Conservation Pricing in Action

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So.....

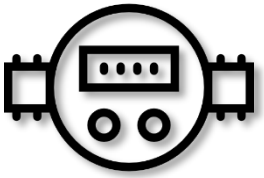
What does this mean in the real world? What would conservation pricing actually look like?


Greetings from
Irvindale
USA

Irvindale, USA Exercise

Small town with a water and wastewater system

Population: 1,100



Service Connections: 450

MHI: $24,432

Exercise

Let’s figure out some rates for Irvindale that promote conservation

We'll look at four rate structures...

- All volumetric uniform rates
- $20 base charge with the rest volumetric uniform rates
- Seasonal rates
- Irrigation rates

Annual Budgeted Revenues

Account	Type	Amount
30-371-01	W/S Charges	$476,495
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**

All Volumetric Uniform Rates

- What information do we need to make this calculation?

- Total revenue needed from rates
- Total gallons sold

All Volumetric Uniform Rates

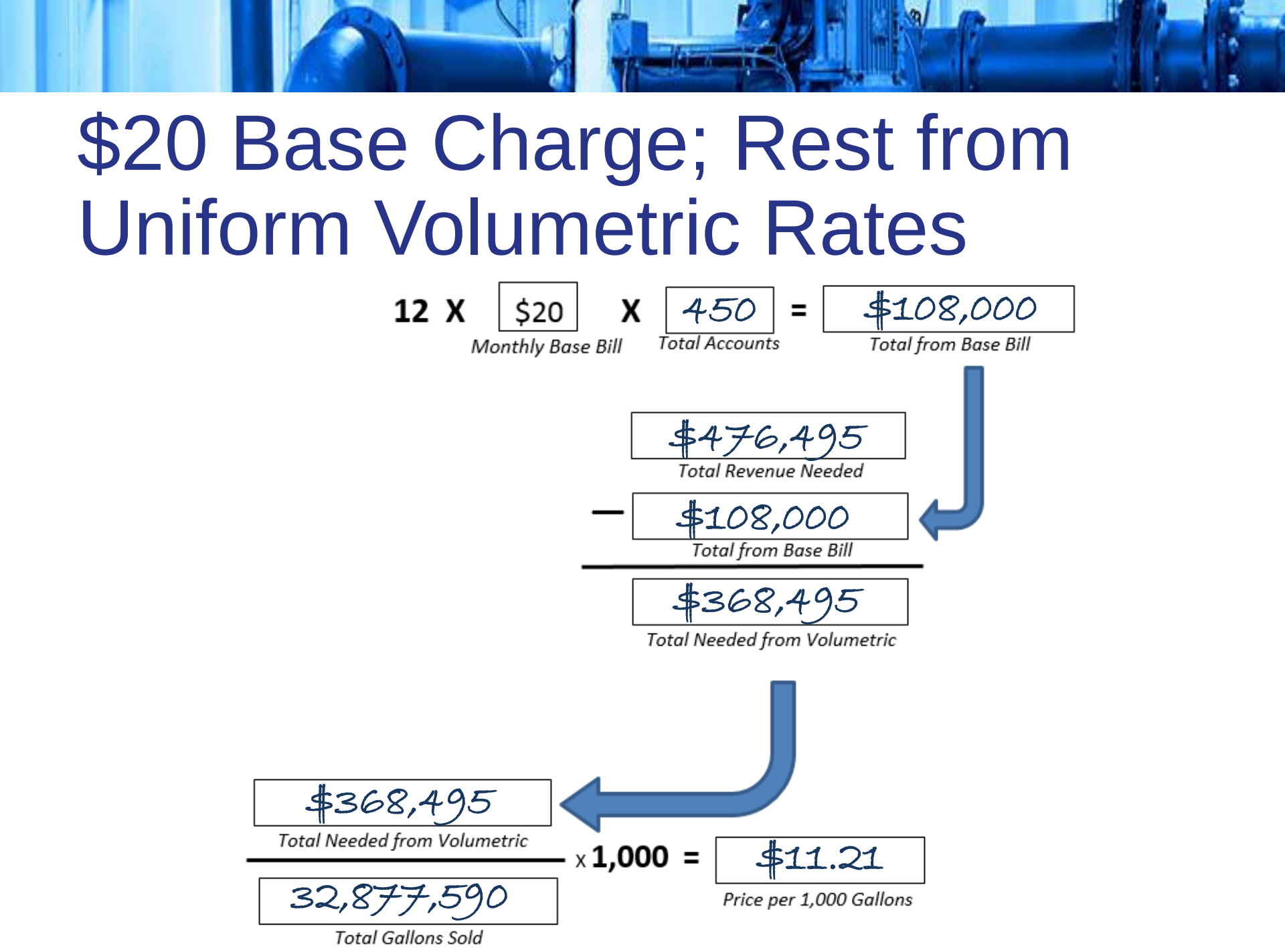
$$\frac{\$476{,}495 \text{ (Total Needed Revenue)}}{32{,}877{,}590 \text{ (Total Gallons Sold)}} \times 1{,}000 = \$14.49 \text{ (Price per 1,000 Gallons)}$$

$20 Base Charge; Rest from Uniform Volumetric Rates

- What information do we need to make this calculation?

- Total Accounts
- Total Revenue Needed
- Total Gallons

$20 Base Charge; Rest from Uniform Volumetric Rates



Seasonal Rates with a $20 base charge

- What information do we need to make this calculation?

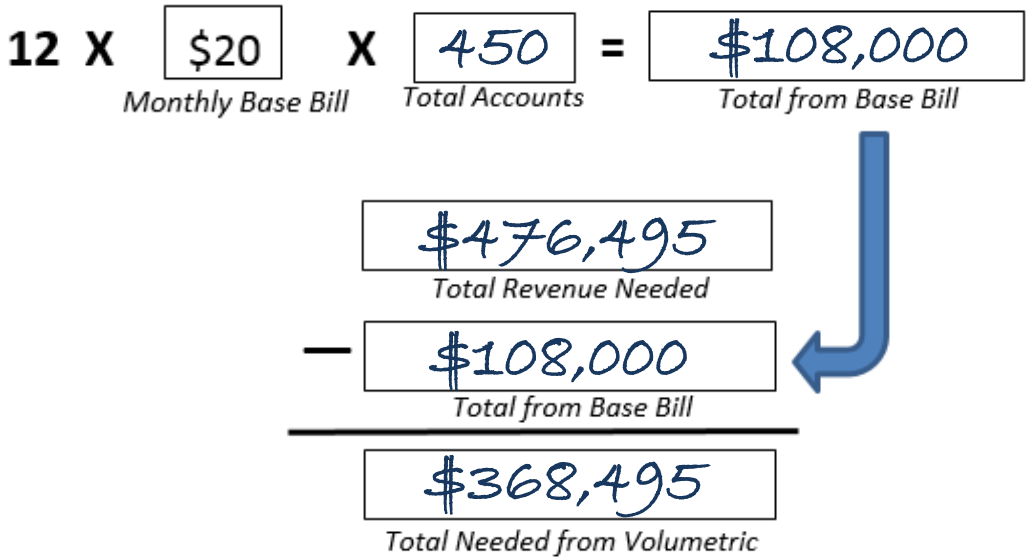
- Total accounts
- Total revenue needed
- Total winter gallons sold
- Total summer gallons sold

Seasonal Rates with a $20 base charge

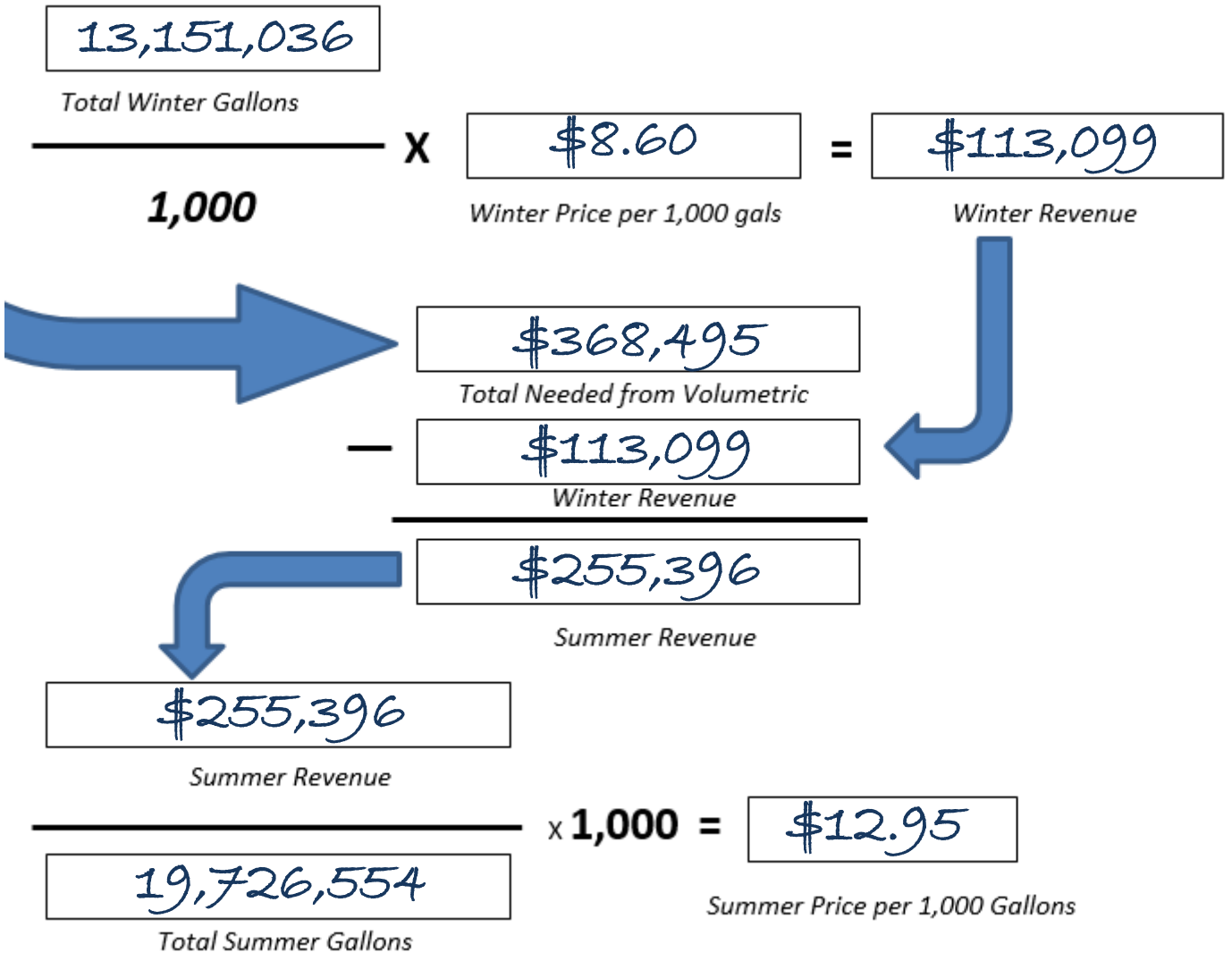
- The winter price per 1,000 gallons is $8.60

- This was calculated based on a cost of service analysis

Seasonal Rates w/ $20 base



Seasonal Rates w/ $20 base



Irrigation Rates with a $20 base charge

- What information do we need to make this calculation?

- Total accounts
- Total revenue needed
- Total indoor gallons sold
- Total outdoor gallons sold

Irrigation Rates with a $20 base charge

- The indoor price per 1,000 gallons is $8.60

- This was calculated based on a cost of service analysis

Irrigation Rates w/ $20 base

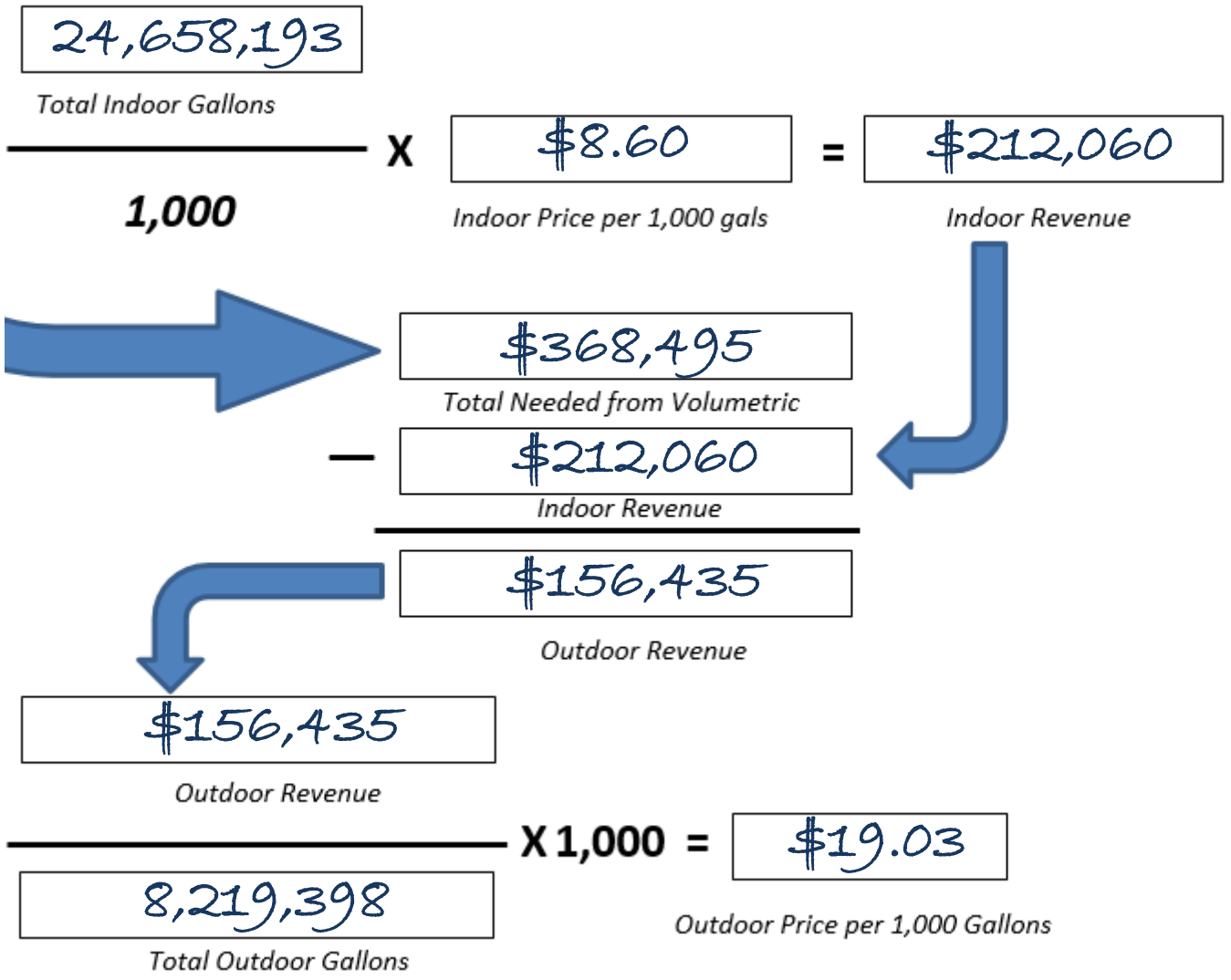
12 X $20 *Monthly Base Bill* **X** 450 *Total Accounts* **=** $108,000 *Total from Base Bill*

$476,495
Total Revenue Needed

— $108,000
Total from Base Bill

$368,495
Total Needed from Volumetric

Irrigation Rates w/ $20 base



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?

Exercise

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

We'll look at summer usage for the exercise

How This Impacts Customers

4,000 gallons/month

15,000 gallons/month

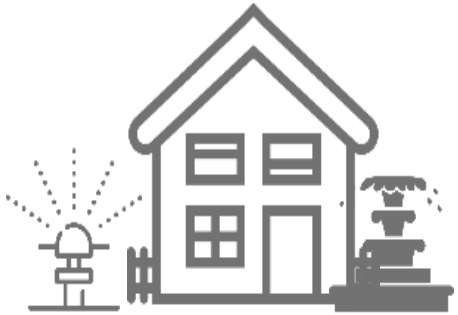
10,000 gallons/month

34,000 gallons/month

The Rate Structures

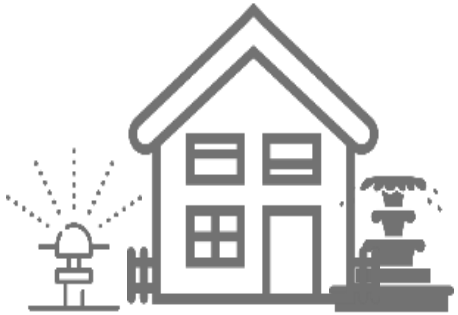
- $14.49 per 1,000 gallons
- $20 base;
  $11.21 per 1,000 gallons
- $20 base;
  $12.95 per 1,000 gallons
- $20 base;
  $8.60 per 1,000 gallons inside;
  $19.03 per 1,000 gallons outside

All Volumetric Uniform Rates



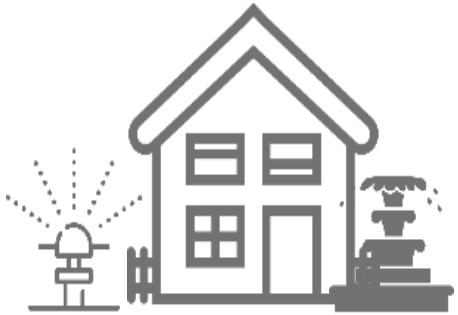
$57.96	$217.35	$144.90	$492.66

$20 Base Charge; Rest from Uniform Volumetric Rates



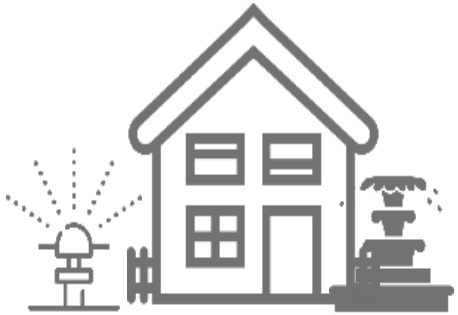
$64.84	$188.15	$132.10	$401.14

Seasonal Rates with a $20 base charge



$71.80	$214.25	$149.50	$460.30

Irrigation Rates with a $20 base charge



$54.40	$263.73	$106.00	$312.40

Gallons per Month:				
Winter Gallons	4,000	4,000	10,000	34,000
Summer Indoor	*4,000*	*4,000*	*10,000*	*34,000*
Summer Outdoor	*0*	*11,000*	*0*	*0*
Summer Gallons	4,000	15,000	10,000	34,000
Volume of Product Received	$57.96	$217.35	$144.90	$492.66
$20 Base Charge; Rest Volumetric	$64.84	$188.15	$132.10	$401.14
Seasonal Rates	$71.80	$214.25	$149.50	$460.30
Irrigation Rates	$54.40	$263.73	$106.00	$312.40

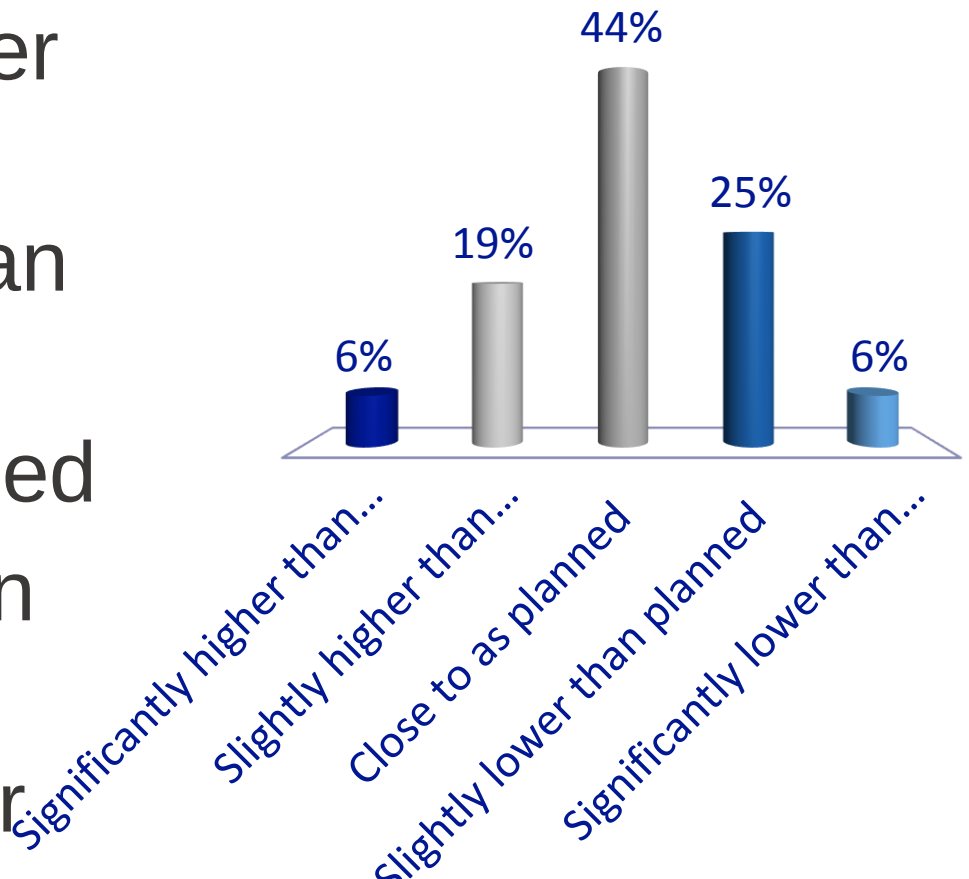
These numbers are based on Irvindale's budget

Does

Maybe, but probably not

Your revenues last year were...

A. Significantly higher than expected
B. Slightly higher than expected
C. Close to as planned
D. Slightly lower than planned
E. Significantly lower than planned



What to do?

- Multiple forecasts based on different assumptions

- Ideally, be conservative
- Don’t forget price elasticity
- Use tools to stress test projections
- Give board options

Rate Changes

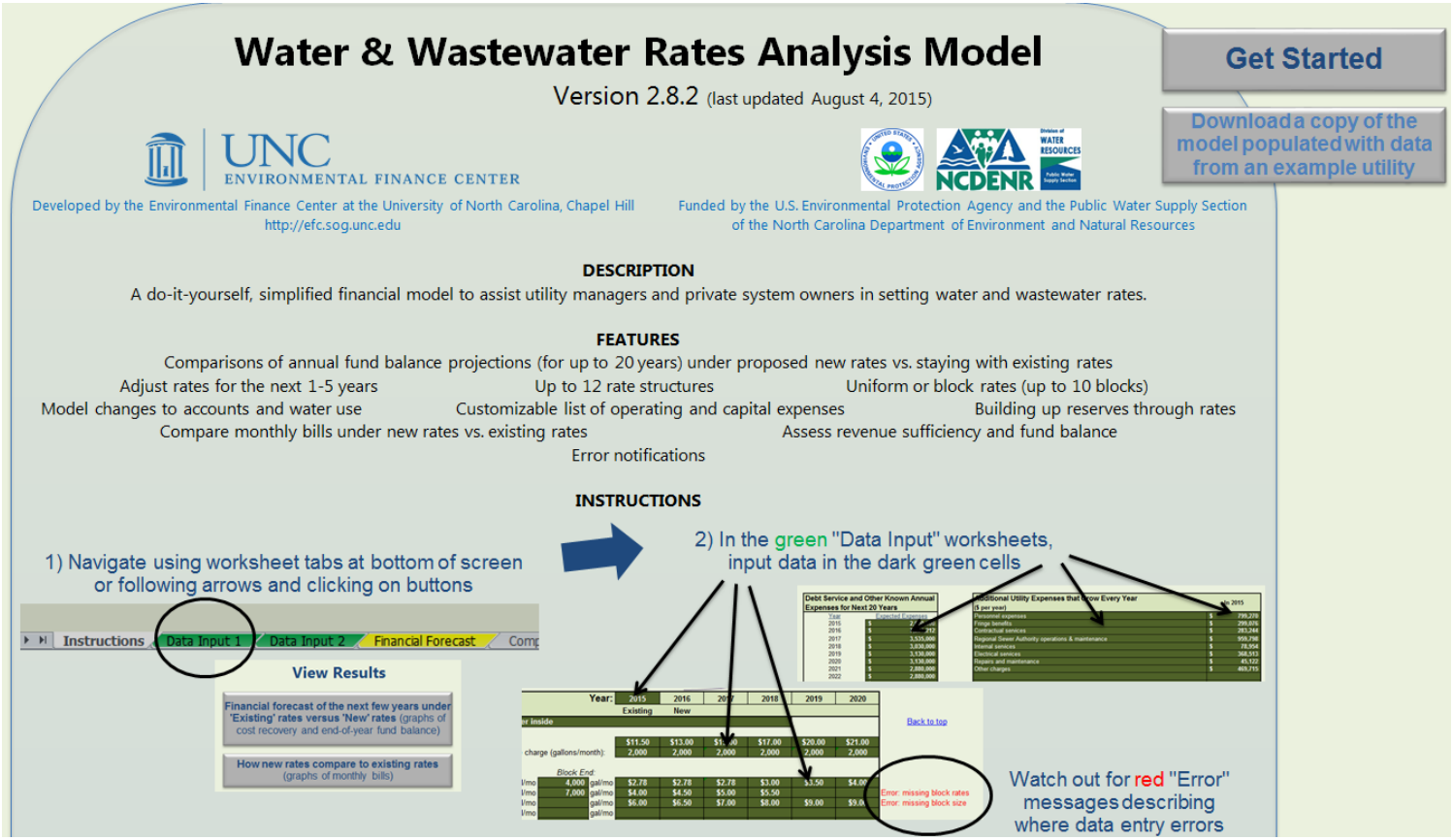
As rates go up, usage goes down

As a rule of thumb, typically usage goes down 3-4% for every 10% increase in rates

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
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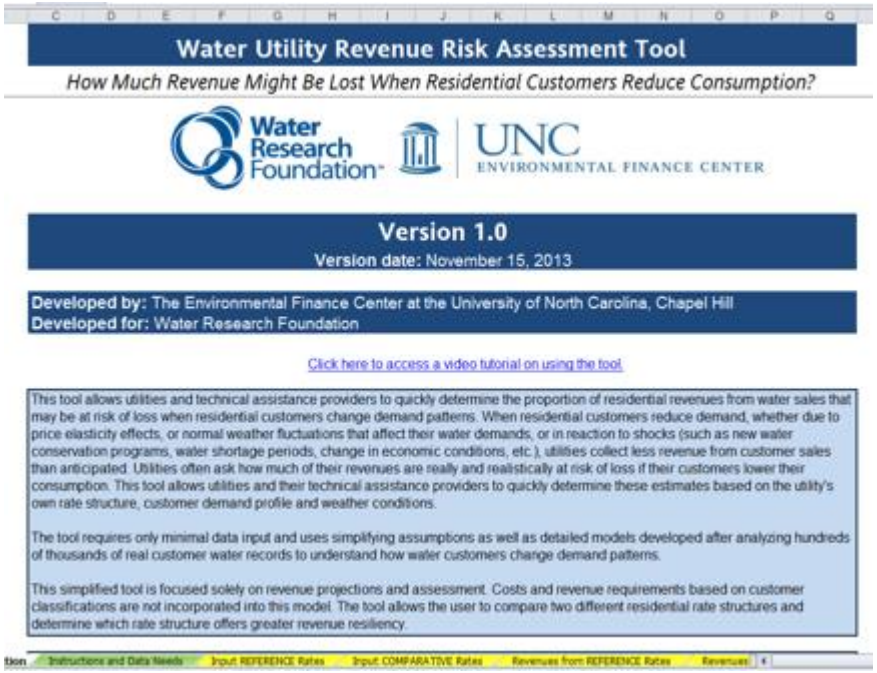
Water Utility Revenue Risk Assessment Tool



- 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

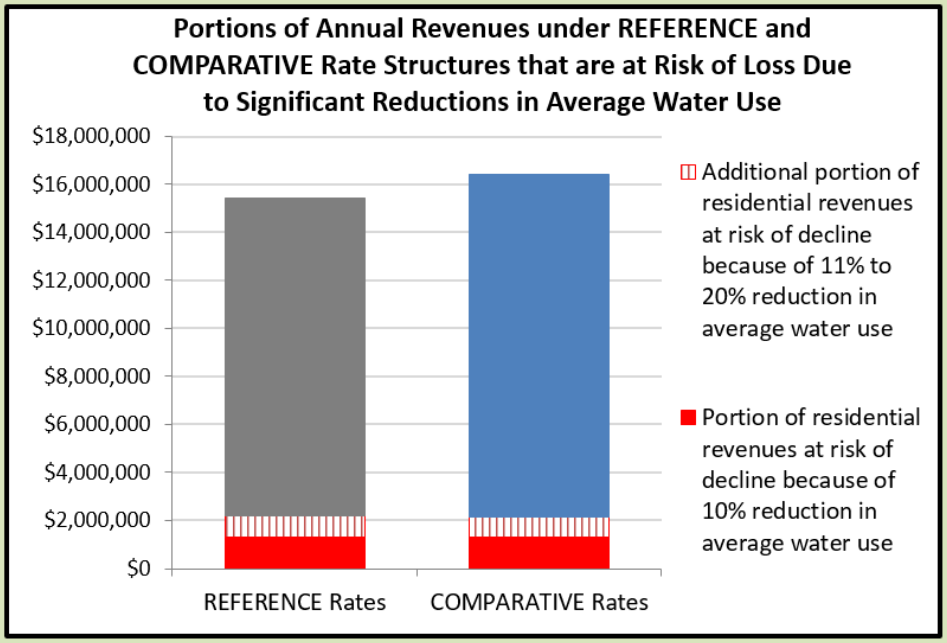
www.waterrf.org

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?

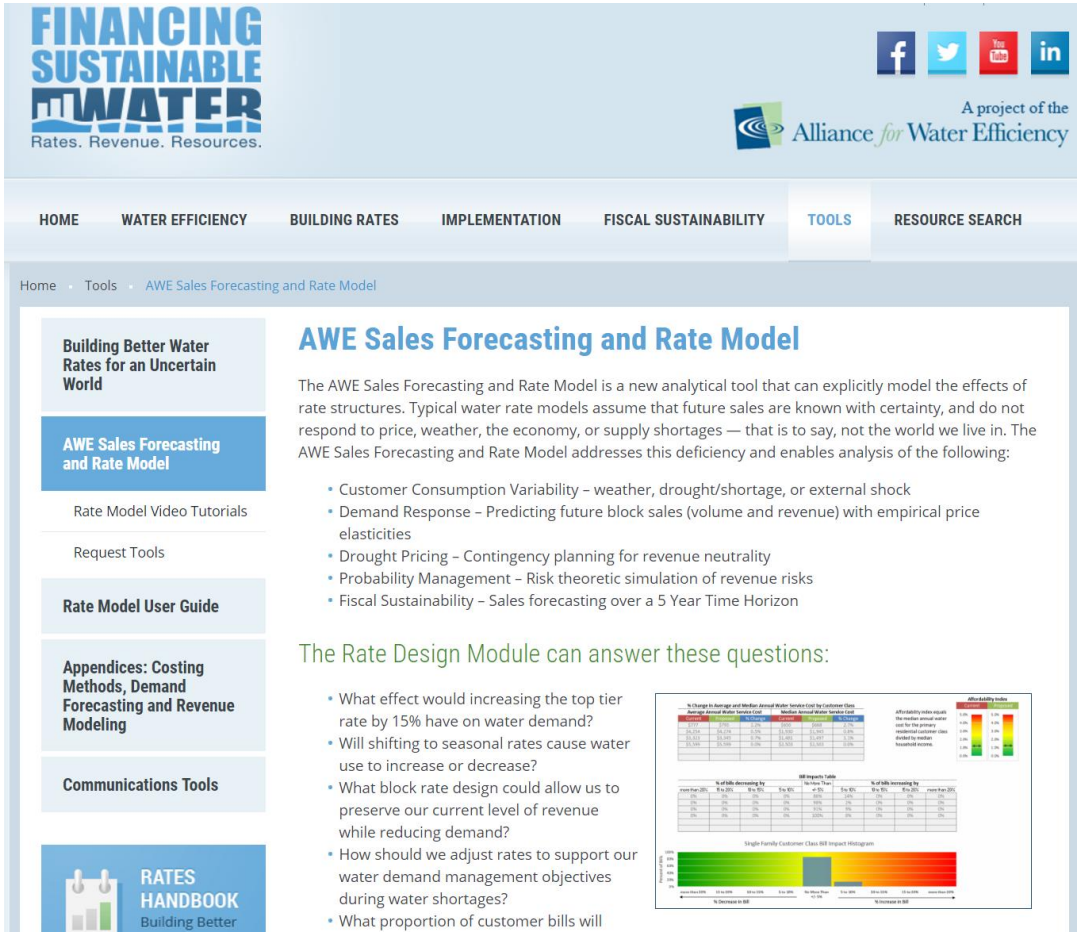


Decline in Total Annual Revenues for a:	REFERENCE Rates	COMPARATIVE Rates
10% reduction in avg use	$1,311,000	$1,319,000
20% reduction in avg use	$2,181,000	$2,167,000
10% reduction in avg use	8.5%	8.0%
20% reduction in avg use	14.2%	13.2%

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/



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