The best place to find this information is on your monthly water bill. Pull out your water bill and follow the steps below to learn more about it and your own water use.

**How much do you use?** +

**What is your usage trend?** +

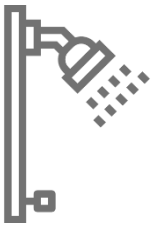
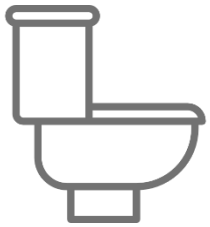
**How does your use compare to that of your neighbor?** +

**How are you being charged?** +

# Help Customers Reduce Usage

- Reduce indoor water use—toilets, faucets, showerheads, dishwashers, washing machines, commercial kitchens
- Help customers fix leaks
- Reduce outdoor water use—low water landscaping, reduce evaporation




https://www.epa.gov/watersense/rebate-finder

WaterSense

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# Rebate Finder


## Water Efficiency Can Pay Off!

Many WaterSense partners offer rebates for WaterSense labeled products—such as water-efficient toilets, showerheads, and faucets—as well as water conservation services. Search below to see what money-saving rebates are available in your area.

**Note about the WaterSense Rebate Finder** +

**Rebate Type**
All Rebates

**Partner Name**

**State/Province**
All States

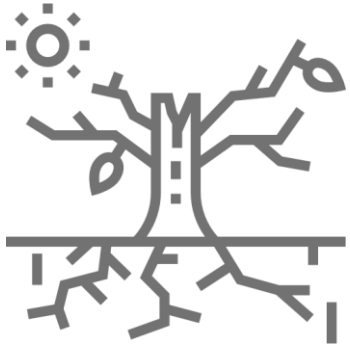
# Alternative Sources for Outdoor Irrigation

- Use raw water, discharge water from water treatment, or treated wastewater for irrigation in lieu of using potable water

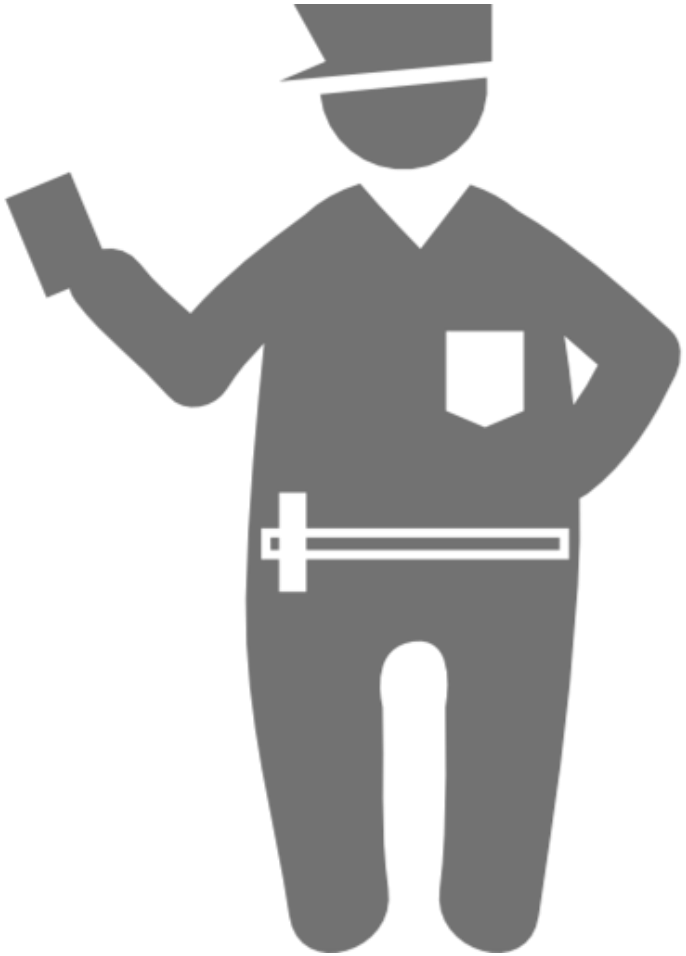
- Rain barrels

# Restrict Outdoor Usage

- At all times by limiting times or days of week that people can irrigate
- Limit customer usage during times of low water supply or drought



# Enforce Your Mandates!



Having mandates in place is only effective if they are enforced

# 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?
- Let’s take a quick overview of costs and revenues

# Three Types of Costs

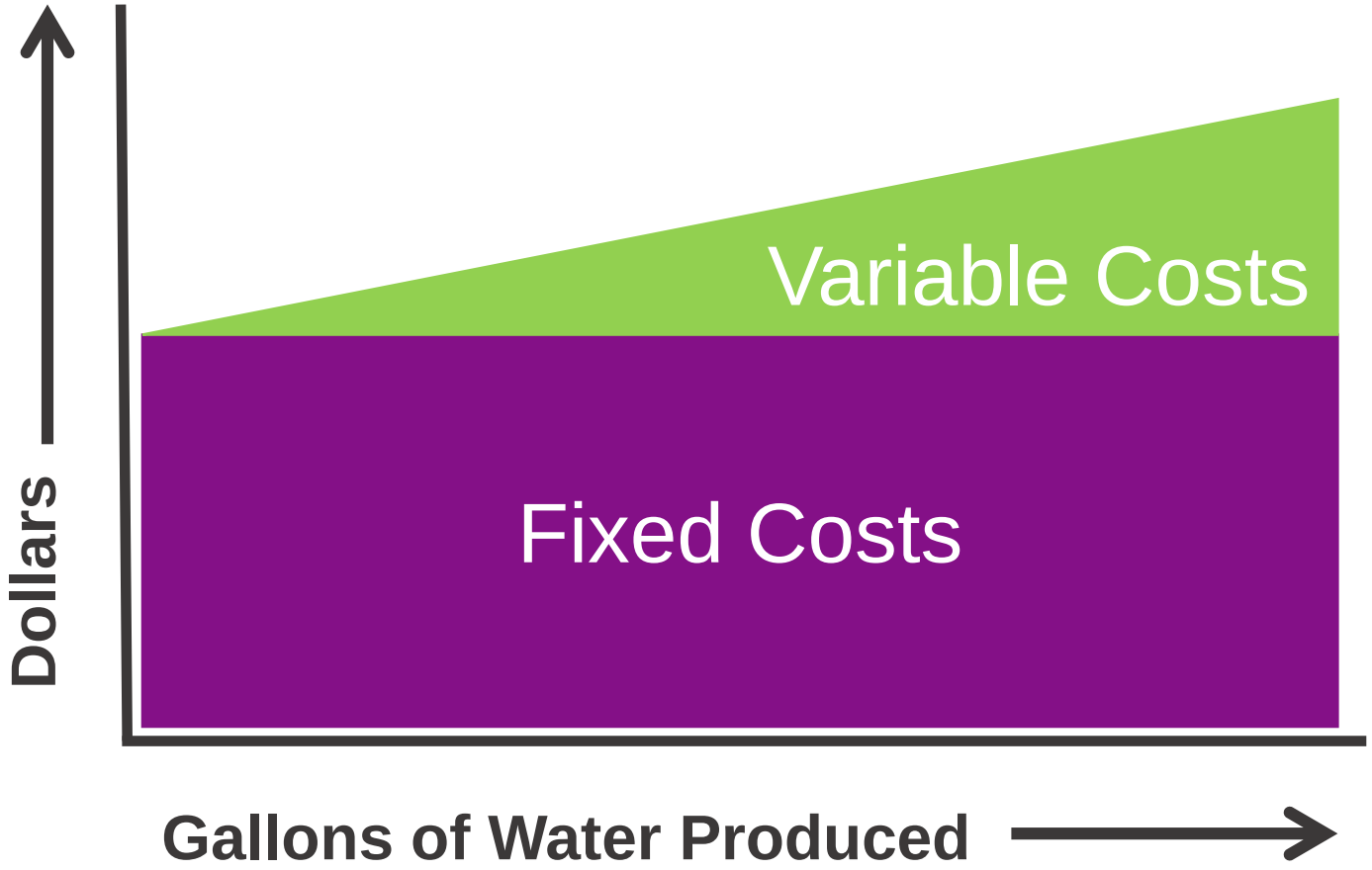
- Operating Costs—what you need to run the system day in and day out
- Capital Costs—rehabilitation and replacement of existing infrastructure and new infrastructure
- Debt Service—what you owe on loans and bonds

# Fixed Cost

# Variable Cost

- Some costs for a water system are fixed regardless of the volume of water treated
- Others vary based on the amount of water treated
- Others are somewhere in between

# Costs Can be Fixed or Variable

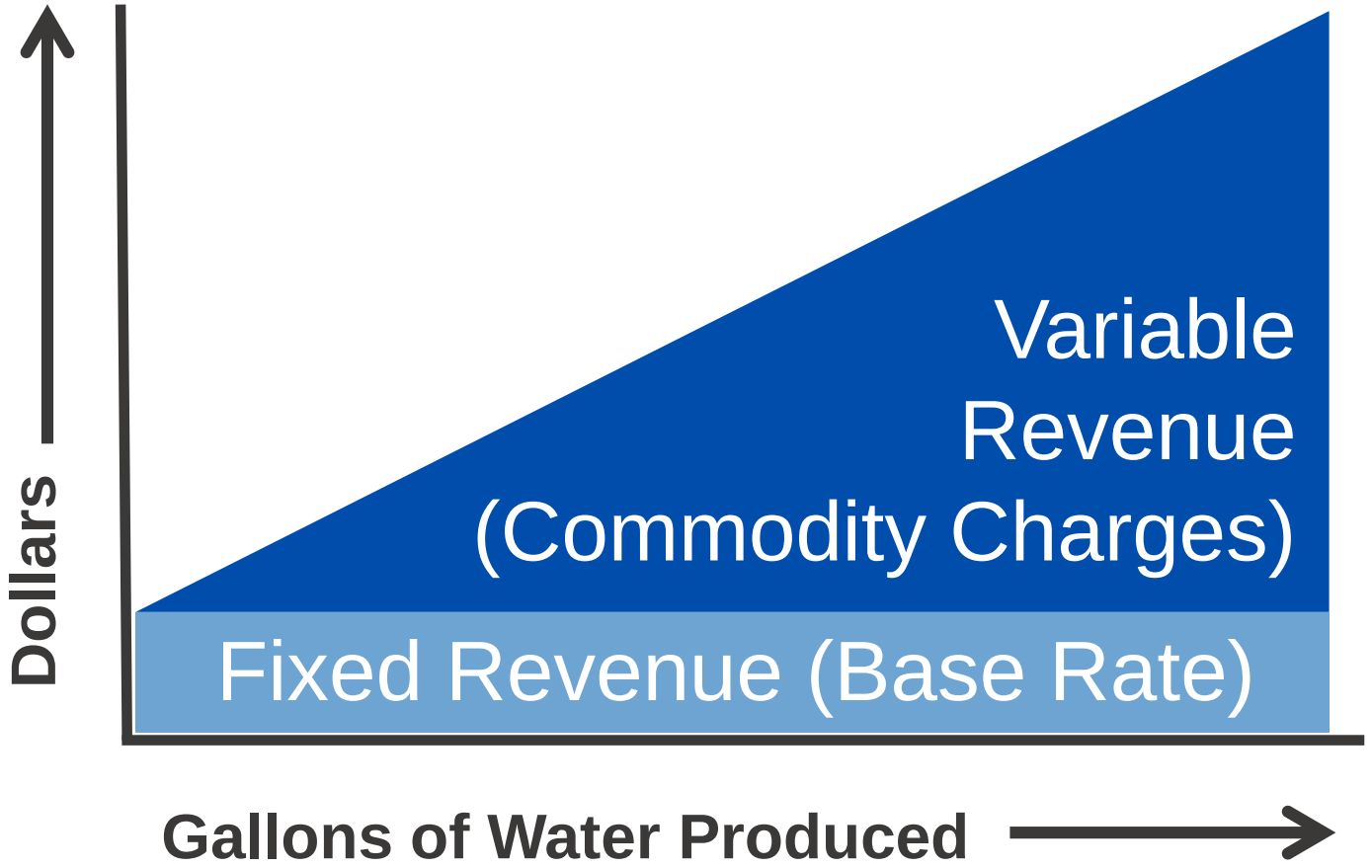


# Two Types of Revenues

- System Income—Money from rates, tap fees, system development charges, grants, penalties, other sources

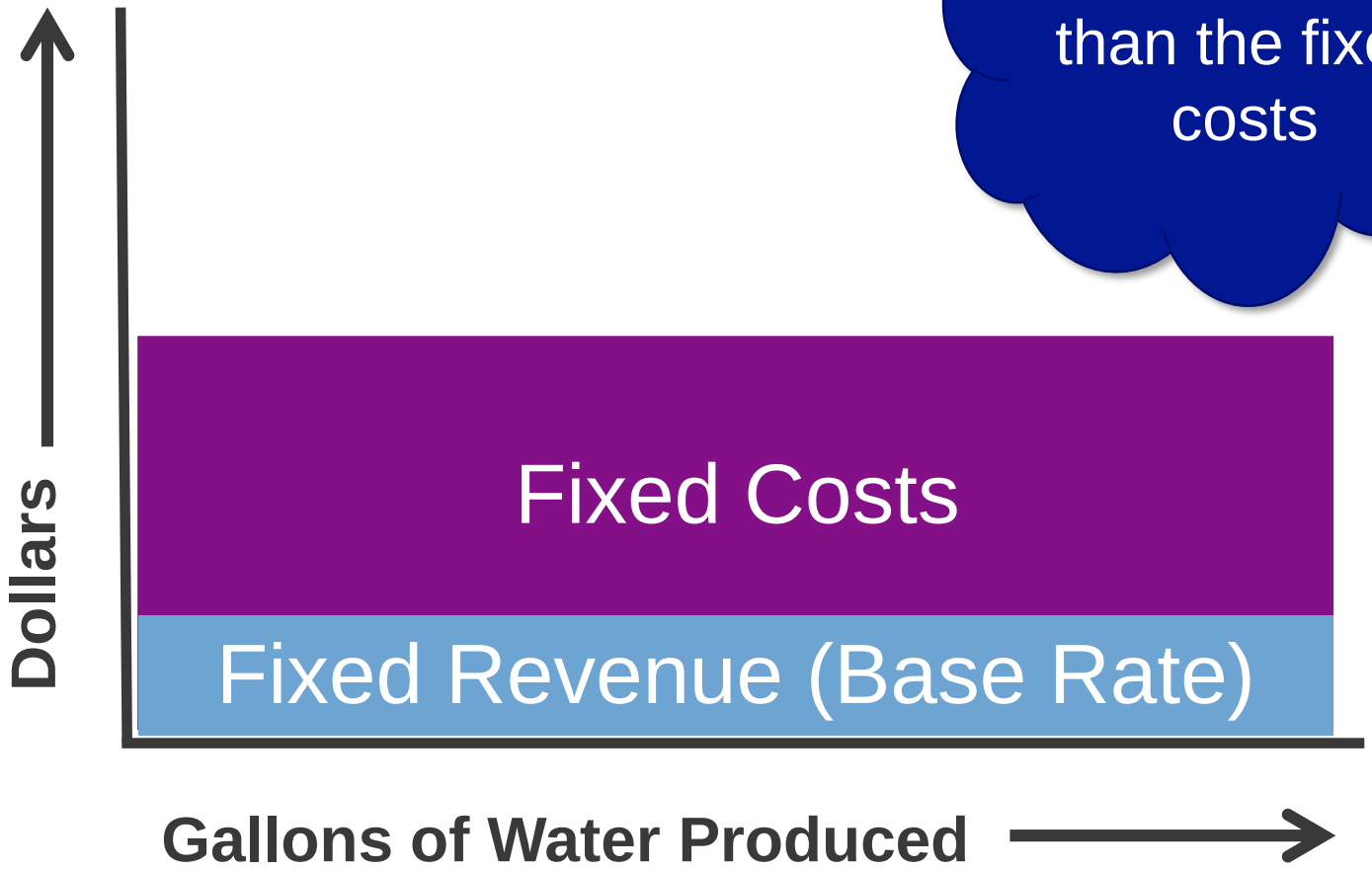
- Debt—Money from bonds and loans

# The Revenue Picture



# Costs vs. Revenues

We collect less fixed revenue than the fixed costs



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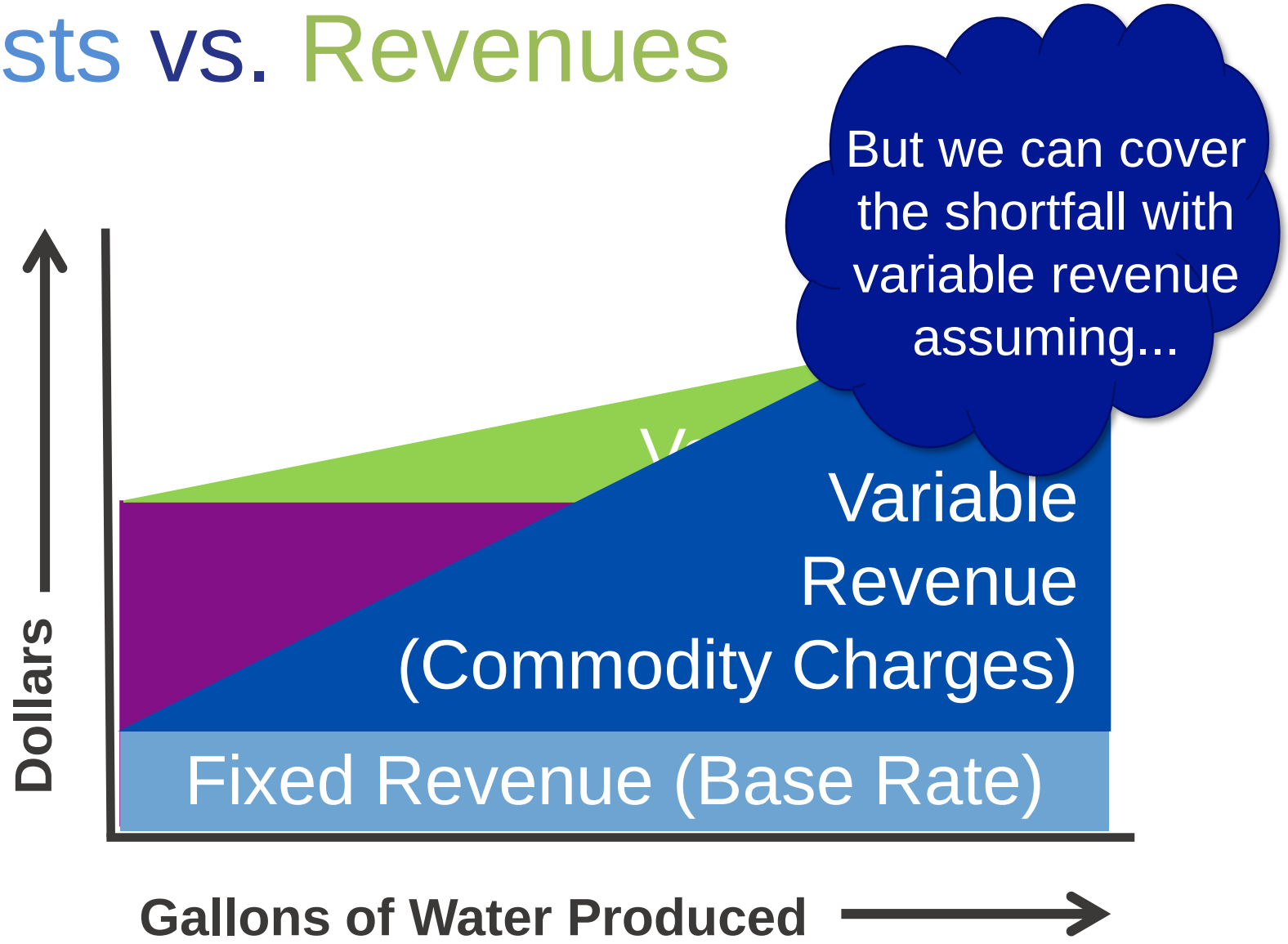

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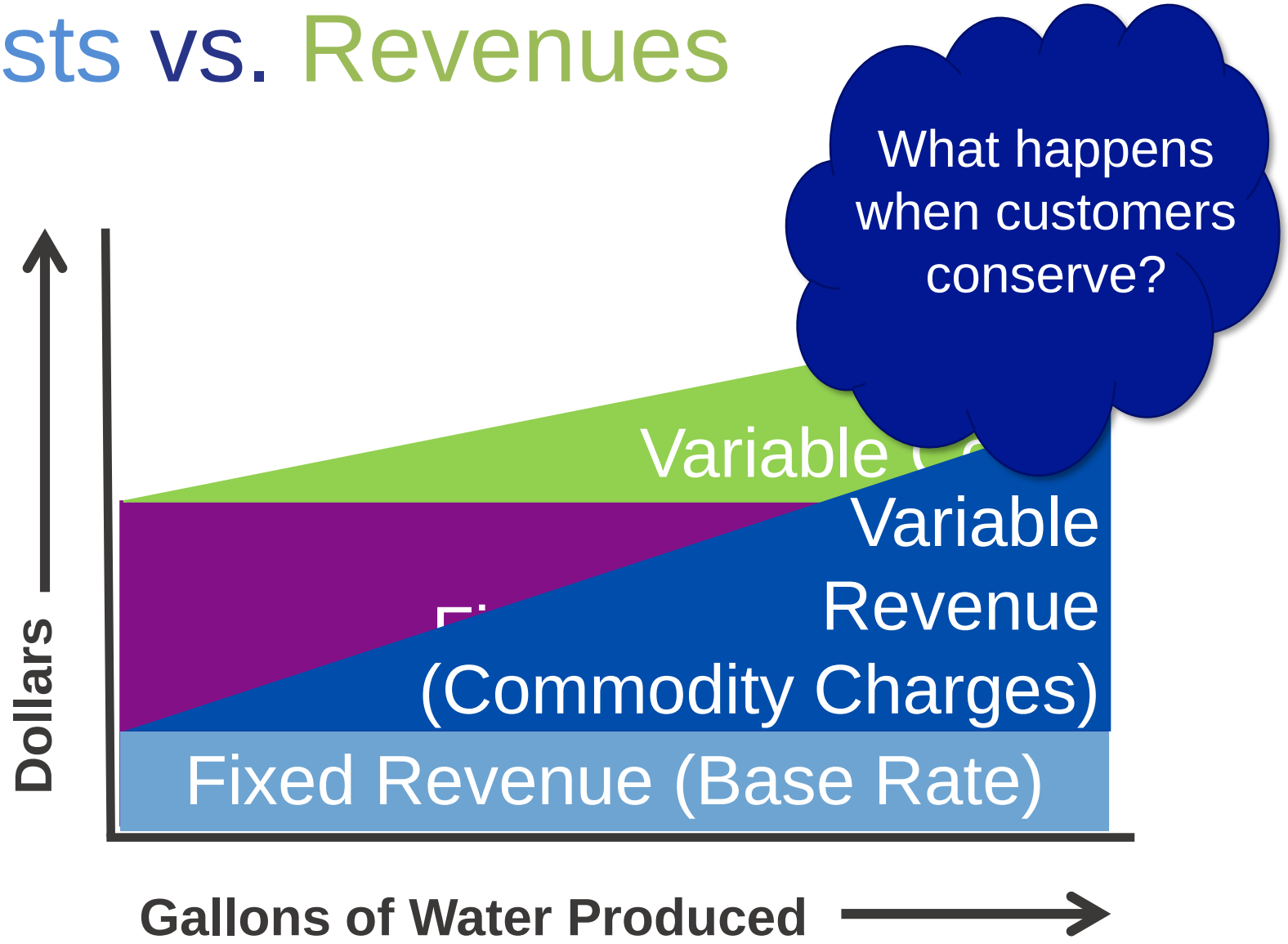
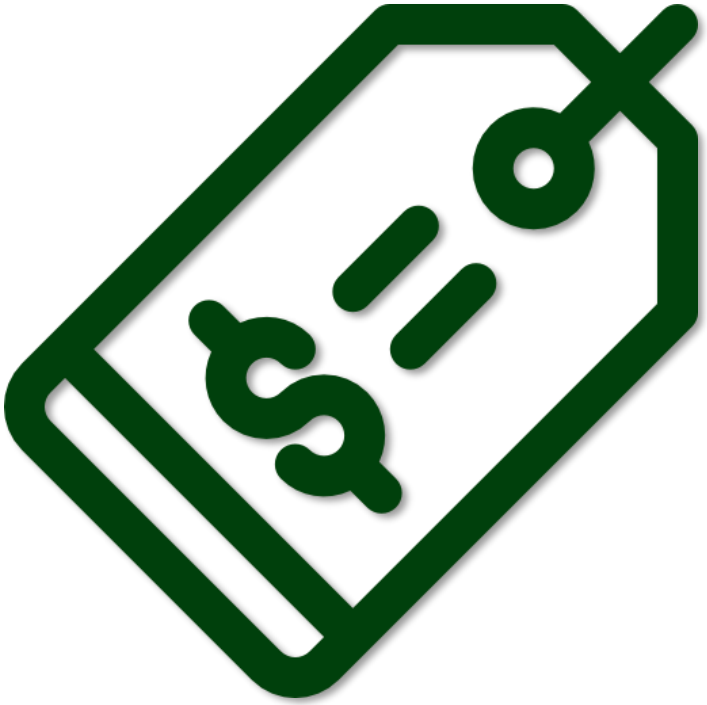


# Two Approaches to Conservation



Pricing signals through your rates

Non-price strategies

# 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 matters more than the rate structure

- Consider higher rates at average usage levels in addition to high levels, though be aware of affordability issues

# Higher Uniform Volumetric Charge

- Customer’s bill is largely driven by usage, which gives them an incentive to conserve

# Higher Uniform Volumetric Charge

**Base Fees:**

| | |
|---|---|
| Residential: | 25.00 |
| Commercial: | 40.00 |
| Distribution: | 30.00 |

**Usage fee:** 14.75 per thousand gallons

Holiday Hills DWID, AZ

# Low or No Base Charge, Higher Volumetric Charge

## 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

# Increasing Block Rates

- At higher usage levels, the price increases, which encourages customers to cut back on usage

# Increasing Block Rates

| 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 |

Napu’u Water Inc., HI

# Increasing Block Rates

**Water Consumption Charges**

Effective July, 1, 2011

| Consumption/Month (in gallons) | Residential | Commercial** |
|---|---|---|
| 0 - 2000 | Base Rate ($20.00) | Base Rate ($20.00) |
| Up to 5,000 | $4.50 per 1,000 gallons | $4.50 per 1,000 gallons |
| Up to 10,000 | $5.50 per 1,000 gallons | $5.50 per 1,000 gallons |
| Up to 15,000 | $6.50 per 1,000 gallons | $6.50 per 1,000 gallons |
| Up to 20,000 | $7.50 per 1,000 gallons | $7.50 per 1,000 gallons |
| All over 20,000 | $8.50 per 1,000 gallons | $8.50 per 1,000 gallons |

Consumption over 2,000 gallons is billed retroactive to the first gallon used.

* Consumption over 2,000 gallons is billed retroactive to the first gallon used. eter accounts are charged at the above rates per unit served. Hotels and motels: Four rooms equal one commercial master meter billing unit.

Currituck County, NC

# 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 Limited, AZ

# Higher Irrigation Rates

- Meter and charge separately for outdoor water use and price that water higher than for regular water use

# 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 |

Stockbridge, GA

# 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.

Southbridge, NC

# 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 |

Marbury Water System, AZ

# Low Supply and Drought Surcharges

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

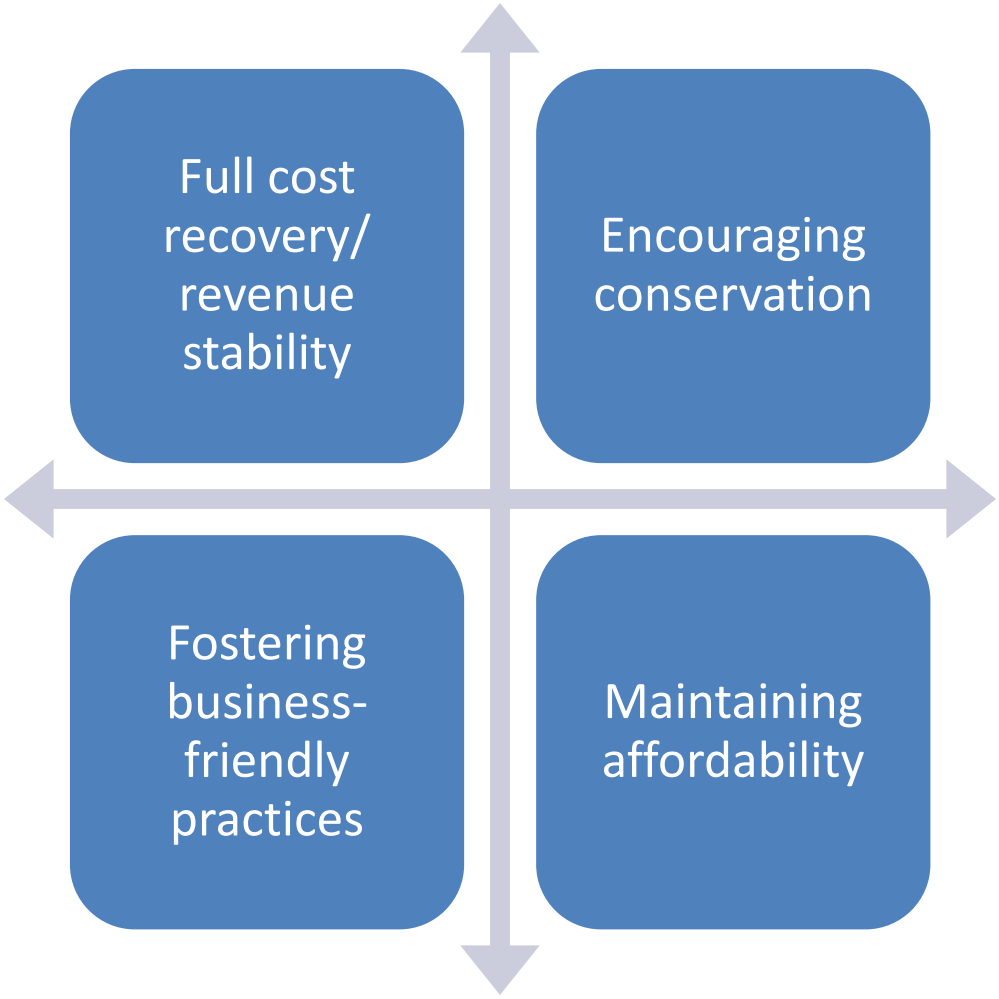
# Low Supply Surcharges

| 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 Water Improvement District, AZ

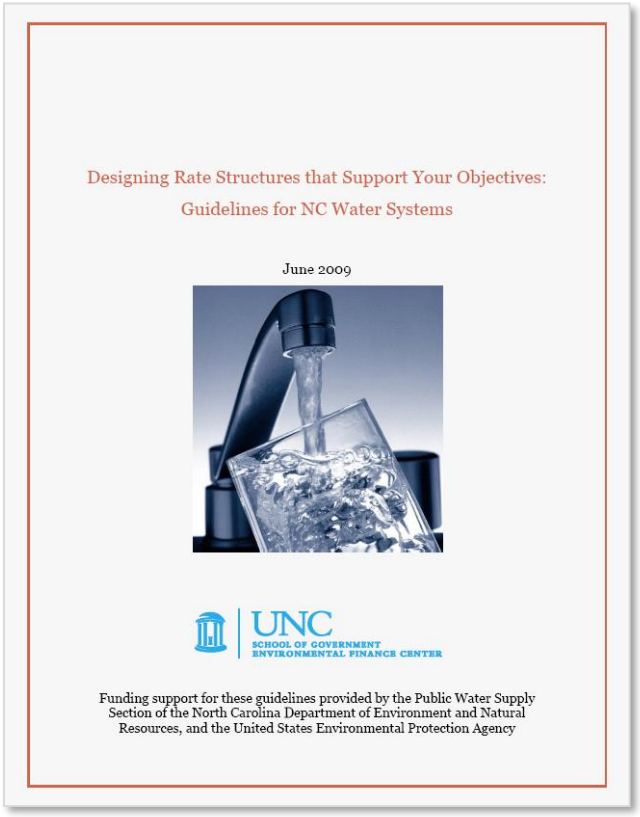
# Competing Objectives



# Designing Rate Structures That Support Your Objectives

Free guide written for system managers

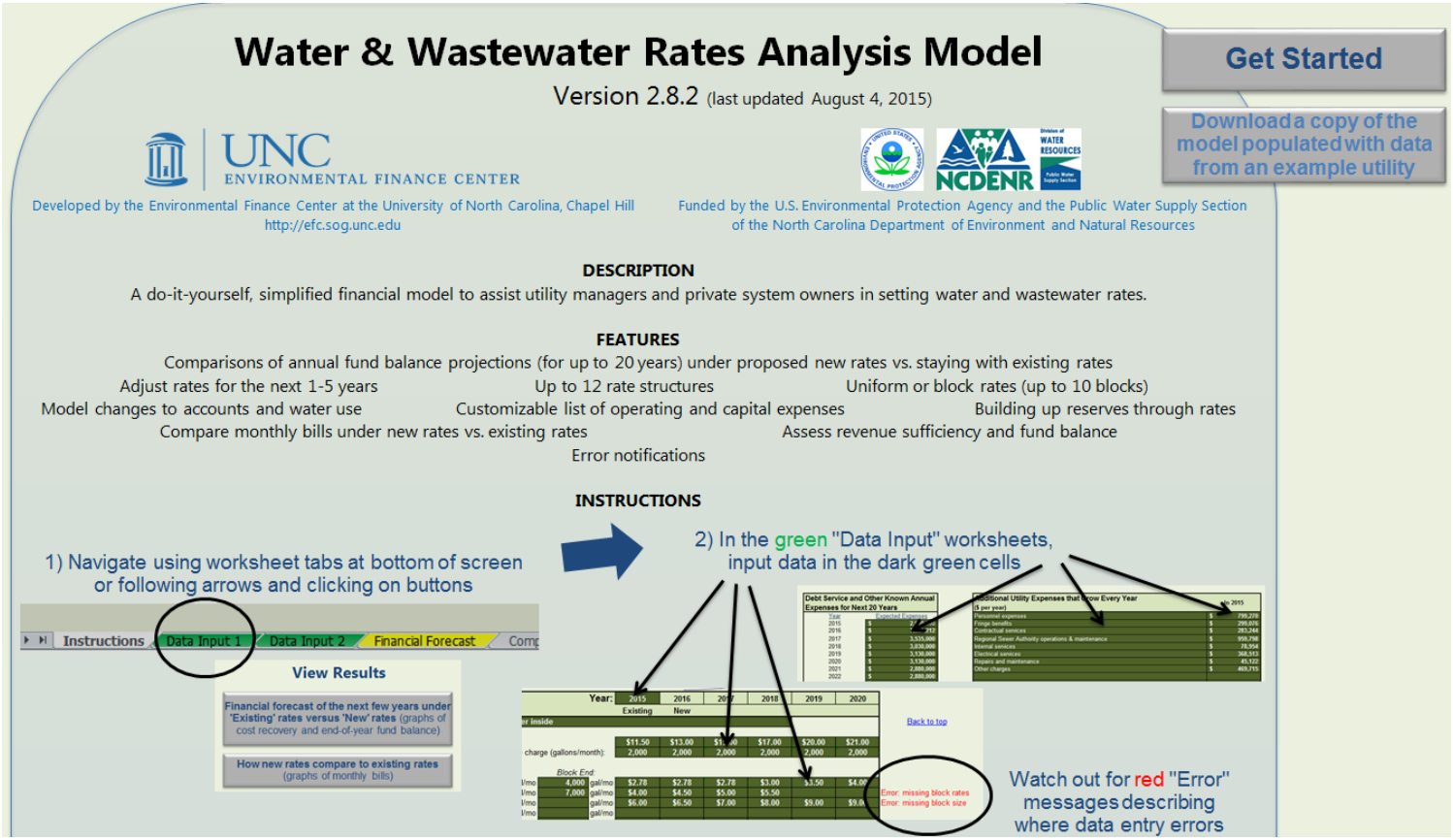
Available at: http://efc.sog.unc.edu/



# Water and Wastewater Rates Analysis Model

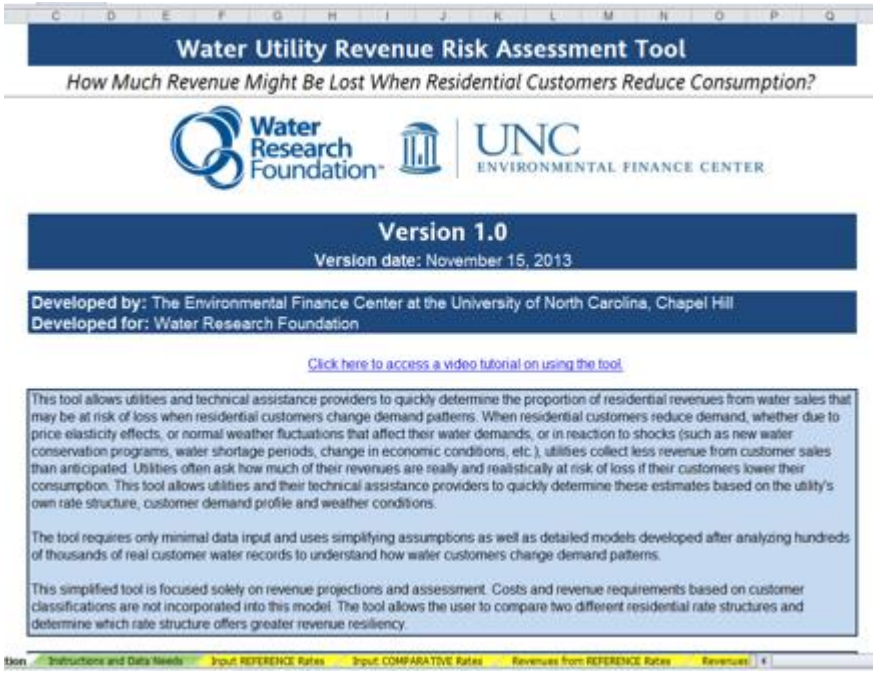
http://efc.sog.unc.edu or http://efcnetwork.org

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




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

# Water Utility Revenue Risk Assessment Tool




- Excel tool (simplified)
- Focus on residential revenues
- Utility inputs own:
  - Rate structure details
  - Residential customer water use profile
  - Weather patterns
  - Assumptions on price elasticity
- Tool estimates the <u>proportion of revenues that may be lost</u> due to changes in water use patterns due to:
  - Rate increase, alone or plus:
  - Normal weather pattern changes, or
  - One-time, significant and sudden conservation effort

Free to download and use at

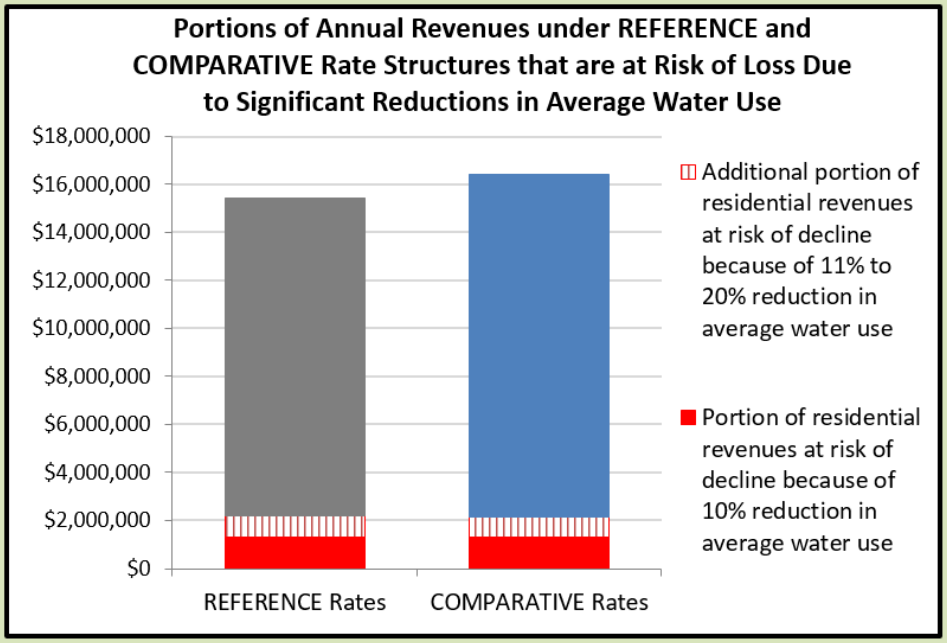
www.waterrf.org

www.efc.sog.unc.edu

# Water Utility Revenue Risk Assessment Tool

## Comparing Revenues After a Significant Decline in Water Use

**How do the total revenues compare under both rate structures if there is a reduction of 10% - 20% in average water use and subsequent demand distribution shifts?**

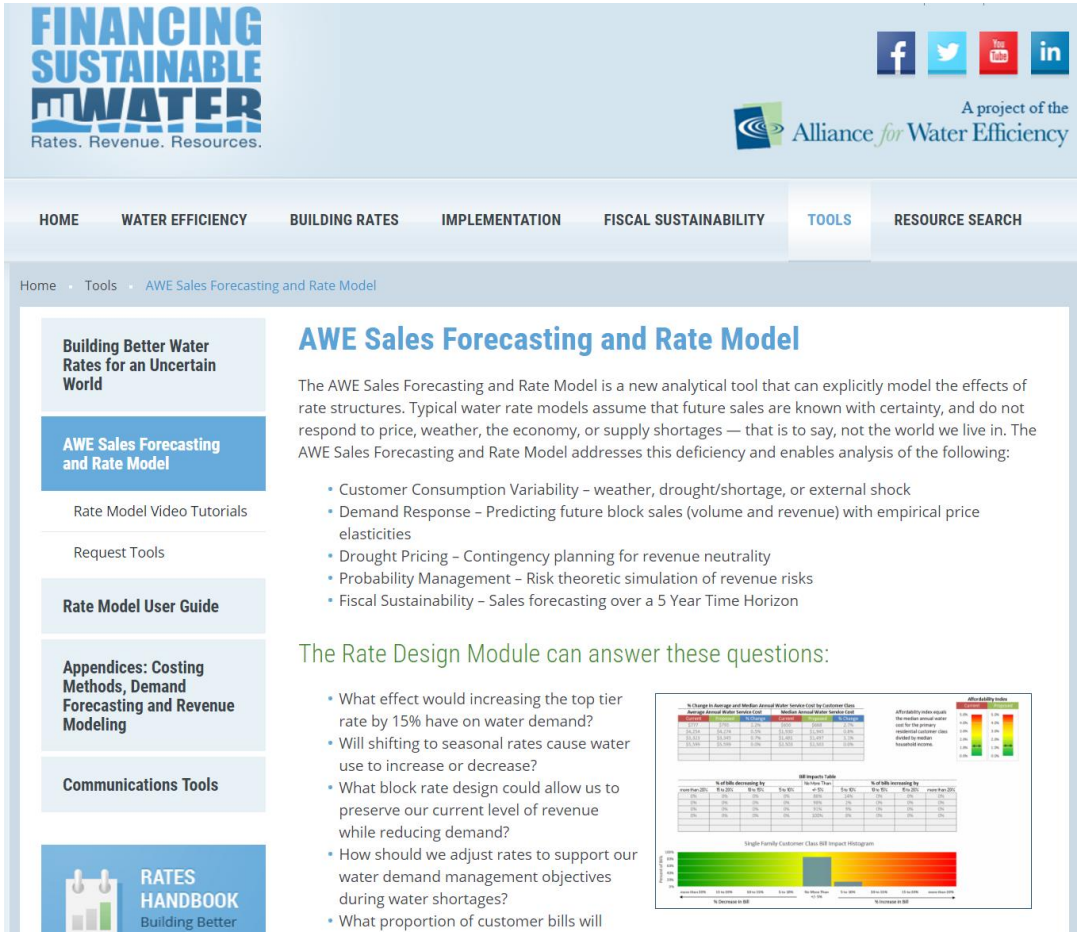



| Decline in Total Annual Revenues for a: | REFERENCE Rates | COMPARATIVE Rates |
|---|---|---|
| 10% reduction in avg use | $1,311,000 | $1,319,000 |
| 20% reduction in avg use | $2,181,000 | $2,167,000 |
| 10% reduction in avg use | 8.5% | 8.0% |
| 20% reduction in avg use | 14.2% | 13.2% |

The comparative rate structure generates revenues that are MORE resilient to sudden and significant declines in residential water use than the revenues generated by the reference rate structure. Revenues under the comparative rate structure are projected to drop 8% - 13.2% for a 10% - 20% reduction in average water use, and their related shifts in demand distribution. These declines occur after including the effect of price elasticity when adjusting rates from the reference rate structure to the comparative rate structure. By comparison, revenues under the reference rate structure are projected to drop 8.5% - 14.2% for the same declines in residential water use.

# AWE Sales Forecasting and Rate Model

Available for
Alliance for Water Efficiency members
http://www.financingsustainablewater.org/



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 / GLENN BARNES / 2 COMMENTS

Print PDF

At our workshops and through our discussions with water systems during technical assistance work, many water systems, in particular small systems, ask what seems like a simple question: "Are our rates right?"

I suspect our initial answer is somewhat unsatisfying: "It depends."

Even when rates are sufficient to generate the revenues needed for the utility, whether or not rates are "right" depends on what a particular water system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