

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com





**I Conserved - You Raised
Rates – Yes But You Pay Less!**

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What We Will Cover

- What is happening across the nation with water and wastewater rates;
- The Texas Example – Conservation, Reuse and Drought Management offer the most water for the least cost;
- A hypothetical case that shows how 10 homes using the exact same amount of water before conservation and paying the exact same in water and wastewater rates will change after conservation – wasters pay more, conservers pay less AND TOTAL REVENUE NEEDS for the utility; and
- The impact on increased efficiency on the expansion of future treatment capacity and the cost reductions inherent to that will be reviewed.

Water & Wastewater Rates

Circle of Blue

April, 2016

<http://www.circleofblue.org/waterpricing/>

***Price of Water 2015: Up 5 % in 2016
in 30 Major U.S. Cities;***

48 % Since 2010!

Consumer Price Index for Utilities

<http://www.circleofblue.org/waterpricing/>

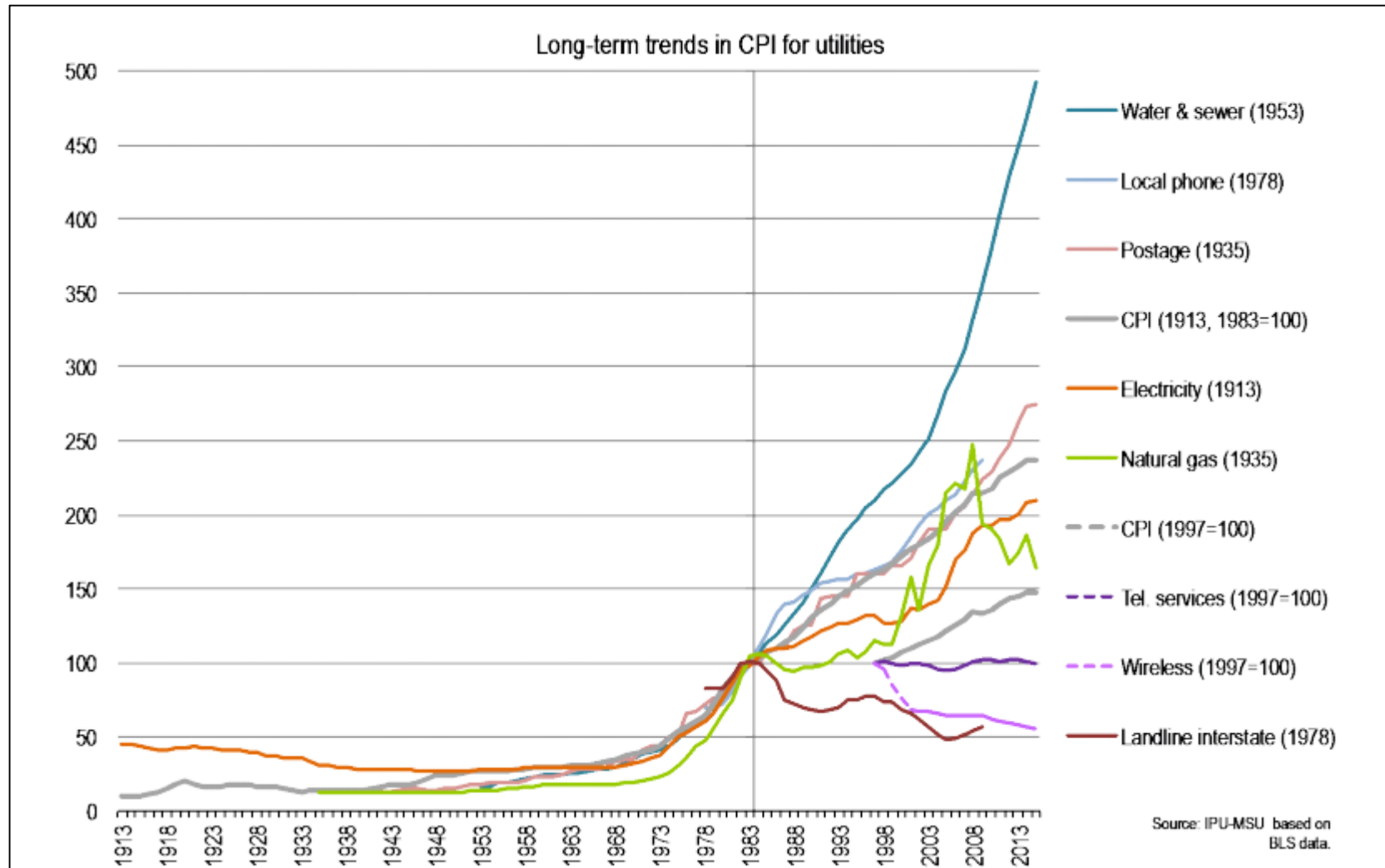
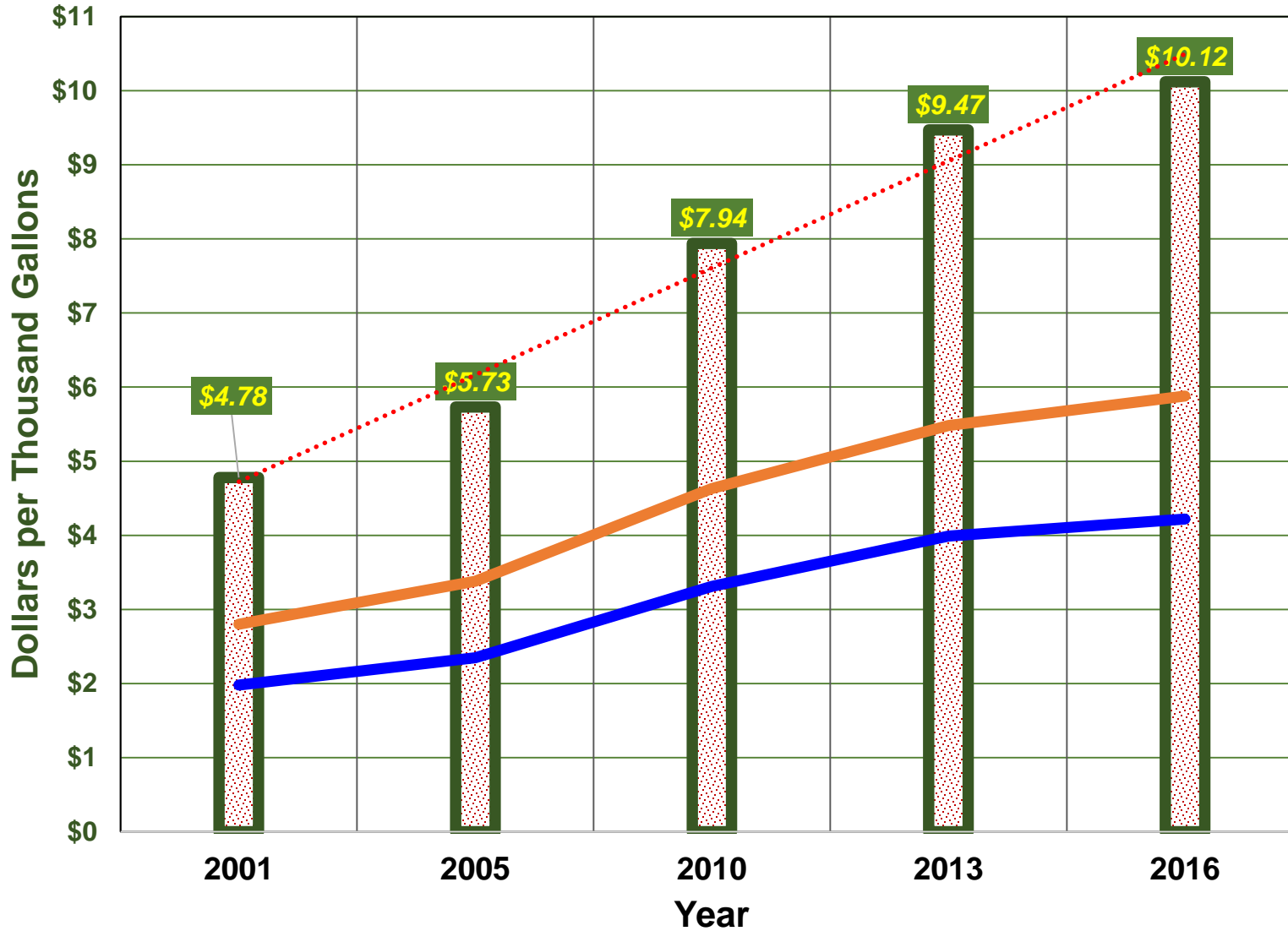


Exhibit 1. Long-term trends in the Consumer Price Index for utilities (1913-2015). The index is set to 100 for 1982-1984 except for telephone and wireless services, where the index is set to 100 for 1997. Year (*) indicates start of series.

Commercial Water and Sewer Rates for 100,000 gallons for Nation's 50 Largest Cities

Source: Black & Veatch - 50 Largest Cities Reports



***Even in Chicago, the Mayor Wants to
Double Water Rates!***



"Water is the
oil of the 21st
century."

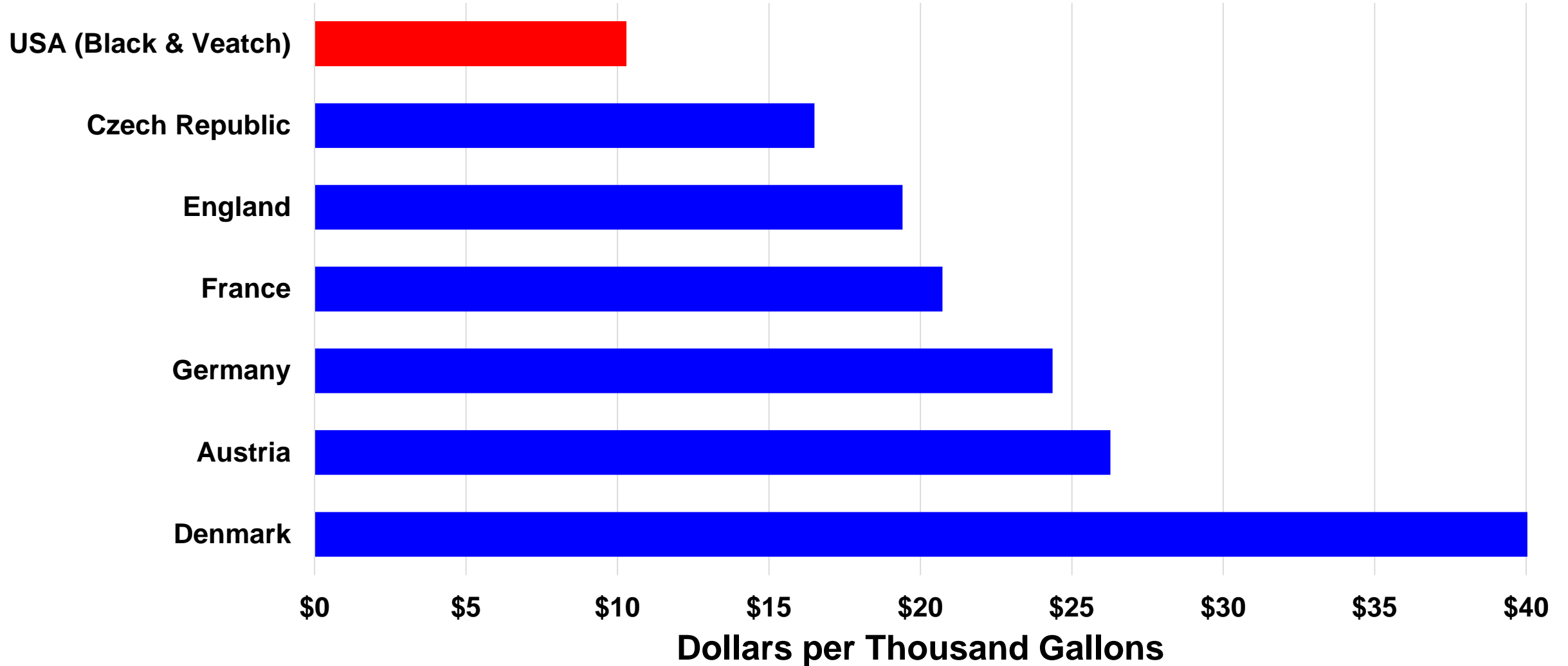
Source:
*Andrew Liveris,
Chief Executive,
Dow Chemical Co.,
August 2008.*

Average Residential Water and Sewer Rates in European Countries Compared to USA in 2013

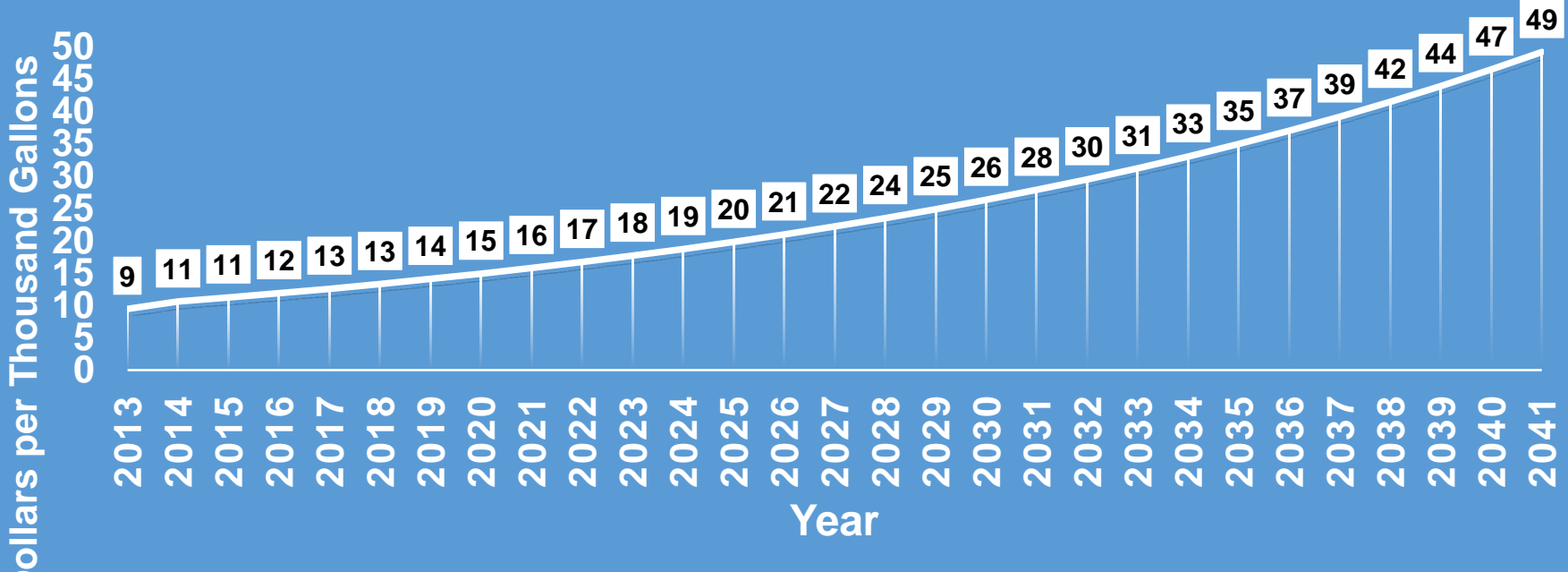
Sources of Information:

Europe - <http://www.globalwaterintel.com/archive/12/9/market-profile/global-water-tariffs-continue-upward-trend.html>

USA - <http://bv.com/docs/mana>



PROJECTED NATIONAL FUTURE WATER AND WASTEWATER COSTS AT CURRENT INFLATION RATE OF 5.85%



Cost to Flush a Toilet at Current Inflation Rate of 5.85%

Gallons per Flush	Cents per Flush in 2014	Cents per Flush in 2034
5	4.9	15.4
3.5	3.4	10.8
1.6	1.6	4.9
1.28	1.2	4.0

Bridges have been the Poster Child for Infrastructure Needs!



INFRASTRUCTURE GRADES FOR 2013

 ENERGY D+	 SCHOOLS D	 PUBLIC PARKS & RECREATION C-
 TRANSIT D	 ROADS D	 RAIL C+
 PORTS C	 INLAND WATERWAYS D-	 BRIDGES C+
 AVIATION D	 WASTEWATER D	 SOLID WASTE B-
 LEVEES D-	 HAZARDOUS WASTE D	 DRINKING WATER D
 DAMS D		

A: EXCEPTIONAL, B: GOOD, C: MEDIOCRE, D: POOR, F: FAILING

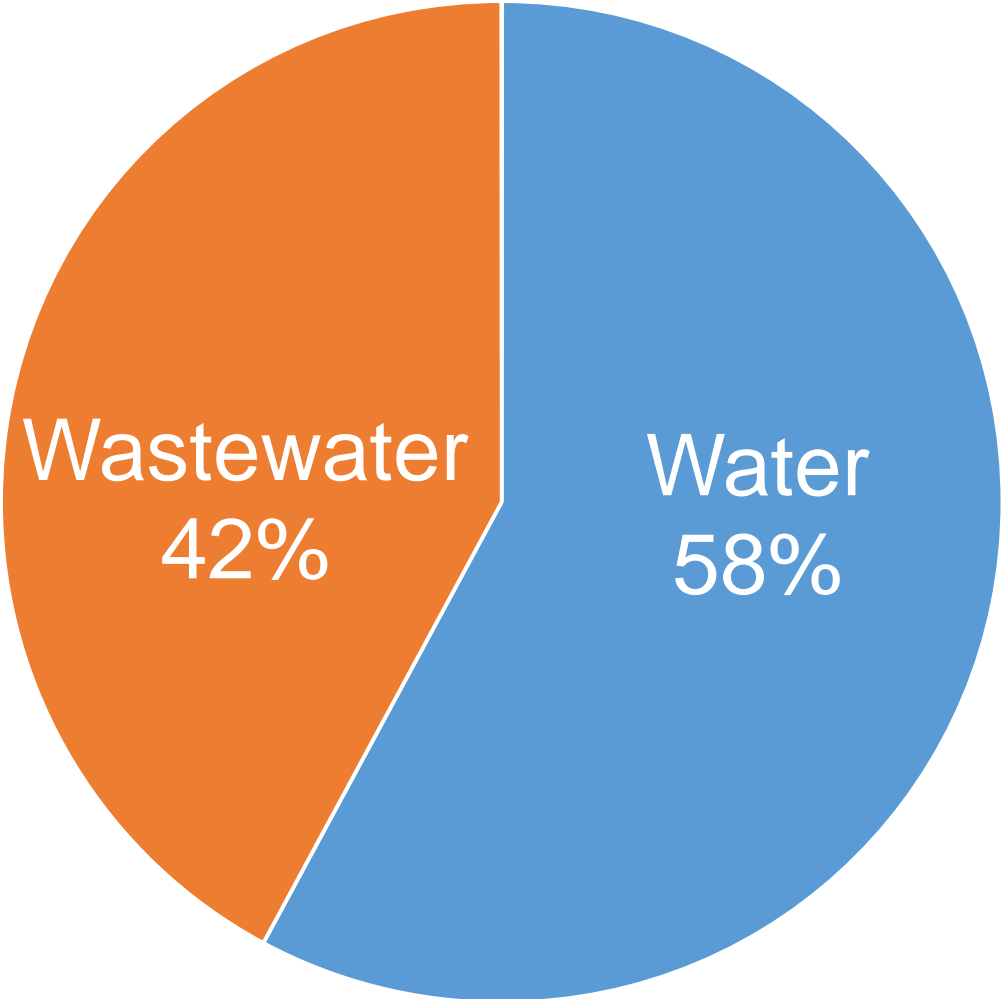
Each category was evaluated on the basis of capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation

**Buried No Longer: Confronting
America's Water Infrastructure
Challenge** (*American Water Works
Association, 2012*)+Investment needs
for buried drinking water infrastructure
total more than **\$1 trillion** nationwide
over the next 25 years.

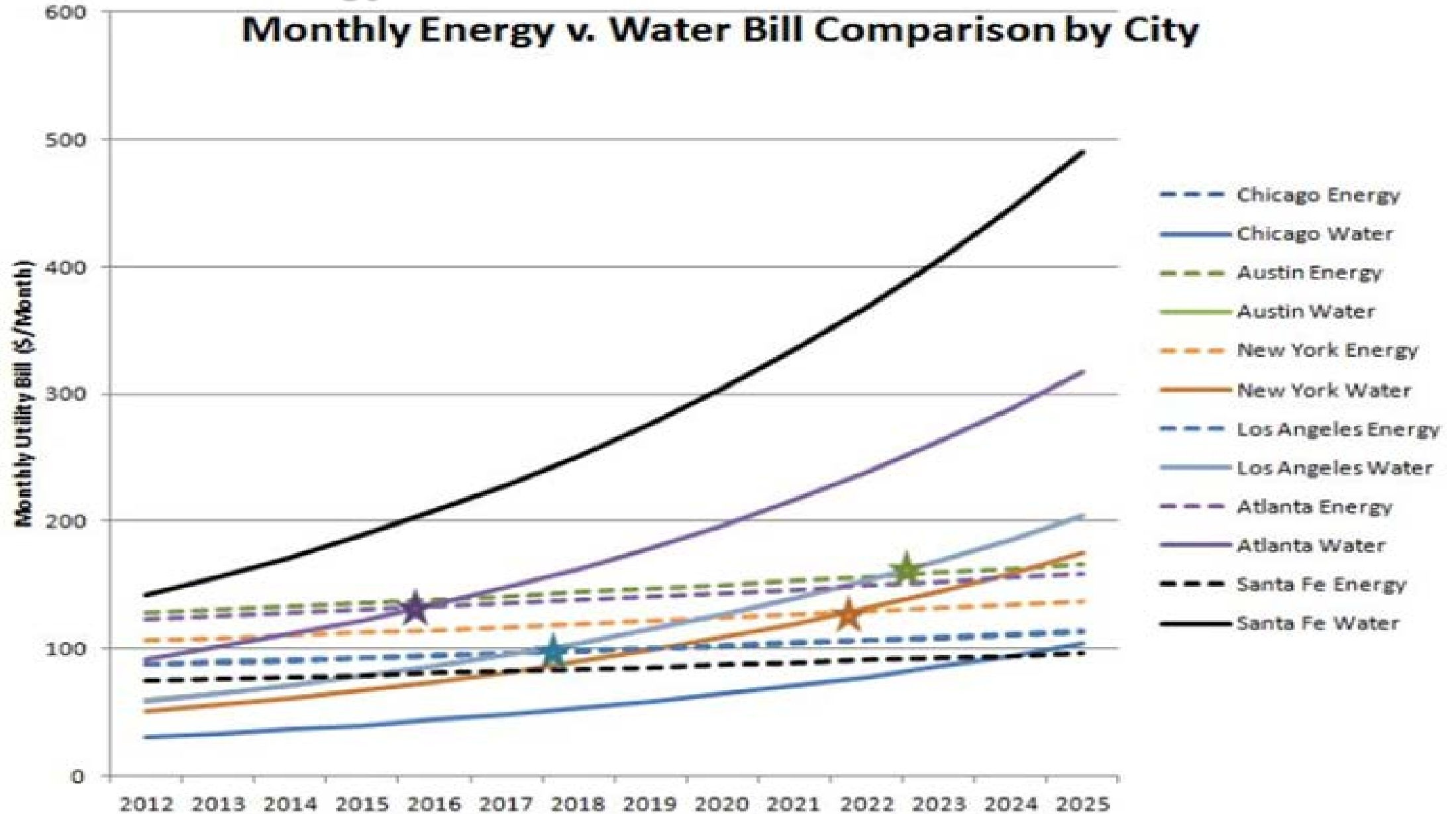
www.awwa.org/Portals/0/files/legreg/documents/BuriedNoLonger.pdf

EPA Breakdown of Water and Wastewater Infrastructure Dollar Needs

<http://www.usmayors.org/urbanwater/documents/LocalGovt%20InvtnMunicipalWaterandSewerInfrastructure.pdf>



This graph shows when residential water and sewer bills will exceed energy bills in selected cities (source – Alliance for Water Efficiency)



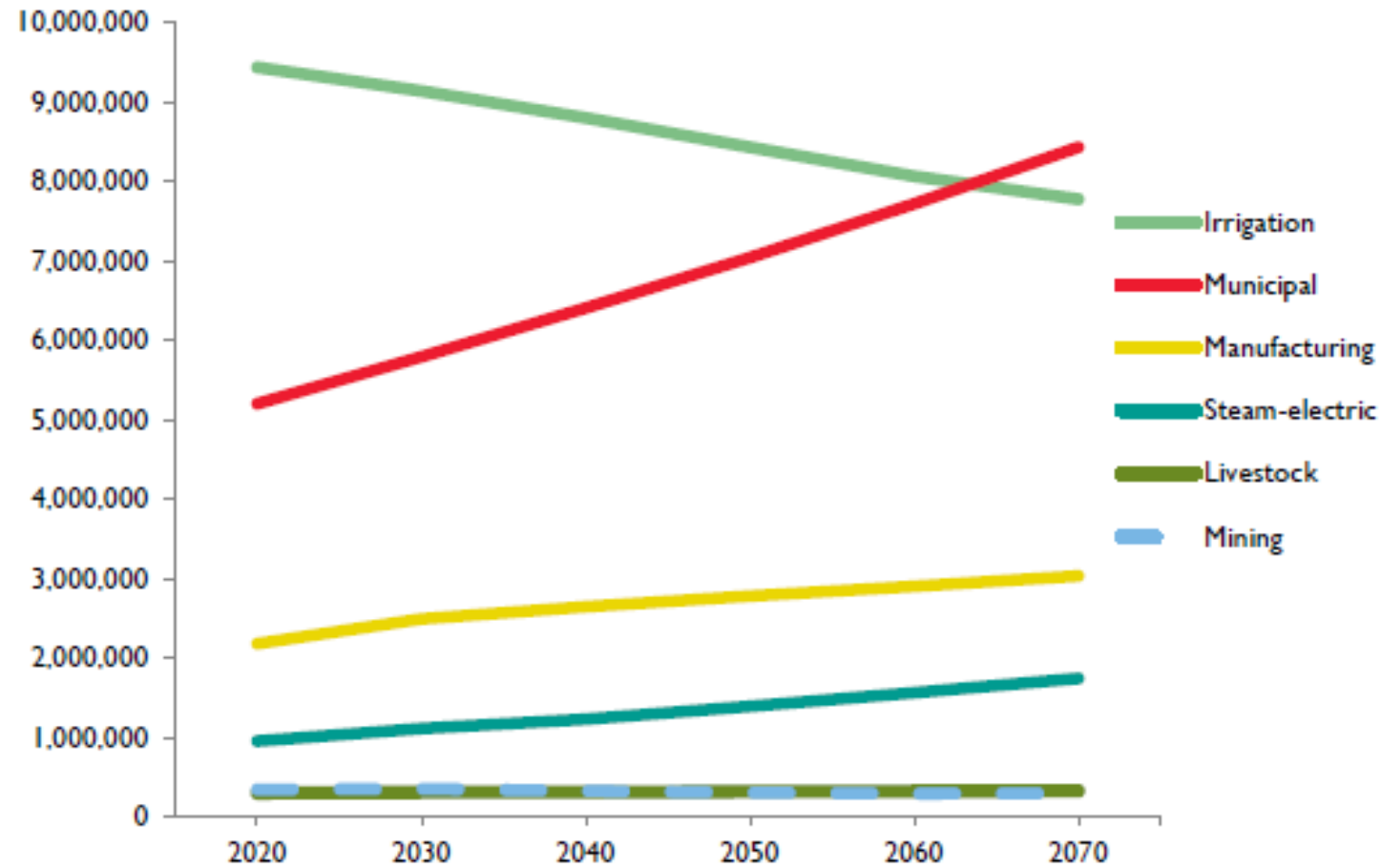
The Texas Example

Future Capital Cost Through 2070 in Texas

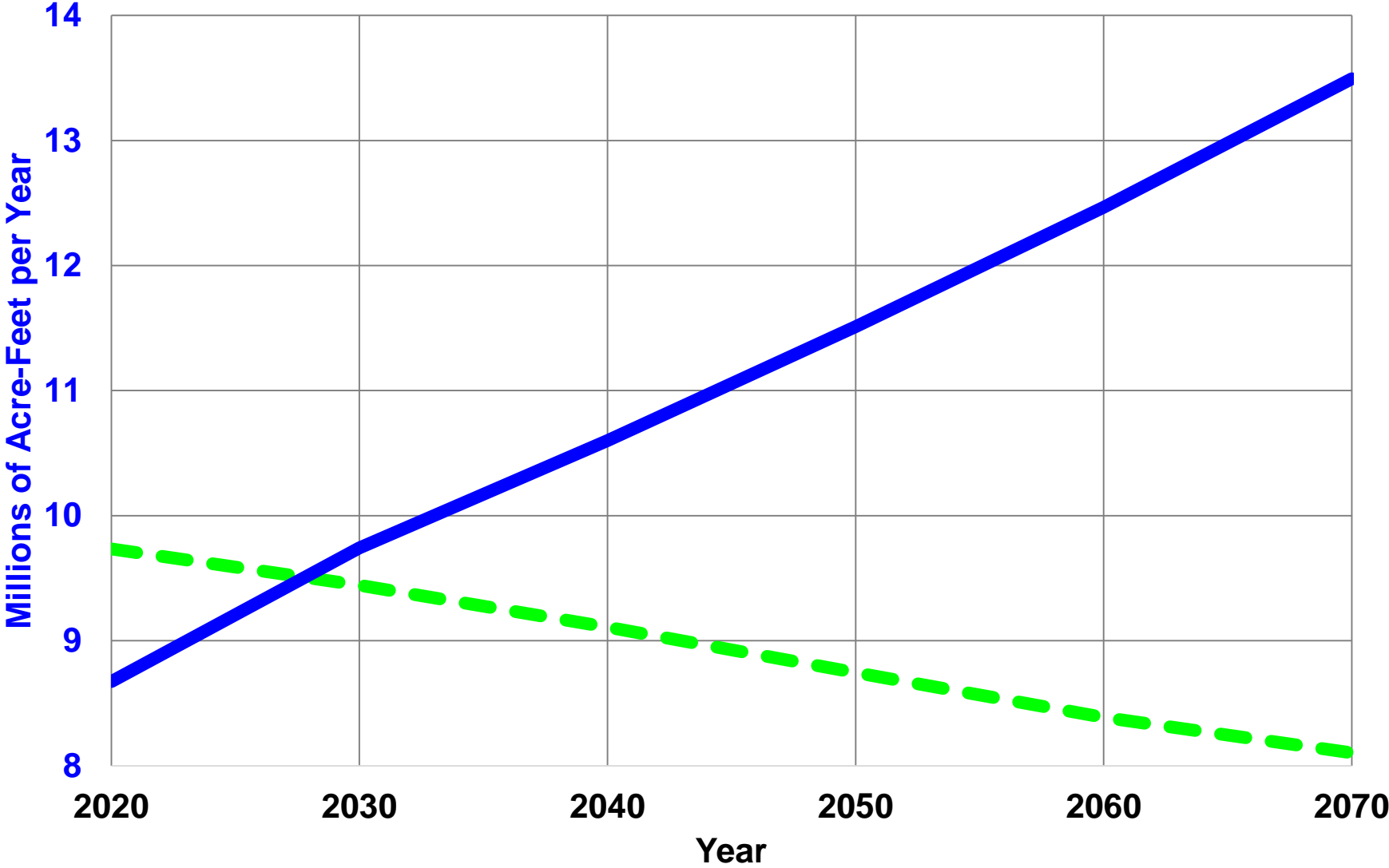
- Total Future Capital Costs for Texas Water/Wastewater Related Resources = \$230 to \$300 Billion
- **75% to 80%** for Water and Wastewater Infrastructure **NOT RELATED TO NEW SUPPLY**
- **New Supply** is only about **20% to 25%** of Future Capital Costs
- **New Supply** Costs = **\$62.6 Billion**

Detailed Breakdown of Projected Water Use in Texas by Category

Figure 5.5 - Projected annual water demand by water use category (acre-feet)



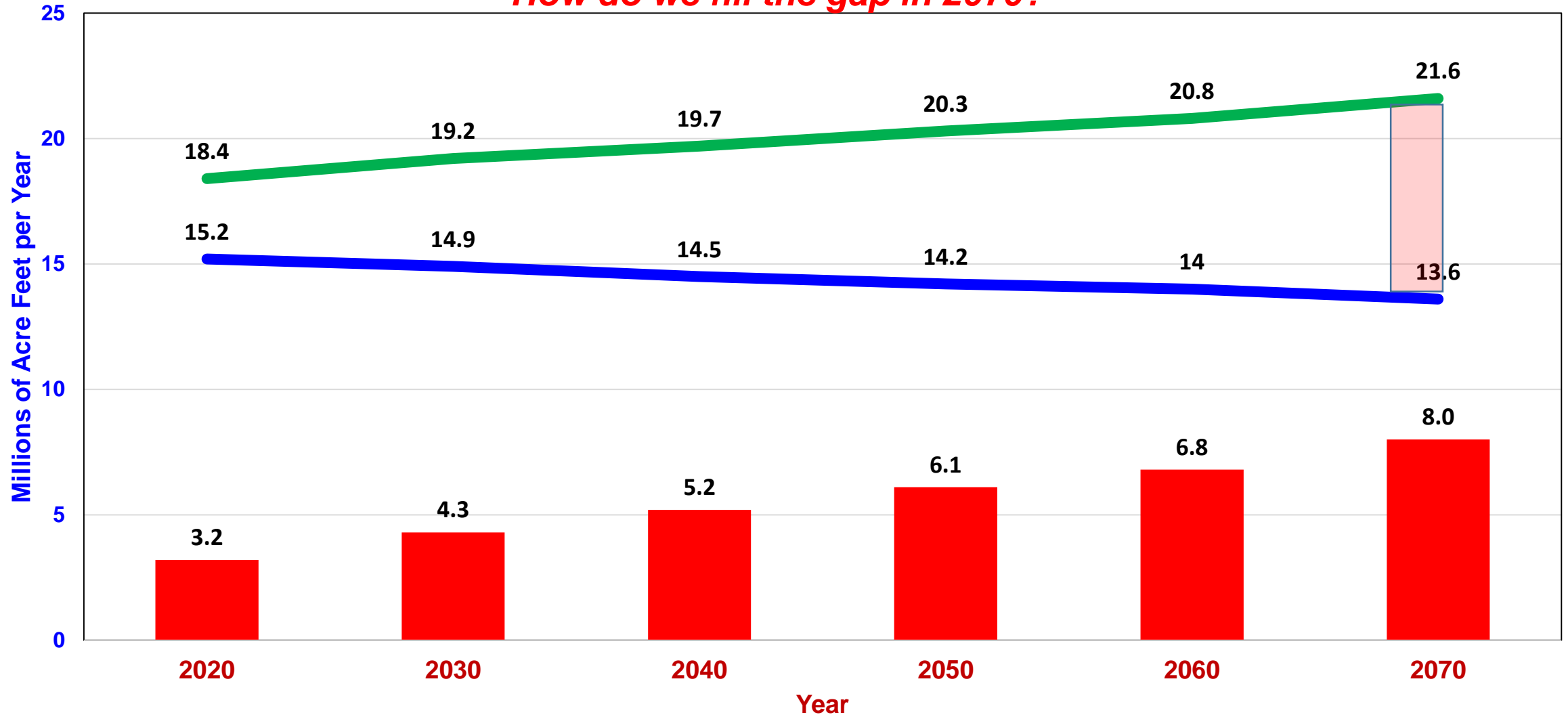
Future Texas Water Use 2017 Texas Water Plan



● Agricultural — Urban & Industrial

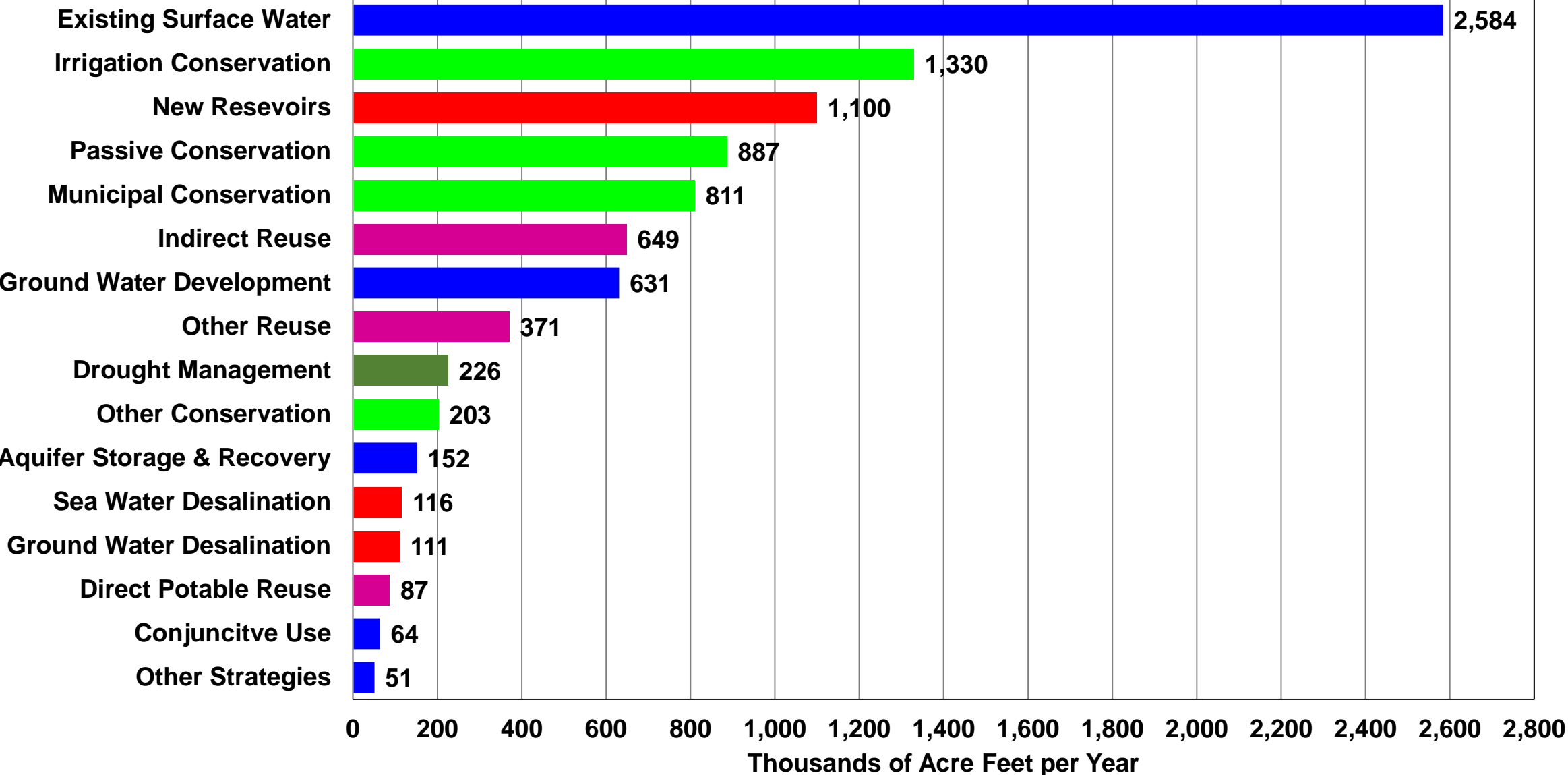
Total Demand, Existing Supply, & Shortfall in Texas

How do we fill the gap in 2070?

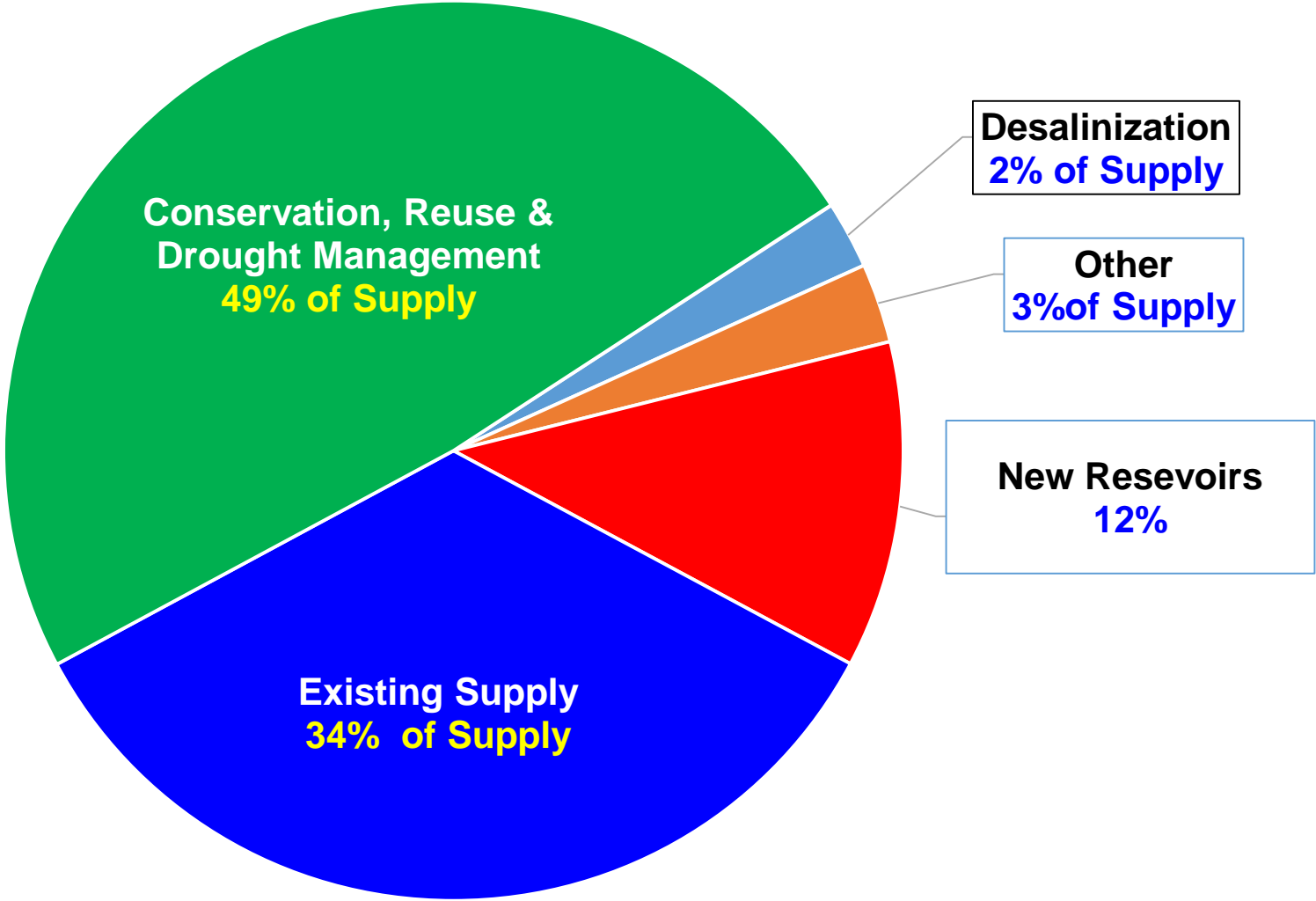


■ Shortfall — Demand — Existing Supply

New Supply in Texas in 2070

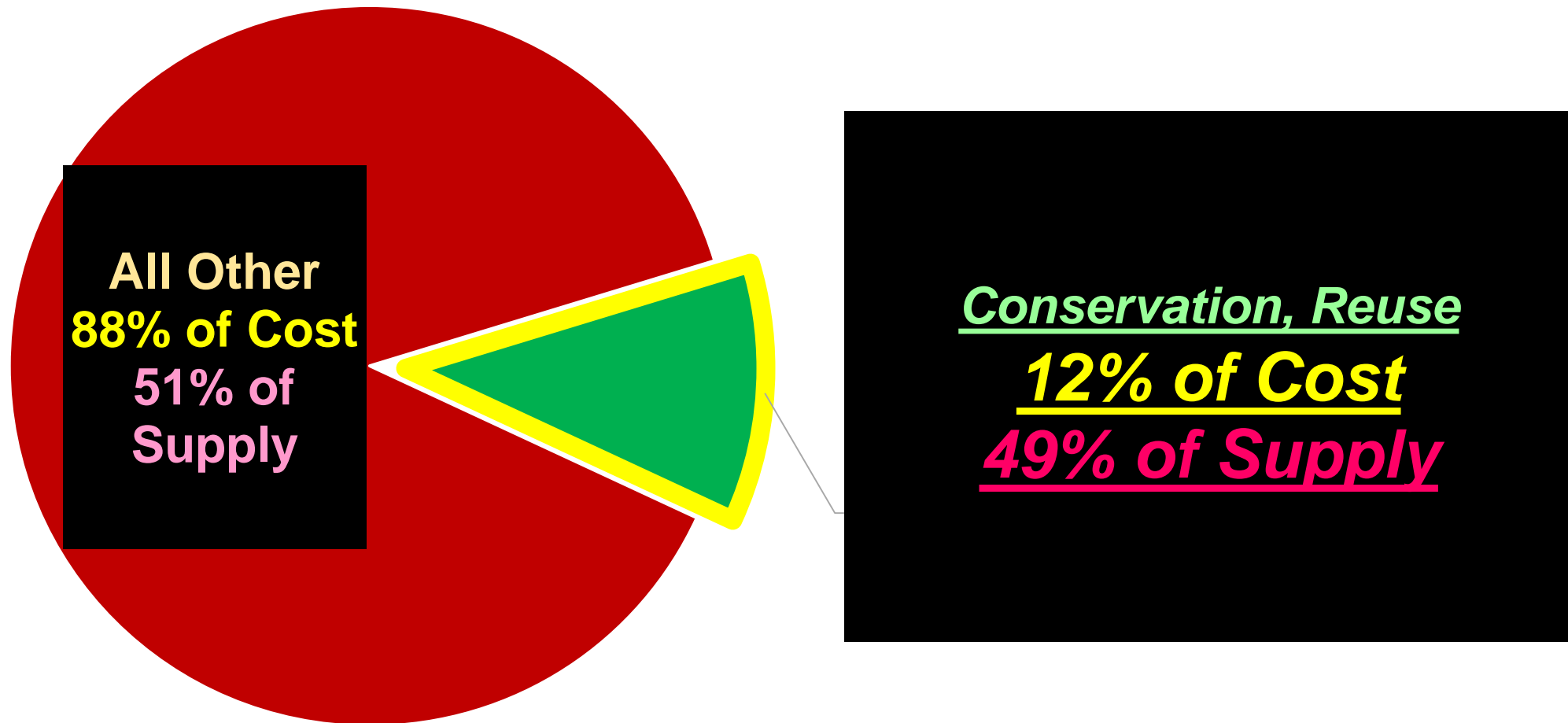


Where Future Water Will Come From And its Capital Cost in Texas in 2070

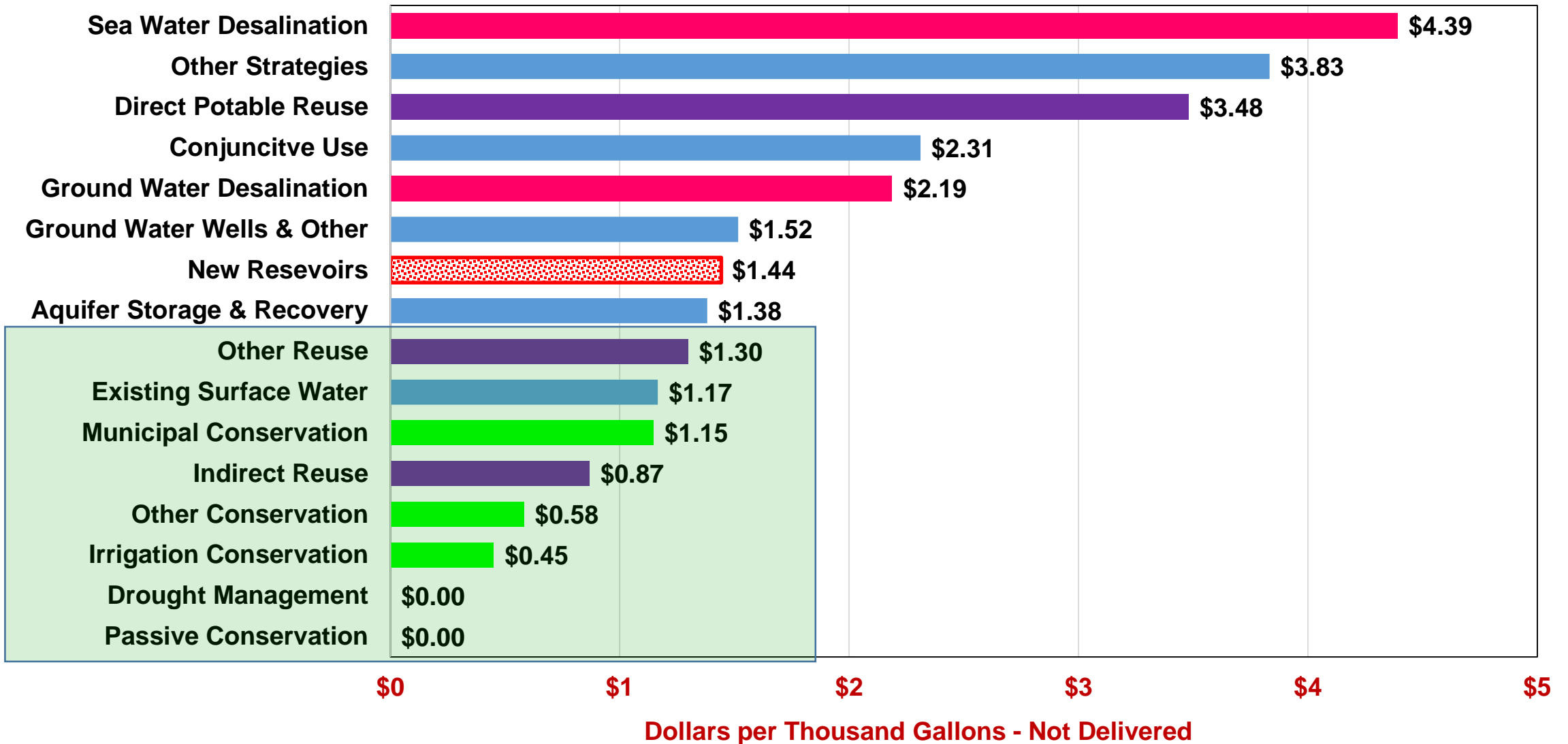


Capital Cost of Future Projects in 2017 Texas Water Plan - \$62.6 Billion

<http://www.twdb.texas.gov/waterplanning/swp/2017/index.asp>



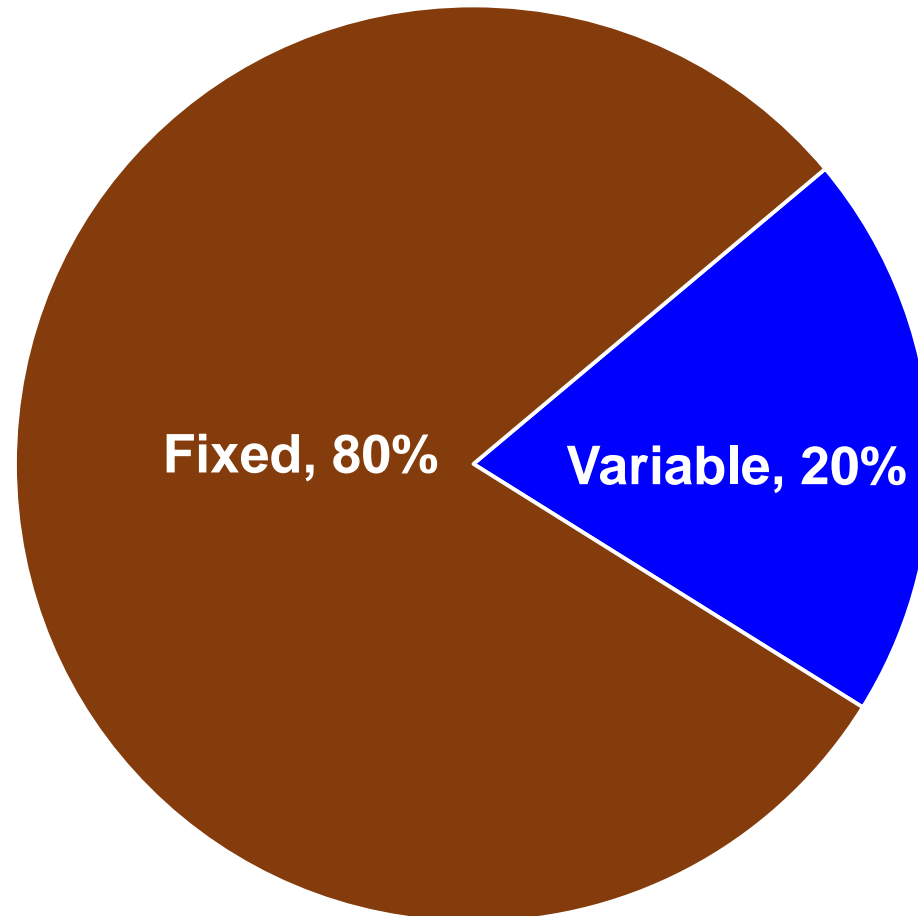
Texas 2017 Water Plan Cost in Dollars per Thousand Gallons



The Cheapest Water
You Will Ever Have
Is The Water You
Already Have!

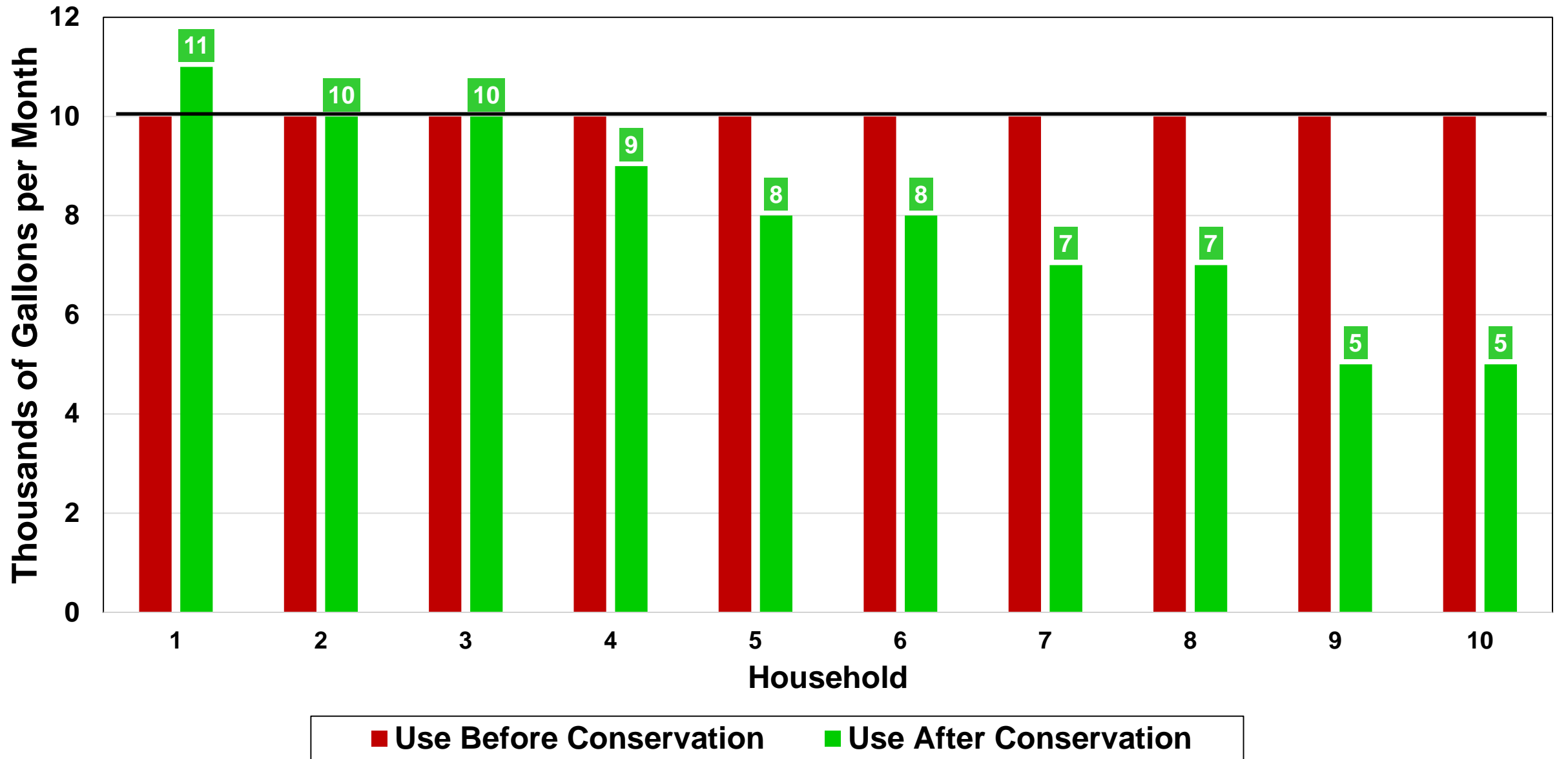
10 Homes in a Hypothetical City

Typical Utility Water/Wastewater Cost Breakdown



Hypothetical Household Use for 10 Houses

Average Use - 10Kgal/Month Before - 8 Kgal/Month After

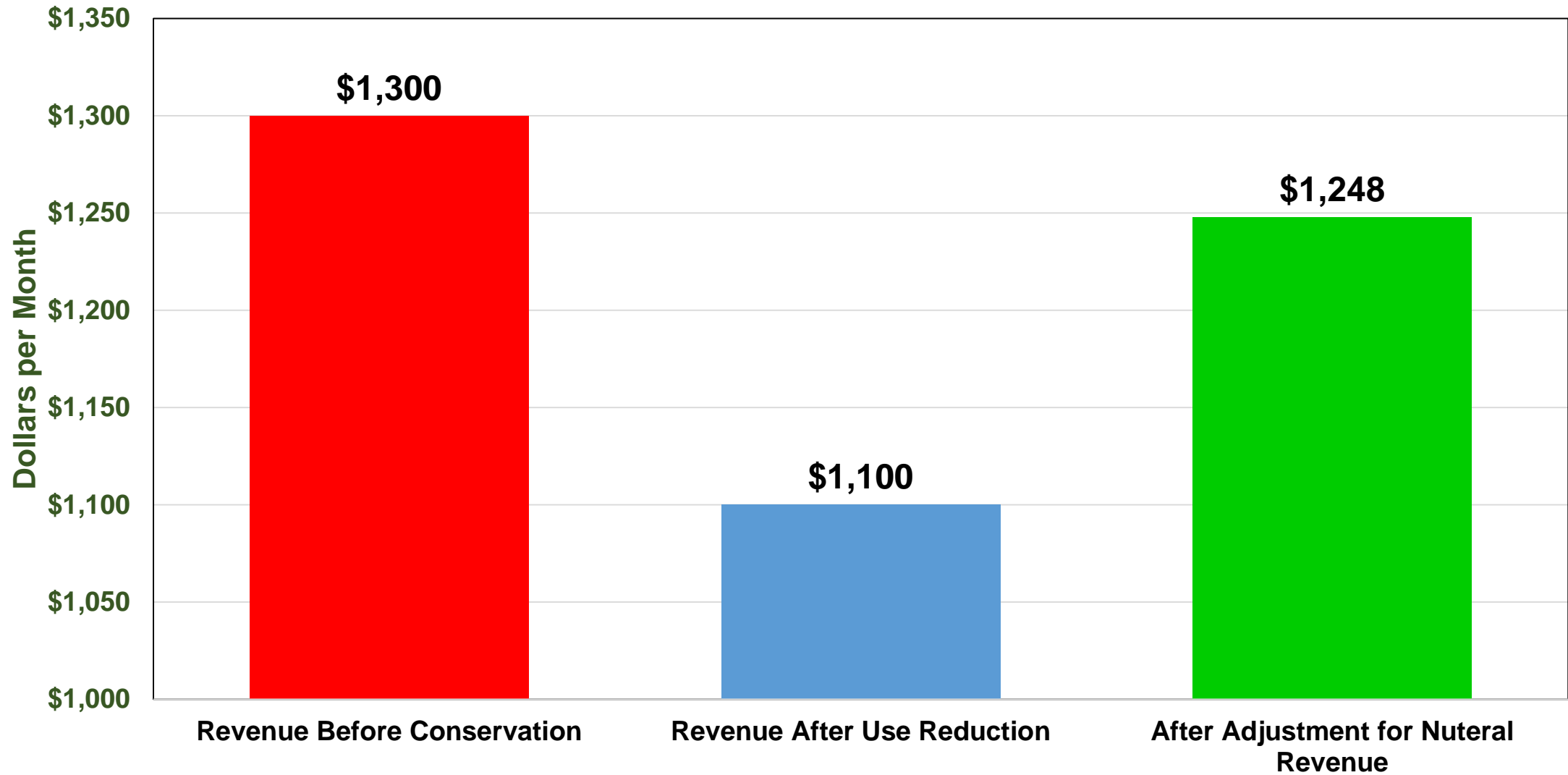


Analysis of Costs After Conservation

- Of the \$1,300 collected for the 10 homes, 20% is variable cost.
- Therefore variable cost equal \$260 each month.
- The 10 homes reduce total water use to 8,000 gallons a month, down from 10,000 gallons a month, a 20% reduction
- Variable costs are also reduced by 20% or \$52 a month that does not have to be recovered to cover operating and fixed costs.
- This means that the Utility still needs to receive \$1,248 in revenue to cover its costs each month, down from \$1,300.
- The utility must raise rates for the 10 homes by 11.4%

Impact of Conservation on Revenue from 10 Homes

A \$52 per Month Savings

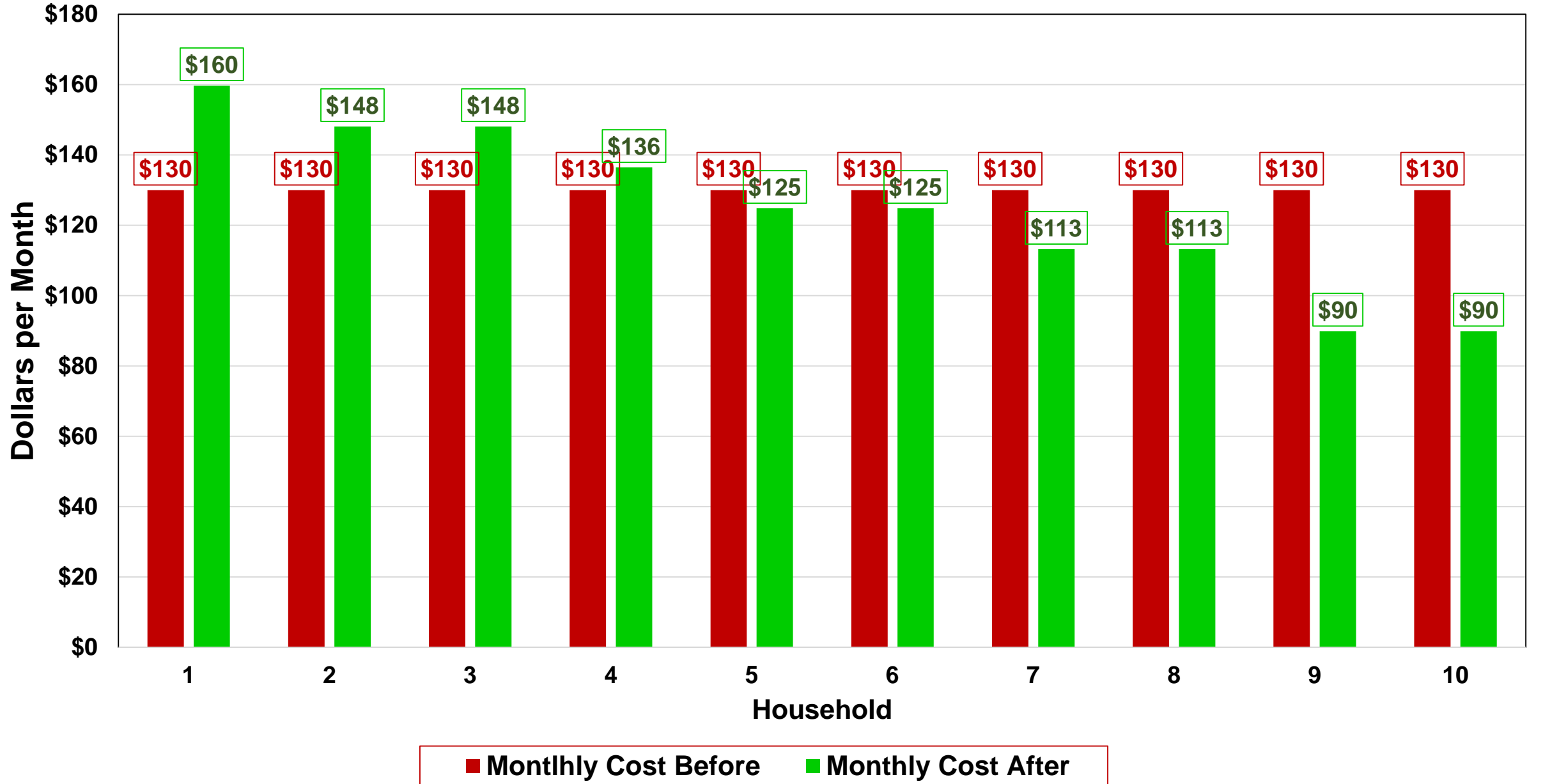


Well, Rates **DID** have to Go Up!

Current Rate Structure	Use fees per 1,000 Gallons		
Type of Service	Water	Sewer	Total
\$/kgal over 2,000 gallons	\$4.50	\$5.50	\$10.00
Base fees for first 2,000 gallons	\$25.00	\$25.00	\$50.00

New Rate Structure	Use fees per 1,000 Gallons		
Type of Service	Water	Sewer	Total
\$/kgal over 2,000 gallons	\$5.85	\$5.785	\$11.635
Base fees for first 2,000 gallons	\$27.50	\$27.50	\$55.00

Monthly Water & Wastewater Fees Before and After Conservation



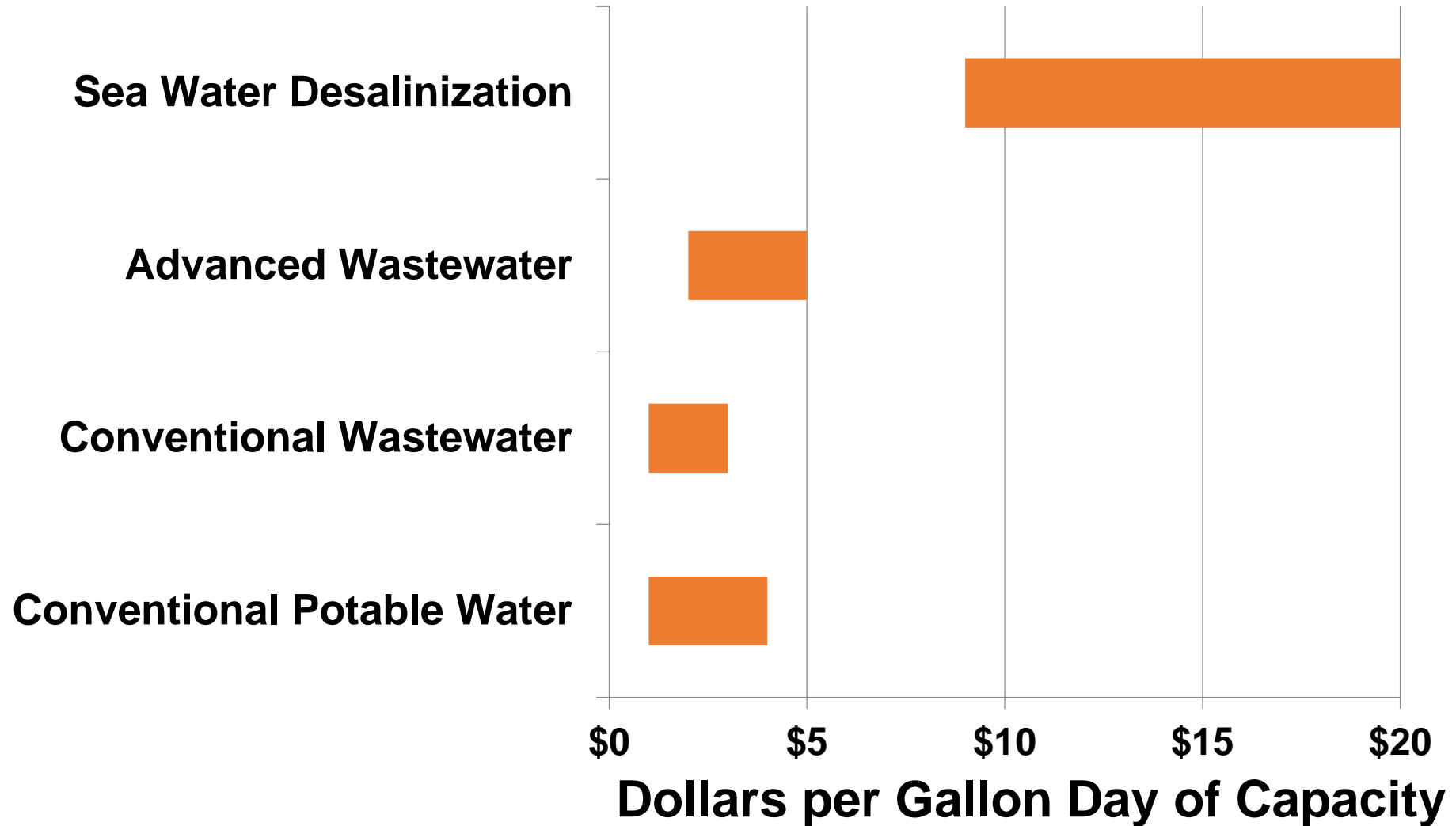
THE BOTTOM LINE!

- Those who did not conserve pay more.
- Those who do a good job pay less – some way less.
- Total bills are actually reduced even though rates are higher and total revenue demands WENT DOWN!
- AND THE TOTAL CHARGE FOR WATER SERVICE TO THE 10 HOMES WAS REDUCED BY \$52 A MONTH!

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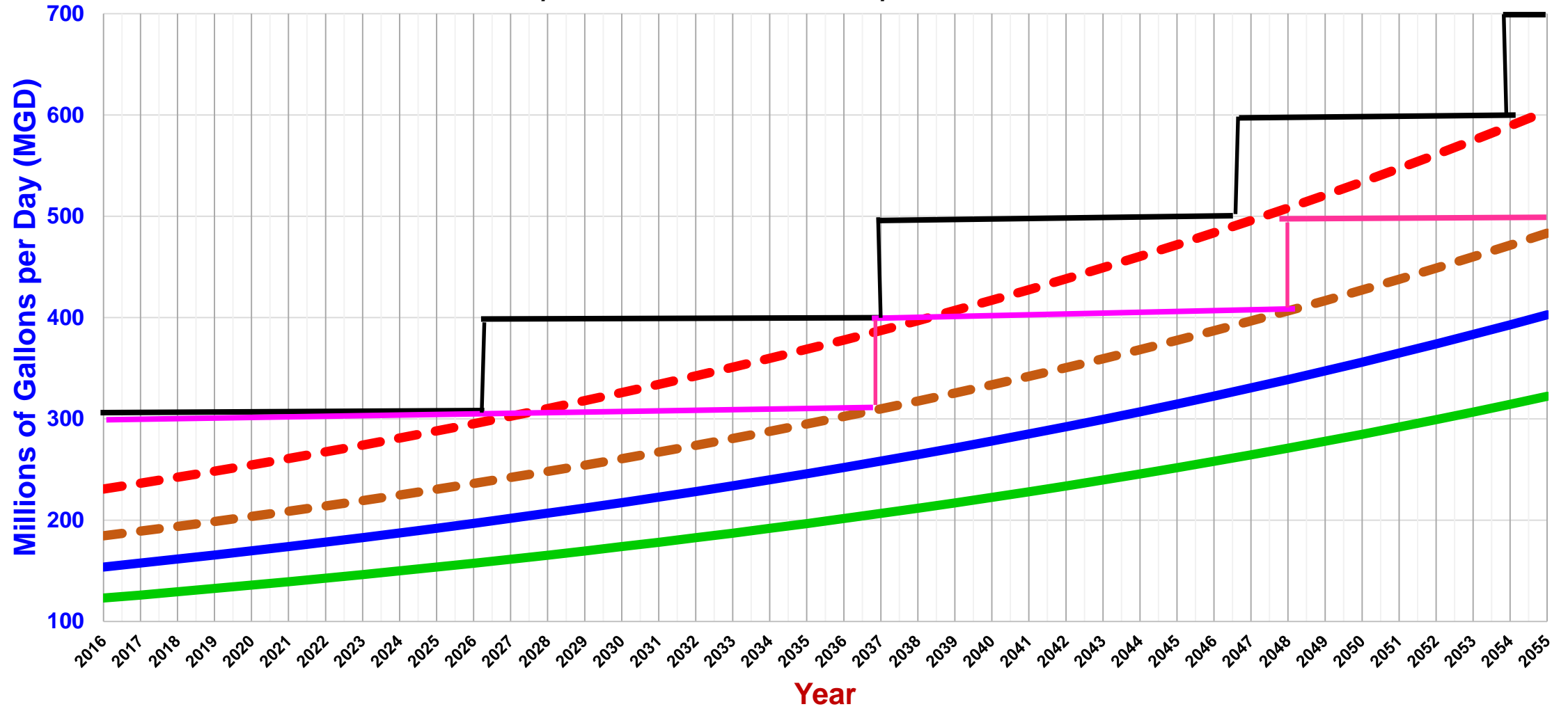
Water Treatment Capacity Impacts

Capital Cost of Water and Wastewater Treatment



Future Expansions of Water Treatment Capacity if Utility Population Grows at 2.5% a Year

4 expansions no conservation - 2 expansions with conservation



Example City

Before Conservation

- Now uses 150 MGD
- Population Growth – 2.5%/Year
- Peak Factor 1.7
- Peak Day – 225 MGD
- In 40 years will expand to 405 MGD
- Peak 604 MGD
- Four plant expansions

With Conservation

- Conservation – 20% use reduction
- Peak day down to 1.5
- In 40 years average = 322 MGD
- Peak 483 MGD
- Two plant expansions

***That is a \$300 Million to
\$800 Million Dollar Capital
Savings by not having to
build 200 MGD of capacity
and expanded supply!***

Conservation Delays Future Capital Investment Needs

The Bottom Line!

With Conservation & Reuse

1. We get more economic expansion on the same infrastructure;
2. Delay when politically sensitive bond elections must be held;
3. Reduce future costs;
4. Keep rates as low as possible.

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