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The Impact of Water Conservation and Reuse Codes, Standards, Regulations and Programs on Present and Future Water Supply and Cost in Texas

H.W.(Bill) Hoffman, P.E.

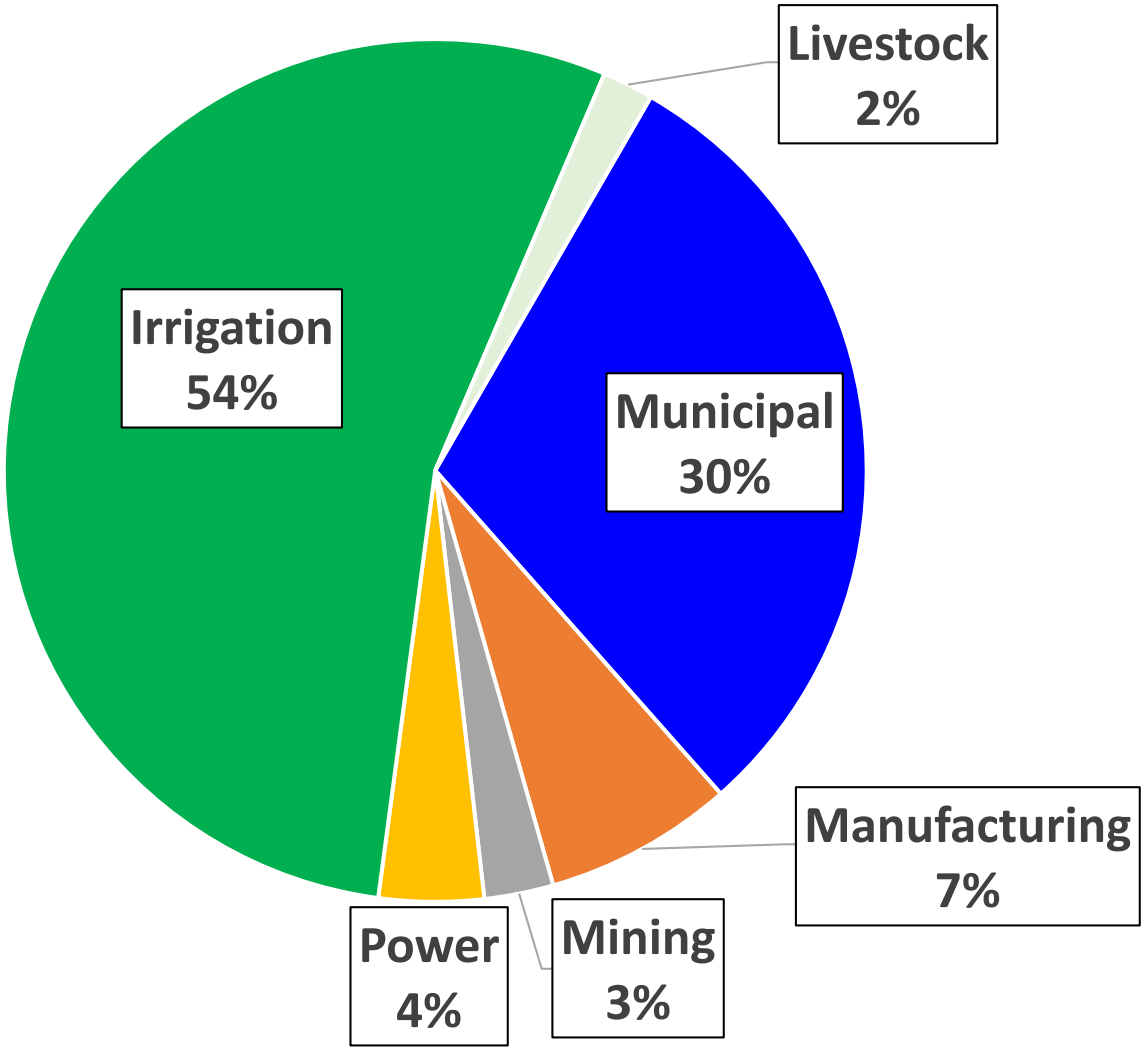
H.W.(Bill) Hoffman & Associates, LLC

512-294-7193

billhoffmantx@earthlink.net

A brief look at recent Texas water use

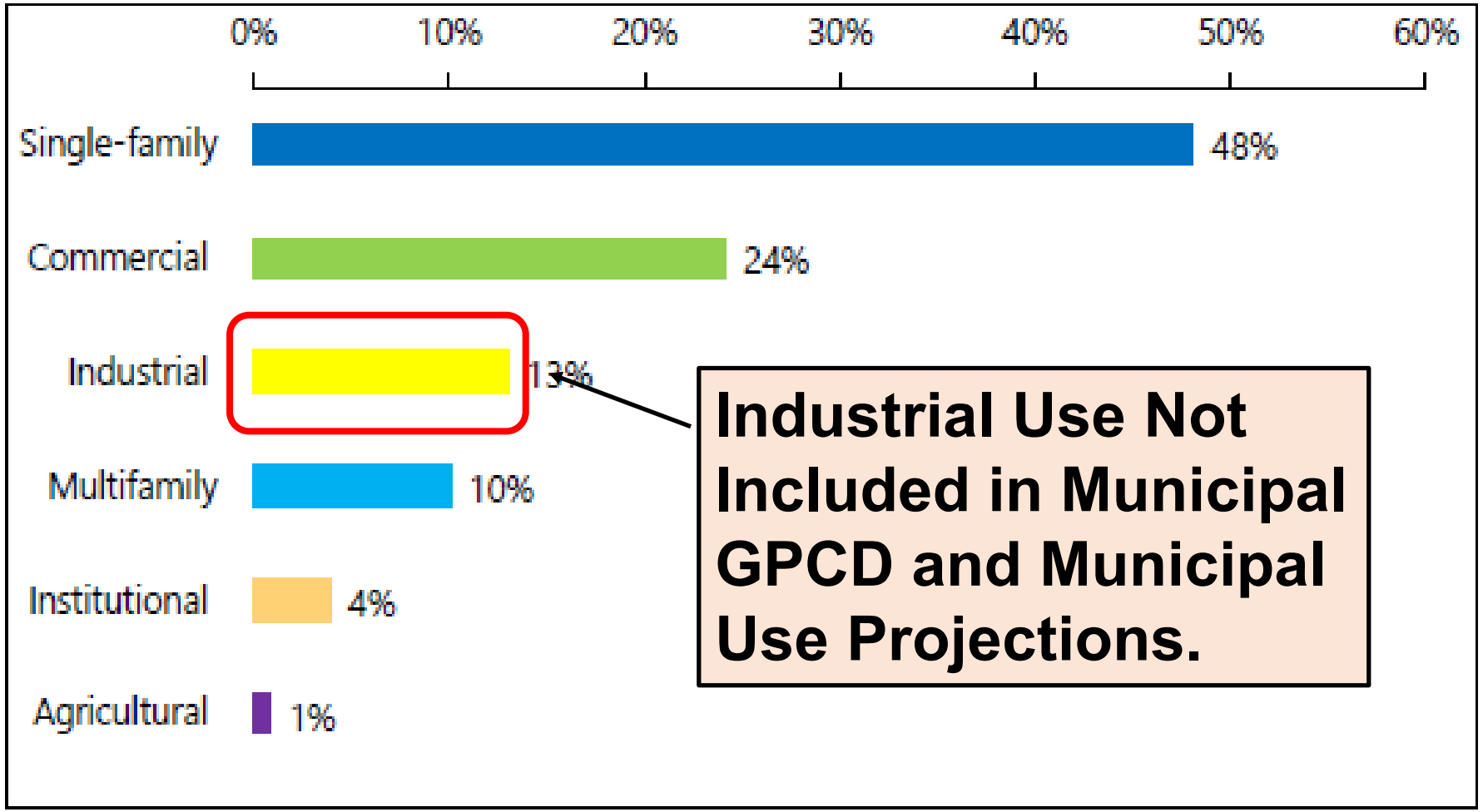
How Texas Currently Uses Water



Municipal includes residential, multifamily, commercial, institutional use as well as leak loss.

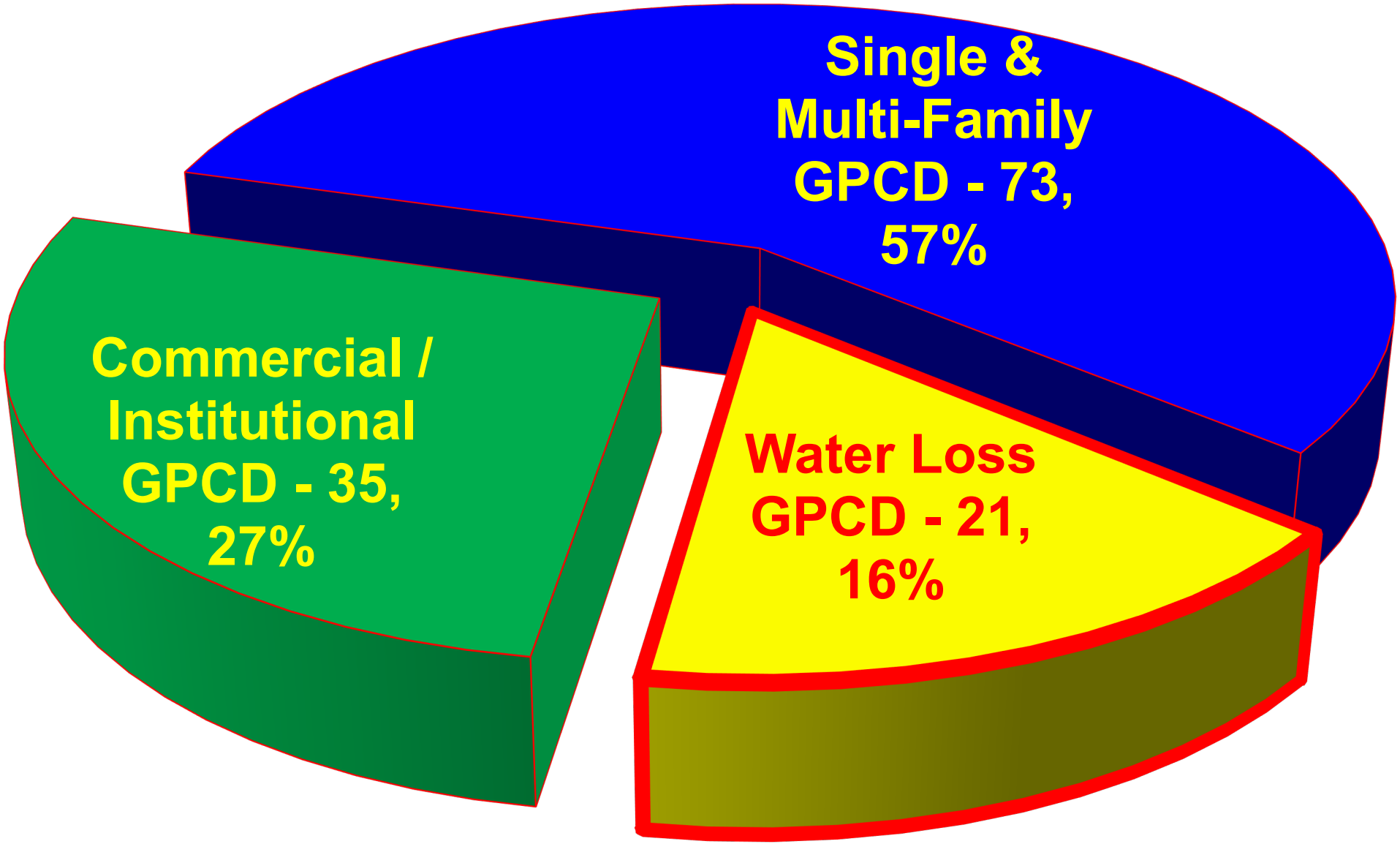
Municipal Sales of Water by User Type in Texas in 2019

Figure 4 – Sector-based water use, 2019



Note: Sectors are shown as a percentage of total metered water by volume.

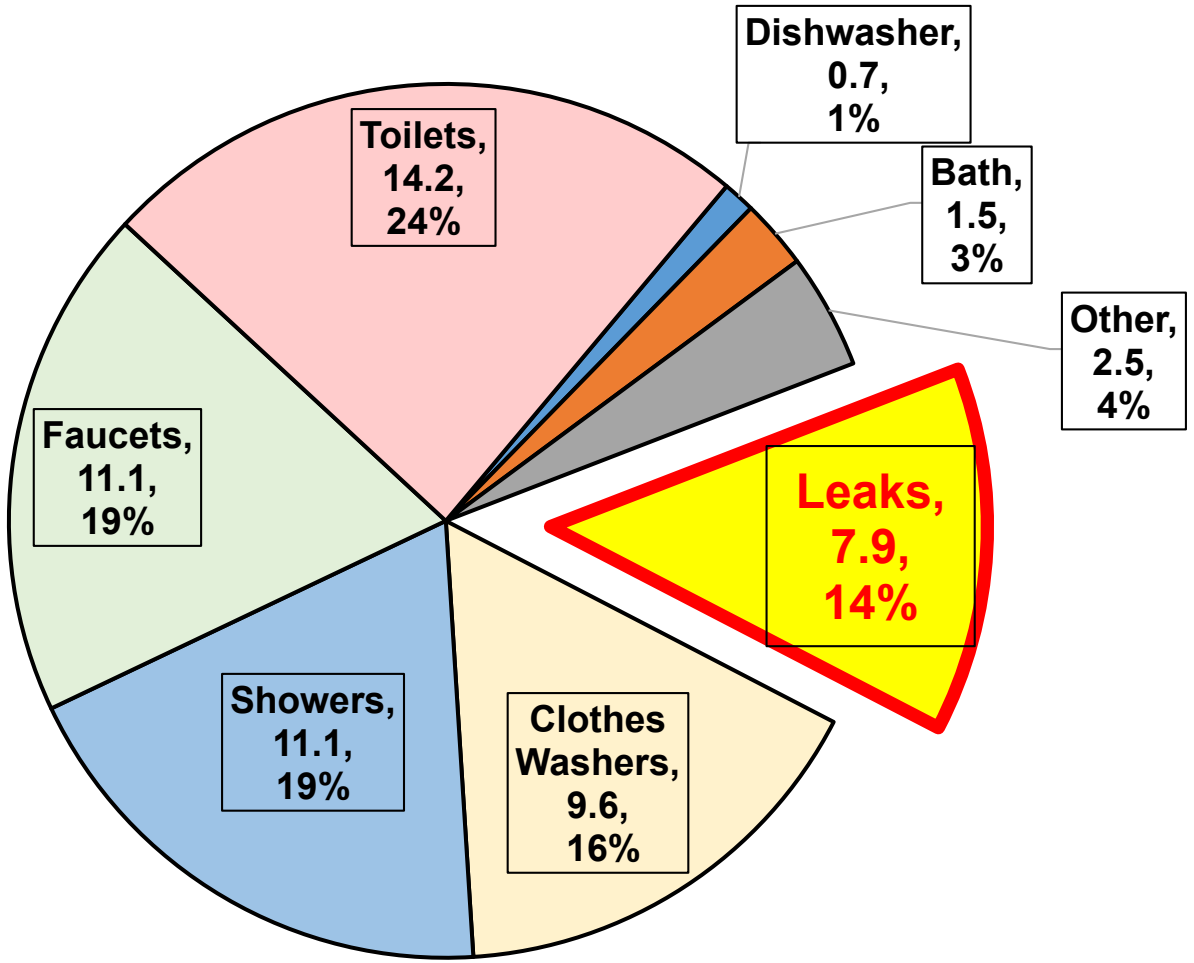
Municipal Water Use in Texas Now



Indoor Single Family Water Use
WRF 2016 Residential End Use Study

Values in GPCD and Percent of Total Use

Total Per Capita (GPCD) use from study = 58.6 GPCD



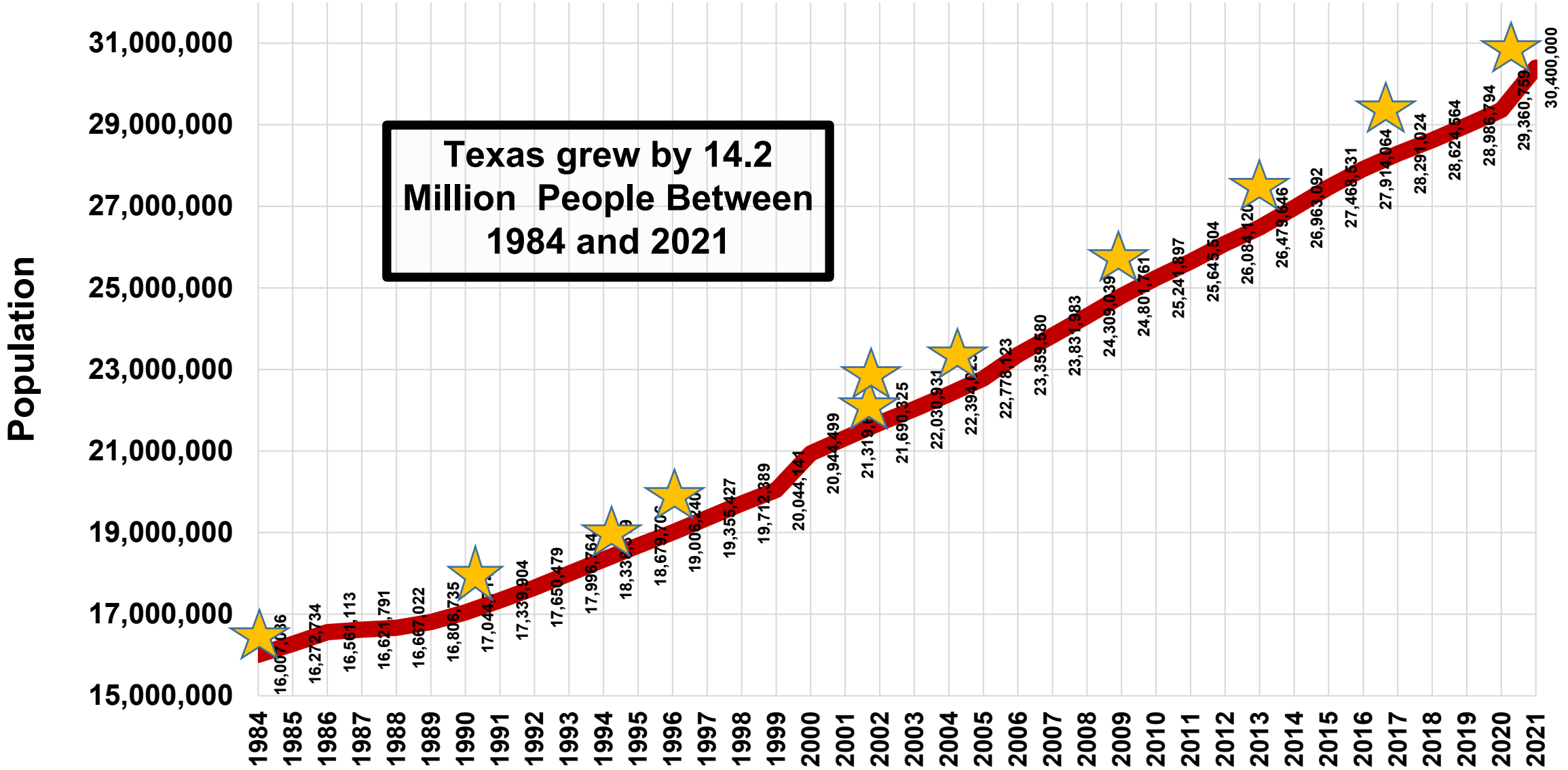
- **Texas Now Requires Annual Municipal Water Loss Audits.**

- **Most of the Future Capital Cost Projected for Municipal Conservation is Directed to Fixing Leaking Infrastructure and AMI Metering to Control Loss.**

- **Most of the Capital Costs Projected for Agricultural Conservation are directed at Controlling Water Loss.**

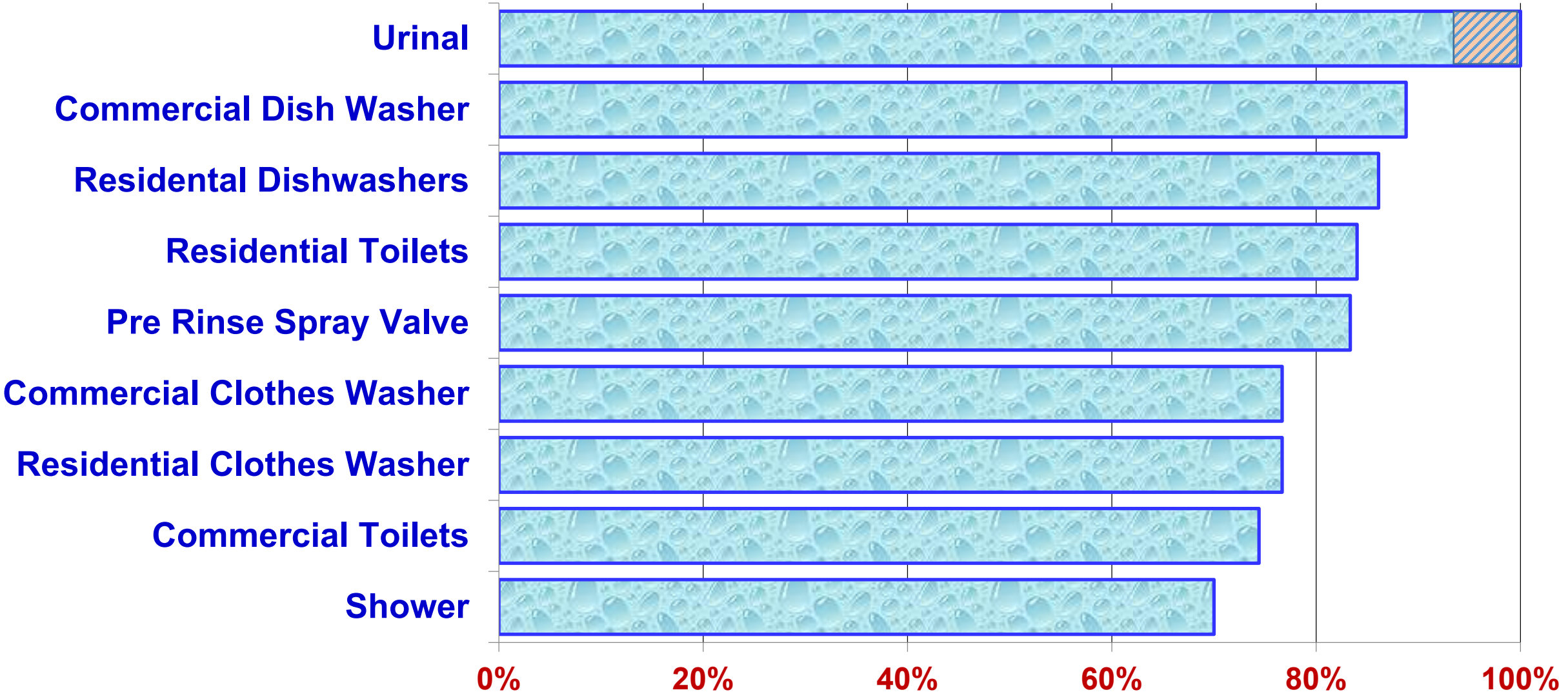
Where Conservation has Taken Texas

Texas Population - 1984 to 2021



Potential Reduction in Water Use 1984 to Now

After John Koeller & Bill Hoffman



Percent Reduction in Use for *Best in Class*

Change in Municipal Use since 1984

1984

- **1984 Population = 16.0 Million**
- **1984 Per Capita Use = 171 GPCD**

2022

- **2022 Population = 30.4 Million**
- **Five Year Average (2015-2019) Per Capita Use = 131 GPCD for utilities with conservation programs (pop. over 3,300 plus financial assistance, and water rights) (the rest about 136 gpcd)**

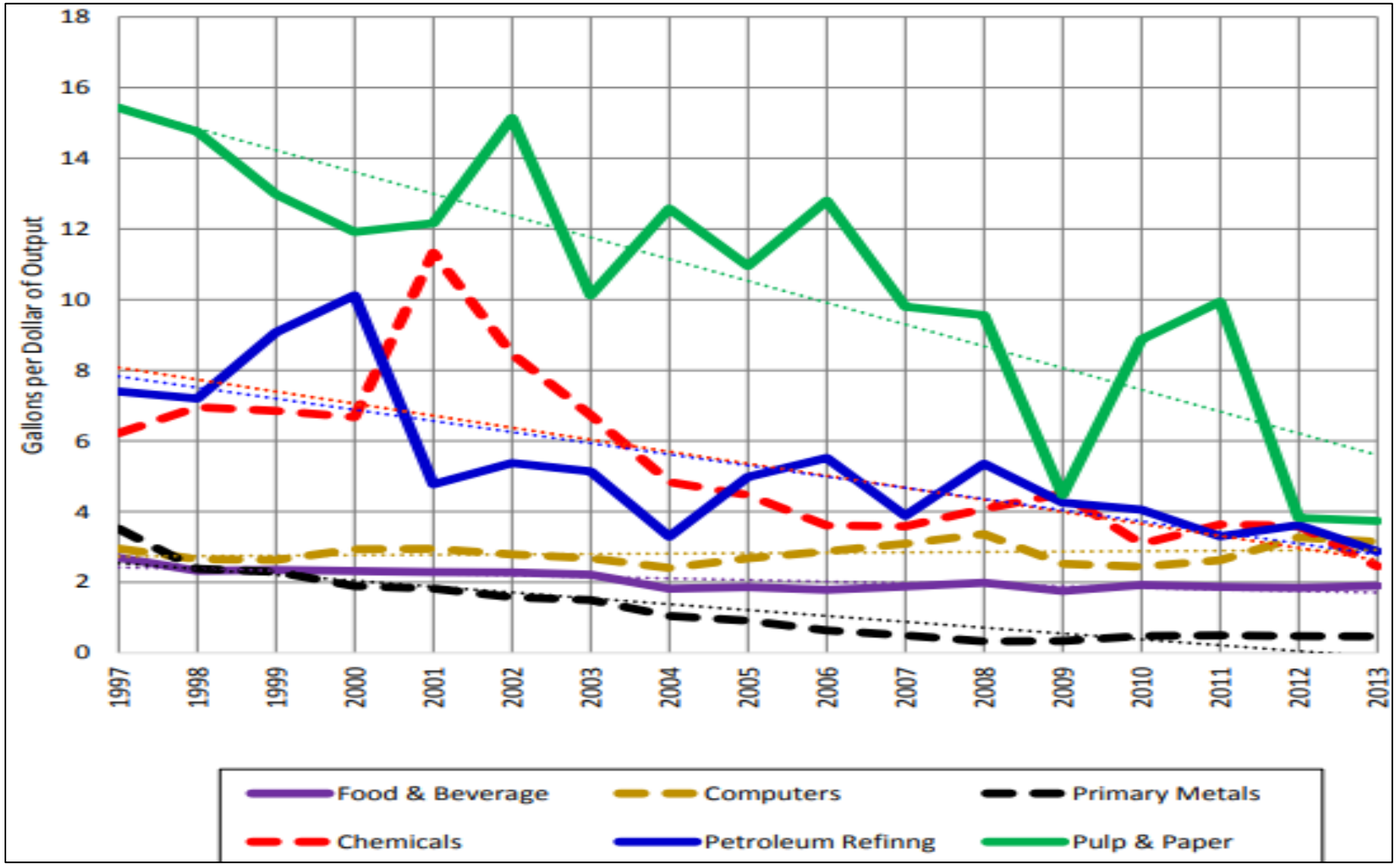
This represents a net savings of ***40 GPCD*** between 1984 and 2019

In 2022, Texas population is estimated to be 30.4 million

If Texans Use the Same Amount of Water per Person per Day Now for Municipal Use as they did in *1984*, Texas Water Use Would Increase by over

1.2 Billion Gallons a Day!

Manufacturing Water Use per Dollar of *Inflation Adjusted* Output in Texas



Water Use for Electric Power Generation per Kilowatt Hour is Decreasing as Texas Now Gets Over 25% of Its Power from Renewables

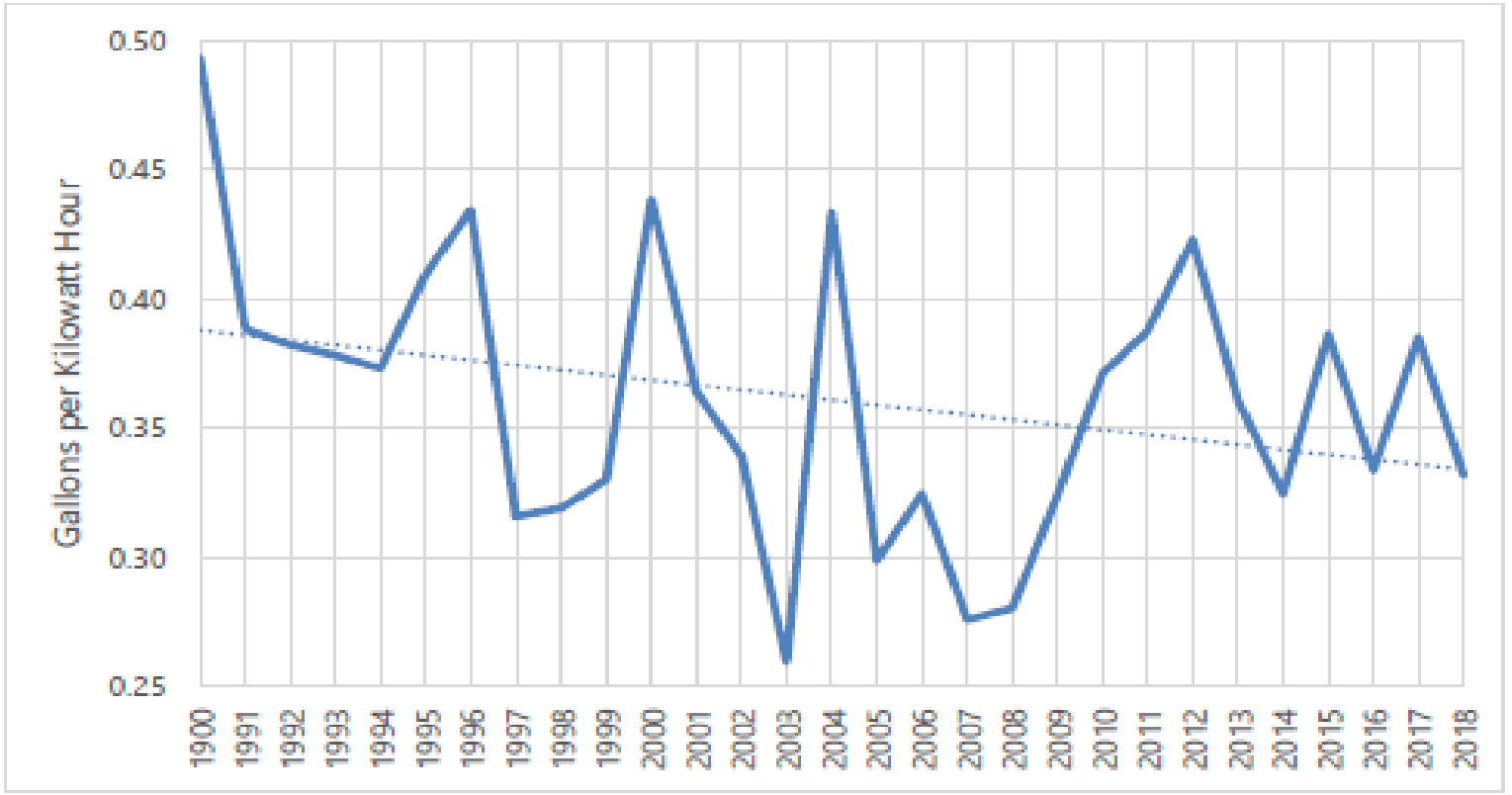
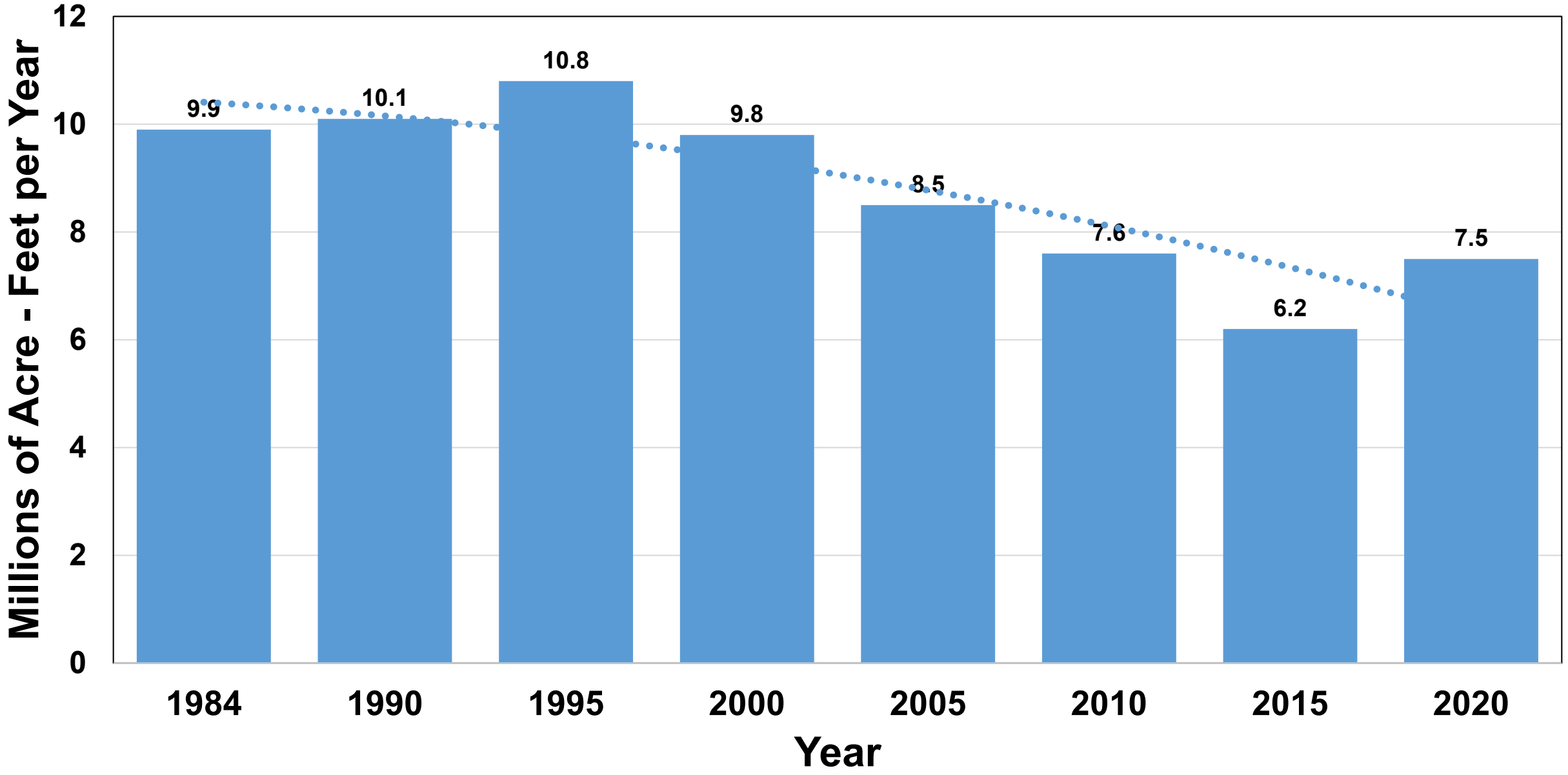
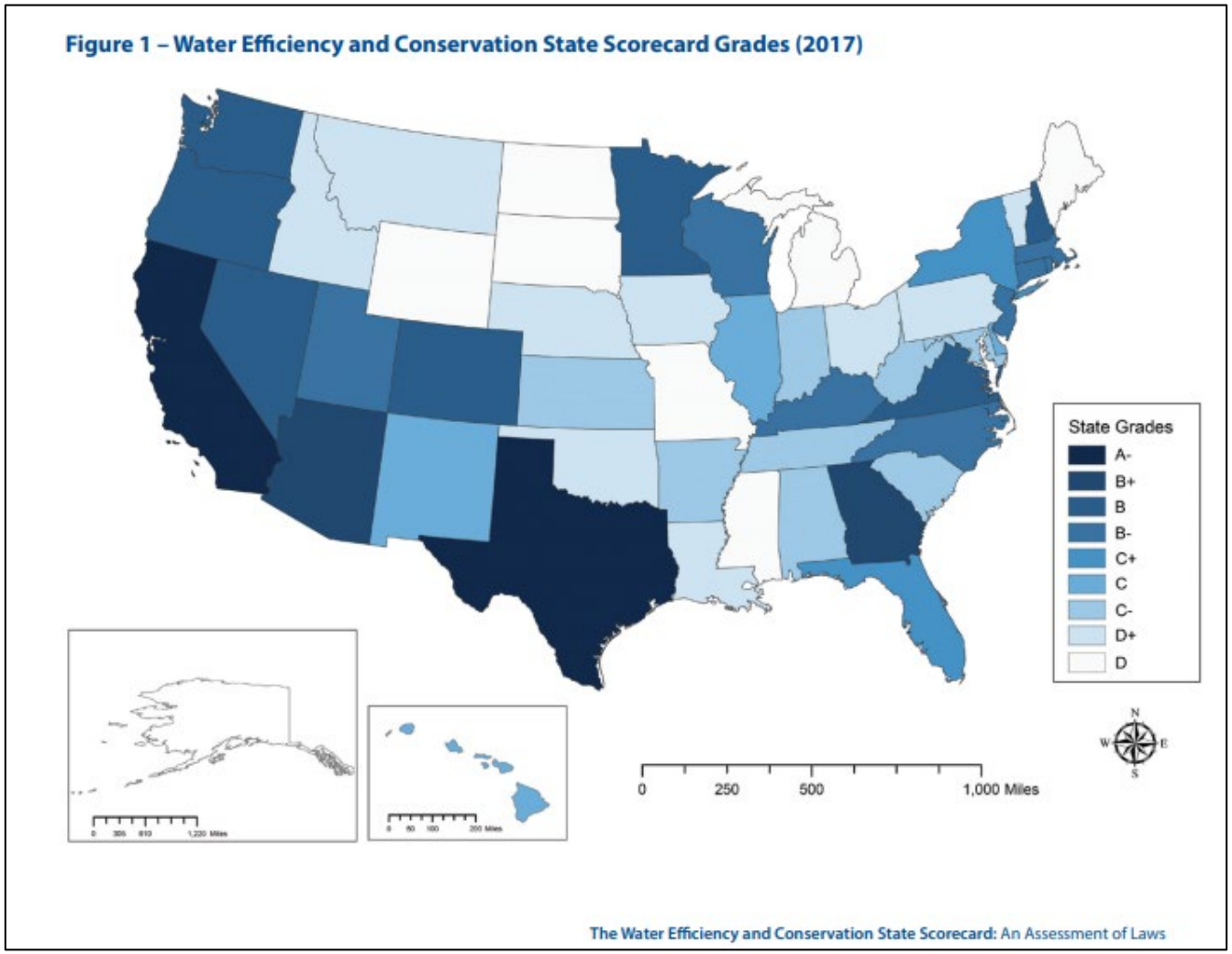


Figure 1. Electric Power Generation Water Use per Kilowatt Hour (Gallons per kWh). Prepared by Bill Hoffman using TWDB and U.S. Dept. of Energy data[7].

Irrigation Water Use in Texas 1984 to 2020

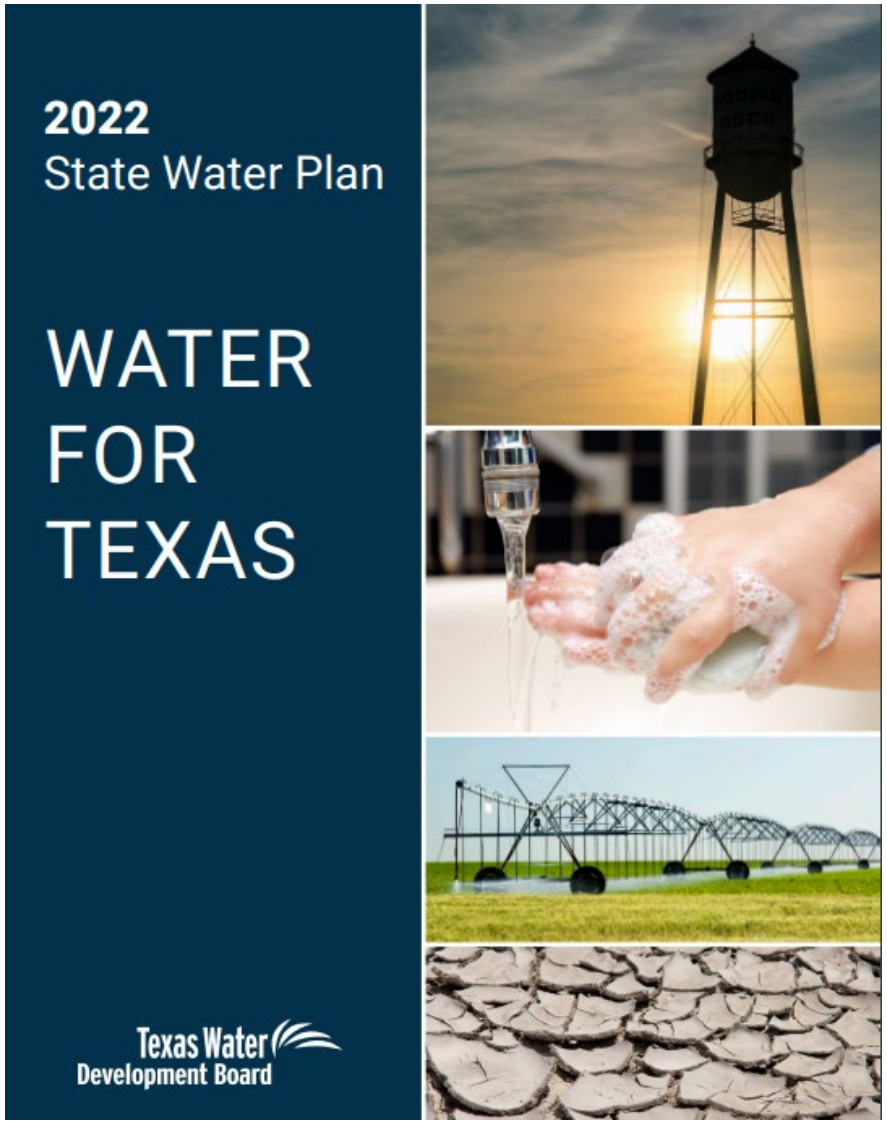


Texas and California are the only two states to make the AWE A list for water conservation.



Texas Future Water Sources Now Rely on Conservation Programs More than Ever!

Texas Water Planning



- First Texas Water Plan in 1958
- Updated every 5 years
- Conservation savings first incorporated in 1984
- Planning time frame – 50 years
- New plan just adopted

Texas Population Is Projected to be 51.5 Million in 2070

Figure 4-1. Historical and projected population growth in Texas (1850–2070)

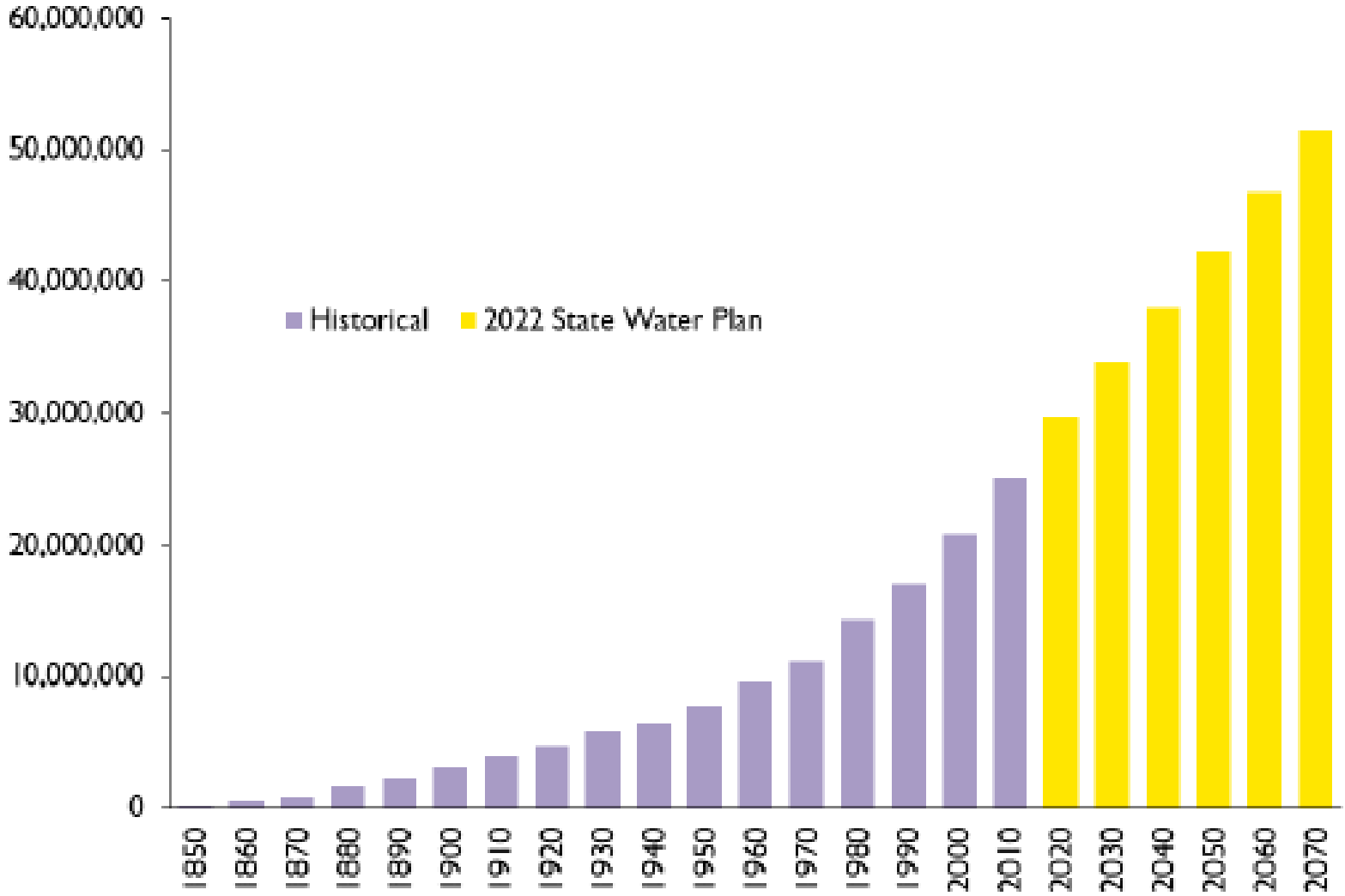
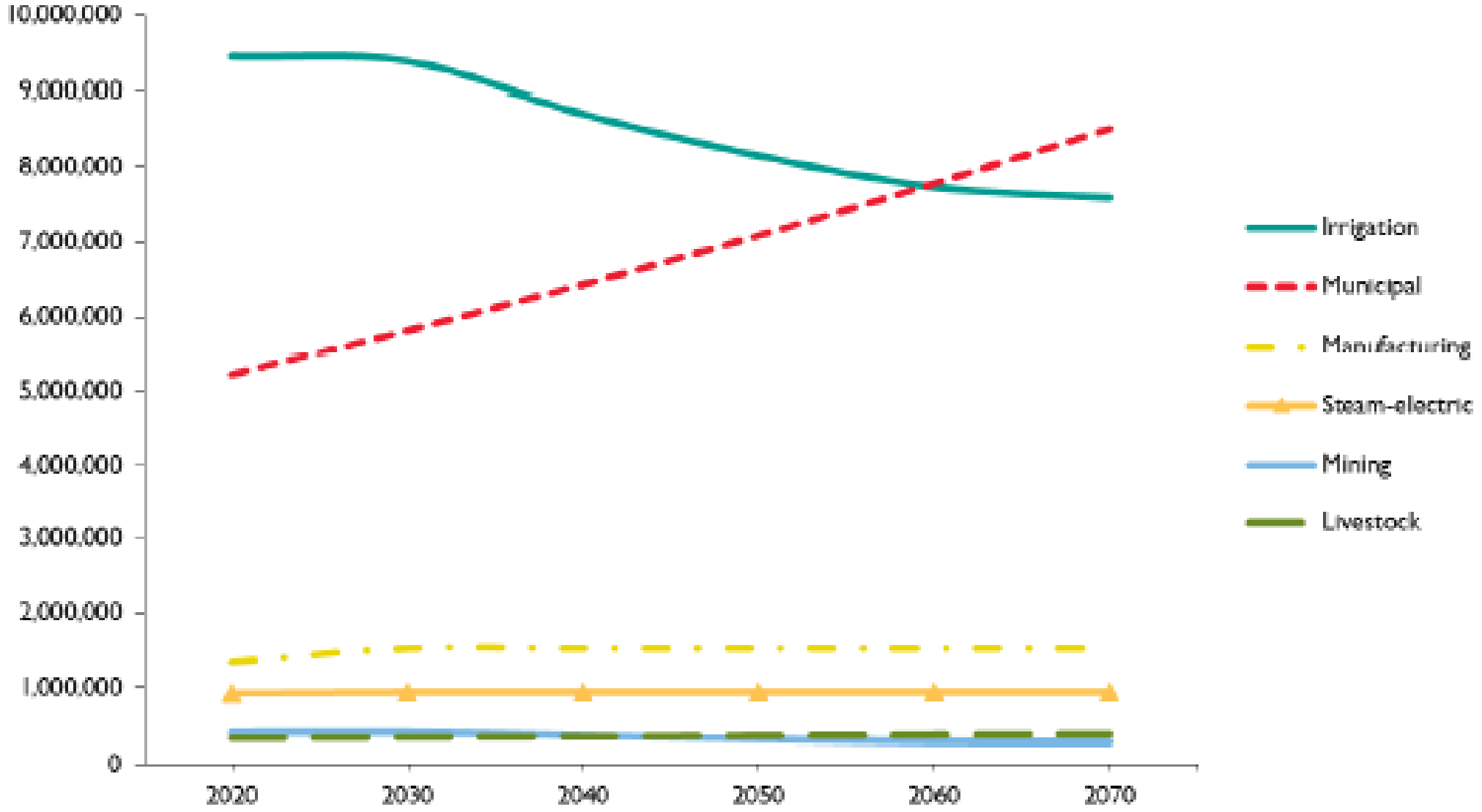


Figure 4-5. Projected annual water demand by water use category (acre-feet)

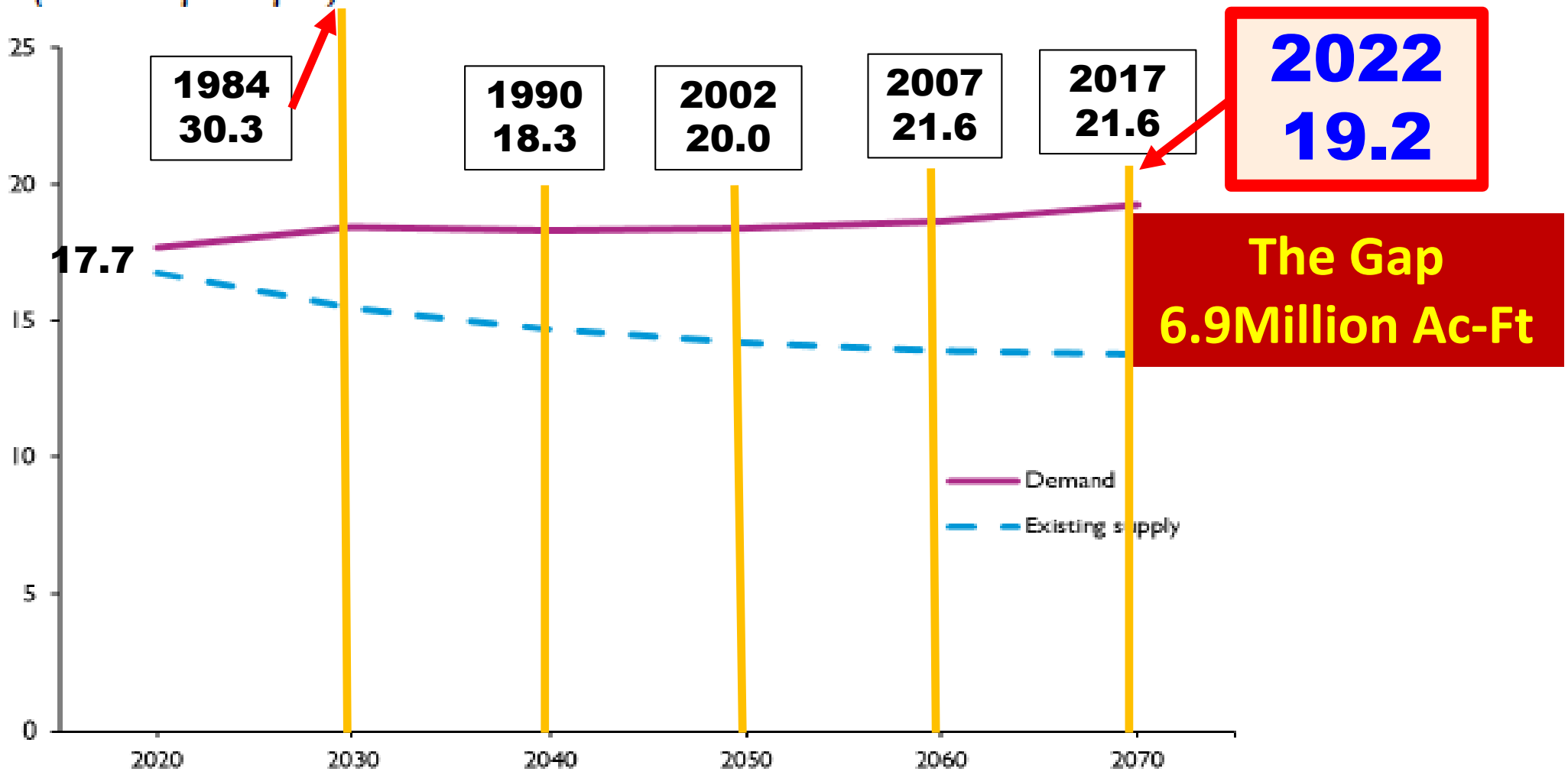


* *Water use categories are presented in the order listed in the legend.*

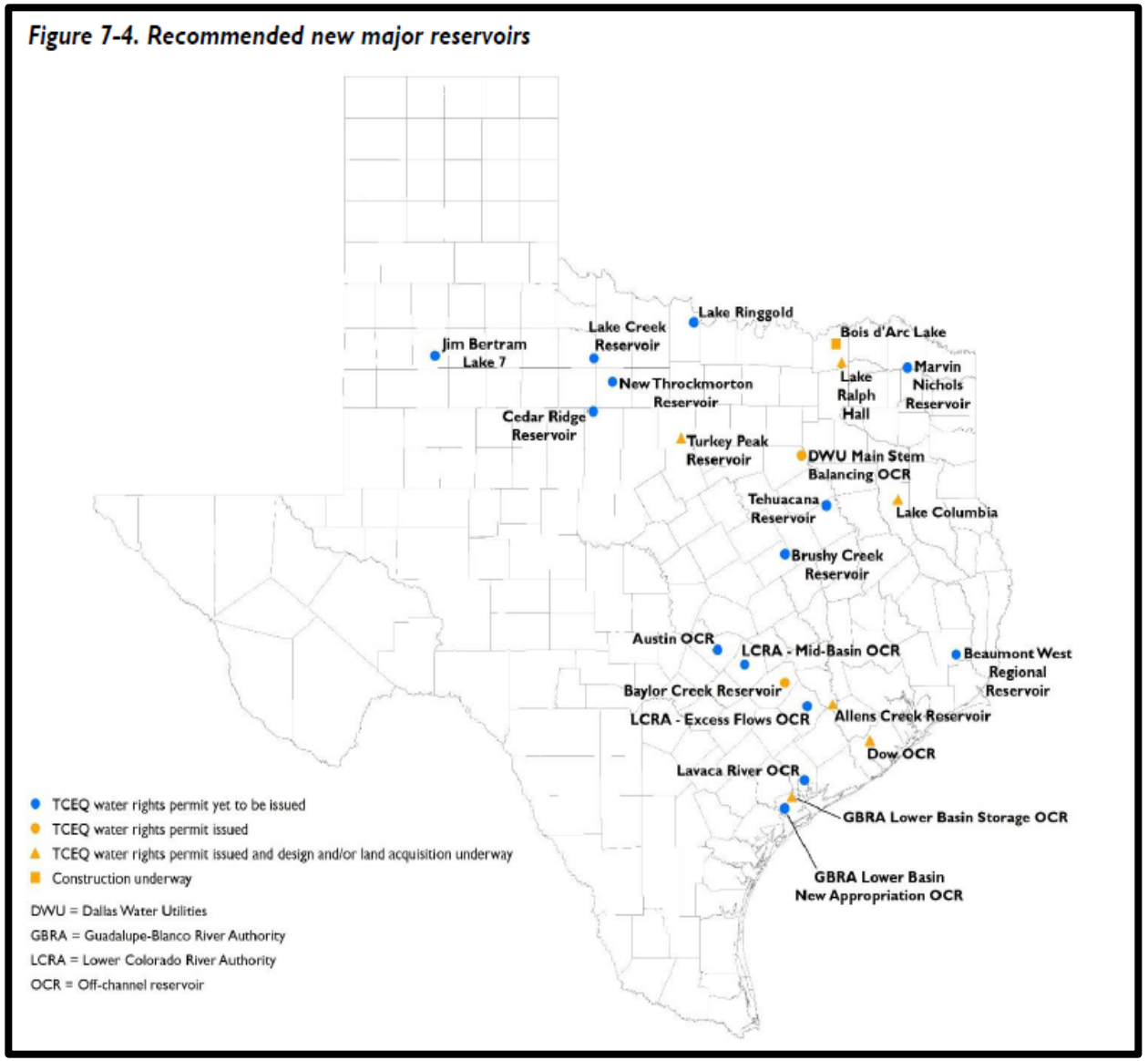
The gap = 6.9 million acre-feet per year
= 6.1 billion gallons per day in 2070

Boxes show projection in that year.

Figure ES-3. Projected total annual water demand and existing water supply for all sectors in Texas (millions of acre-feet)



The plan includes 23 ***new*** reservoirs



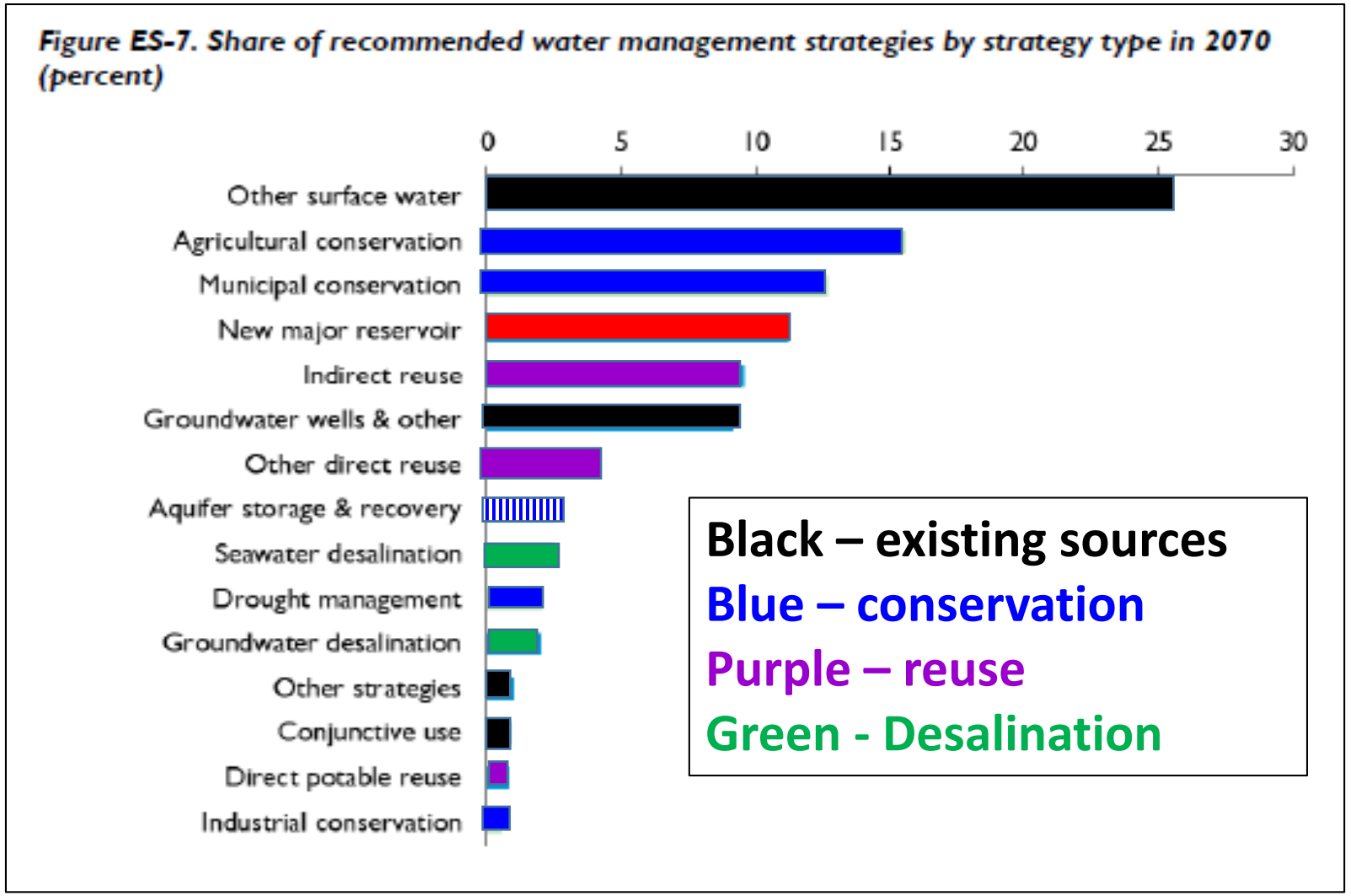
Current gross surface water evaporation form Texas lakes & other surfaces equals

6 BGD

and exceeds all municipal water use of about 4 BGD .

Where Future Supplies Will Come From

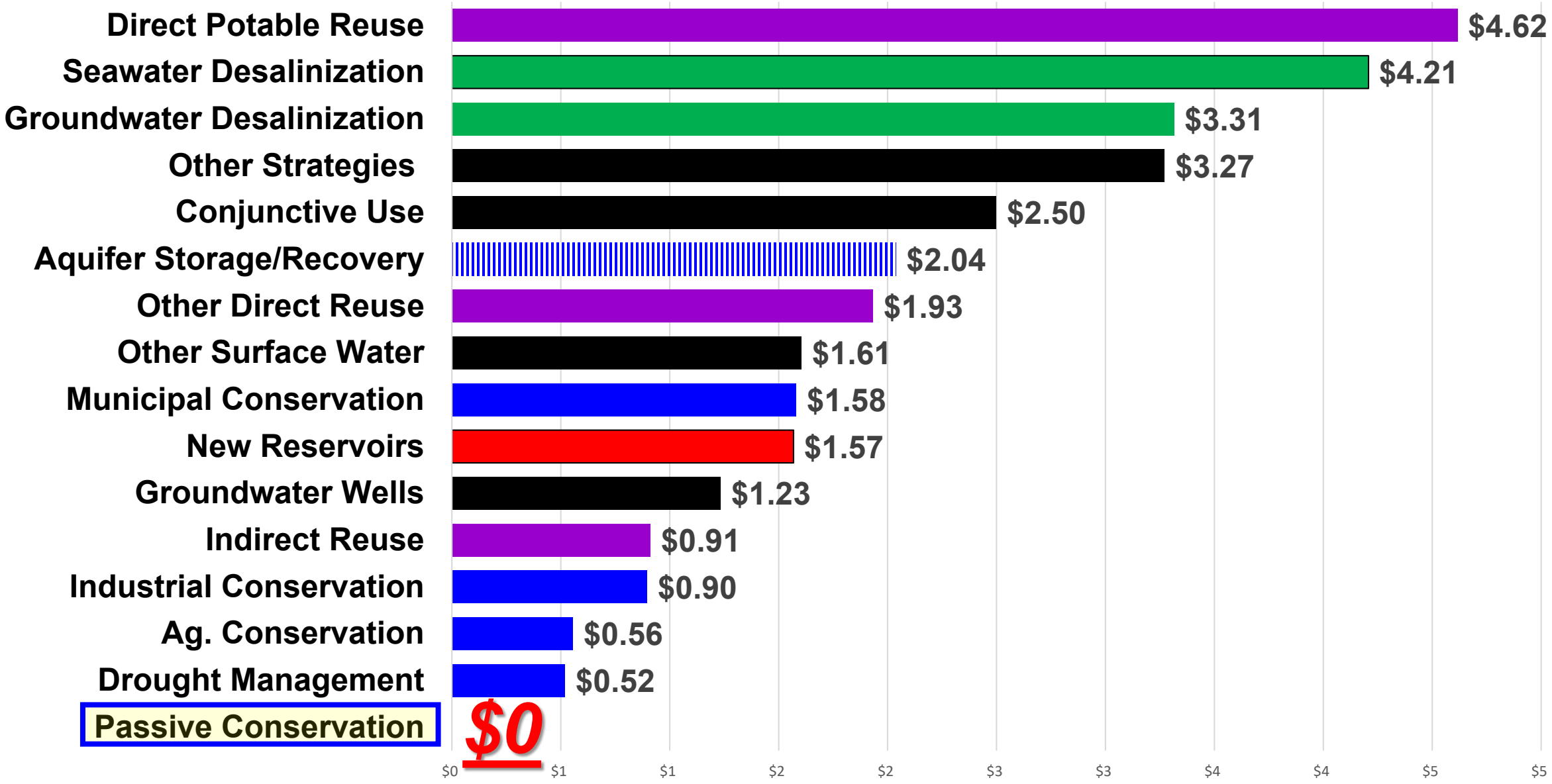
Passive conservation not included



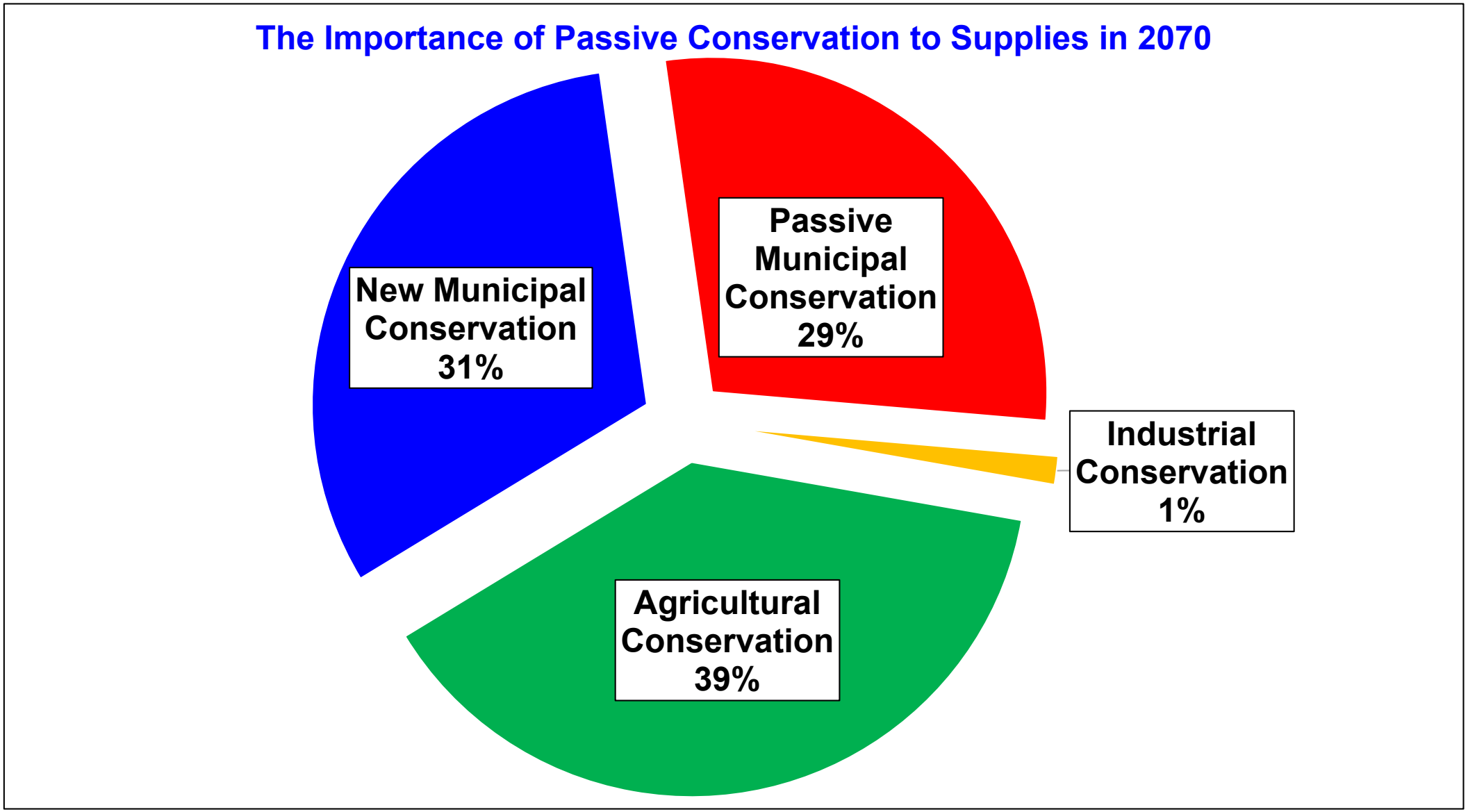
The Importance of ***Passive Savings***

Plumbing Codes and Appliance Standards Will Provide 889,000 Acre Feet (794 MGD) of Savings in 2070

Cost of Water in Dollars per Thousand Gallons in 2070

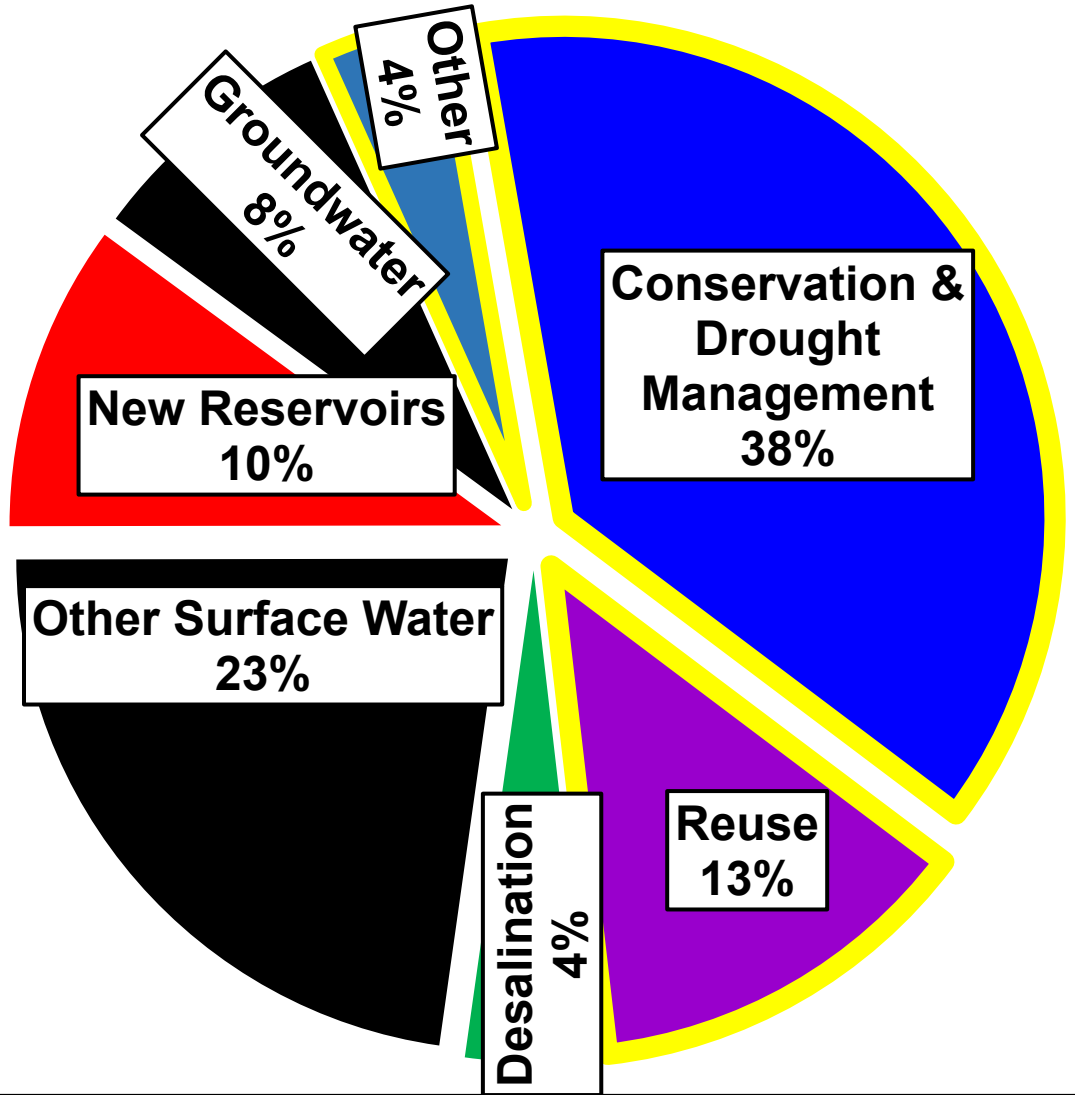


Passive conservation is based on current codes and standards, and is **essential** to overall reductions.



Sources to Meet 2070 Water Demands in Texas

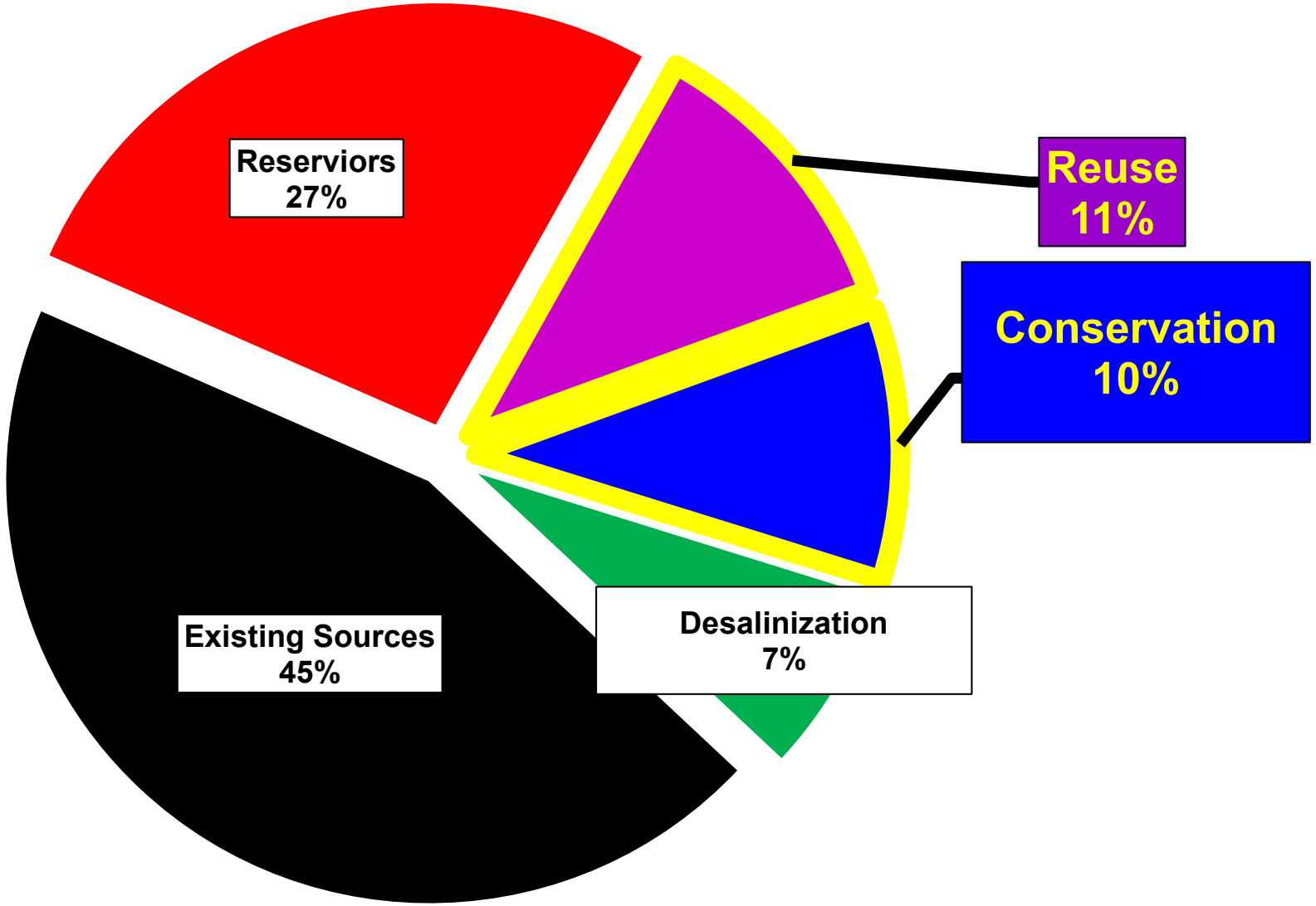
Including Passive Conservation



Conservation, Drought Management and Reuse Account for 55% of Future New Sources in Texas.

The 4% other includes rainwater harvesting, graywater, onsite reuse, brush control on water sheds to reduce water loss, etc.

Distribution of $83.4 Billion Dollars in Capital Cost Needed in Texas by 2070



Conservation and reuse account for only 21% of future capital cost but supply 55% of future supply.

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

Conservation and Reuse are Key to Texas' Water Future!

This Applies to All of North America!

Failure to Conserve & Reuse will leave us all hanging out there!

Remember, ***YOU*** are on the front line!

No Water,

No Beer!

Napoleon said an army marches on its stomach.

Our Economy and Society marches on its water supply!

THANK YOU!

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