

**ASU**® **Kyl Center for Water Policy**  
**at Morrison Institute**

**Arizona State University**

# Arizona Water Policy 101

**ASU**® **Arizona State**  
**University**

**Kathryn Sorensen**  
**ASU Hydrosystems Seminar**  
February 23, 2022

**Mission: promote informed public dialogue on critical **water** issues in Arizona and the West**

- **non-partisan**
- **research & analysis**
- **historical understanding**

# **ASU**® **Kyl Center for Water Policy at Morrison Institute**

**Arizona State University**



**The Arizona CuRVE Project:  
Colorado River Visualization  
Enterprise**



**Arizona  
Water  
Blueprint**

[azwaterblueprint.asu.edu](http://azwaterblueprint.asu.edu)

# Agenda



Arizona's water sources

Arizona's water uses

Water management  
accomplishments

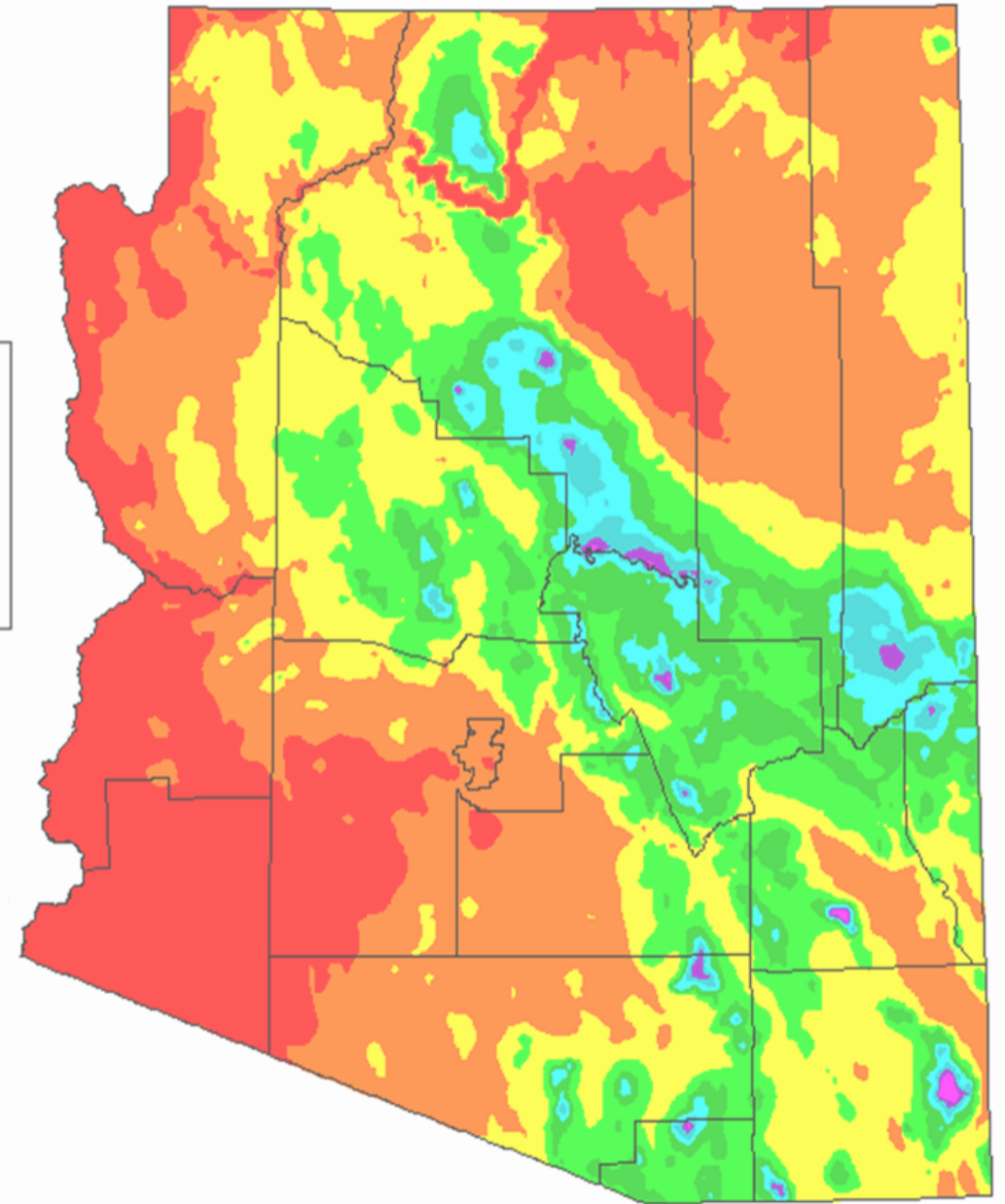
Water management challenges

Future prospects

# Arizona is a dry state



Period: 1961-1990



Annual Precipitation

# Arizona's

# water sources



**36%**

**COLORADO RIVER**

**5%**

**RECLAIMED WATER**

**18%**

**IN-STATE RIVERS**

**41%**

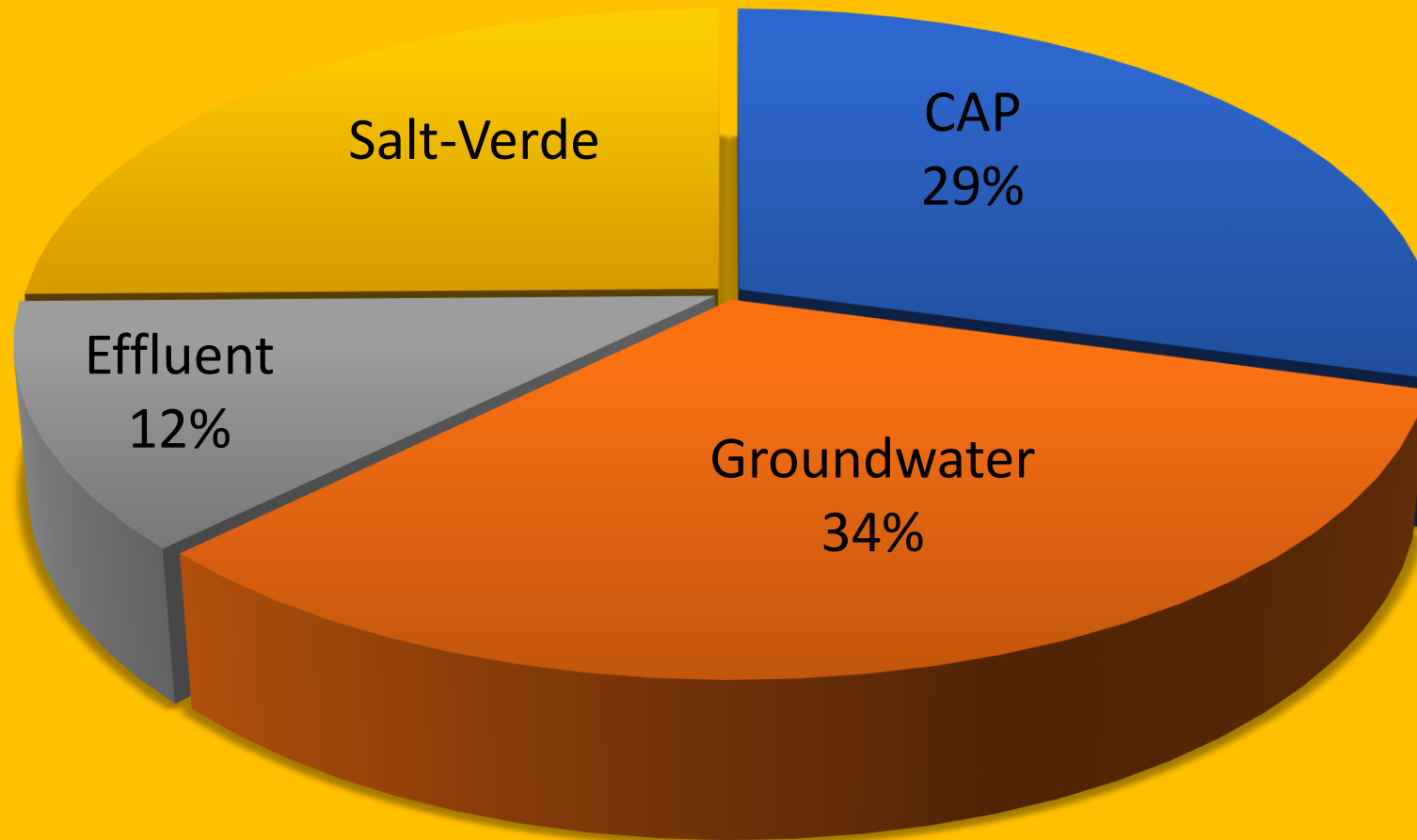
**GROUNDWATER**



SOURCE: ADWR, 2020

Pre-shortage water supplies. ([Arizona Water Facts](#))

# Greater Phoenix Water Sources

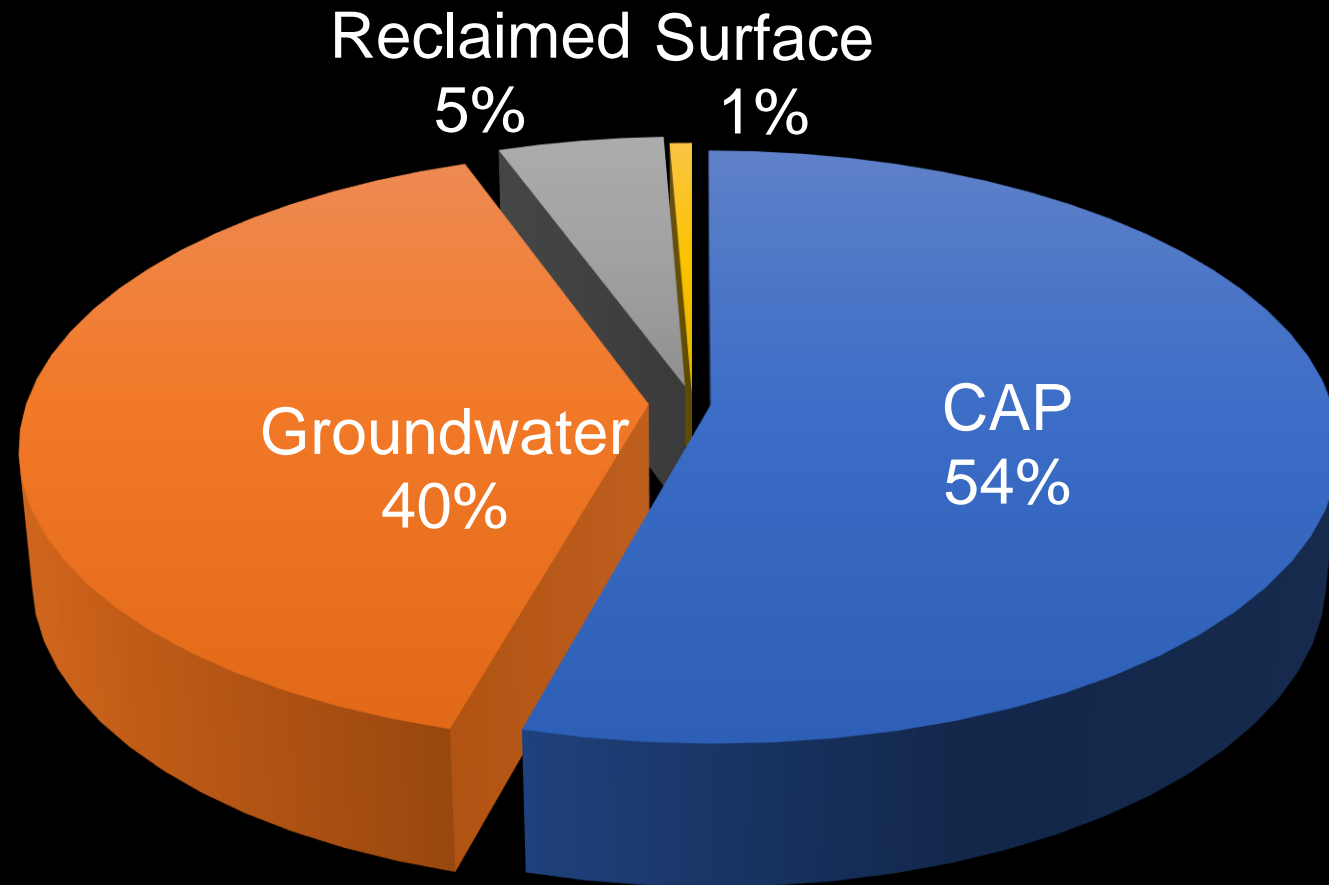


**Total Demand ~ 2.25 MAF / year**





# Greater Tucson Water Sources



- 40 million people
- 7 states, 29 tribes & Mexico
- 5 million acres of agriculture
- Significant biodiversity
- Grand Canyon & other national parks & monuments

# Colorado Basin



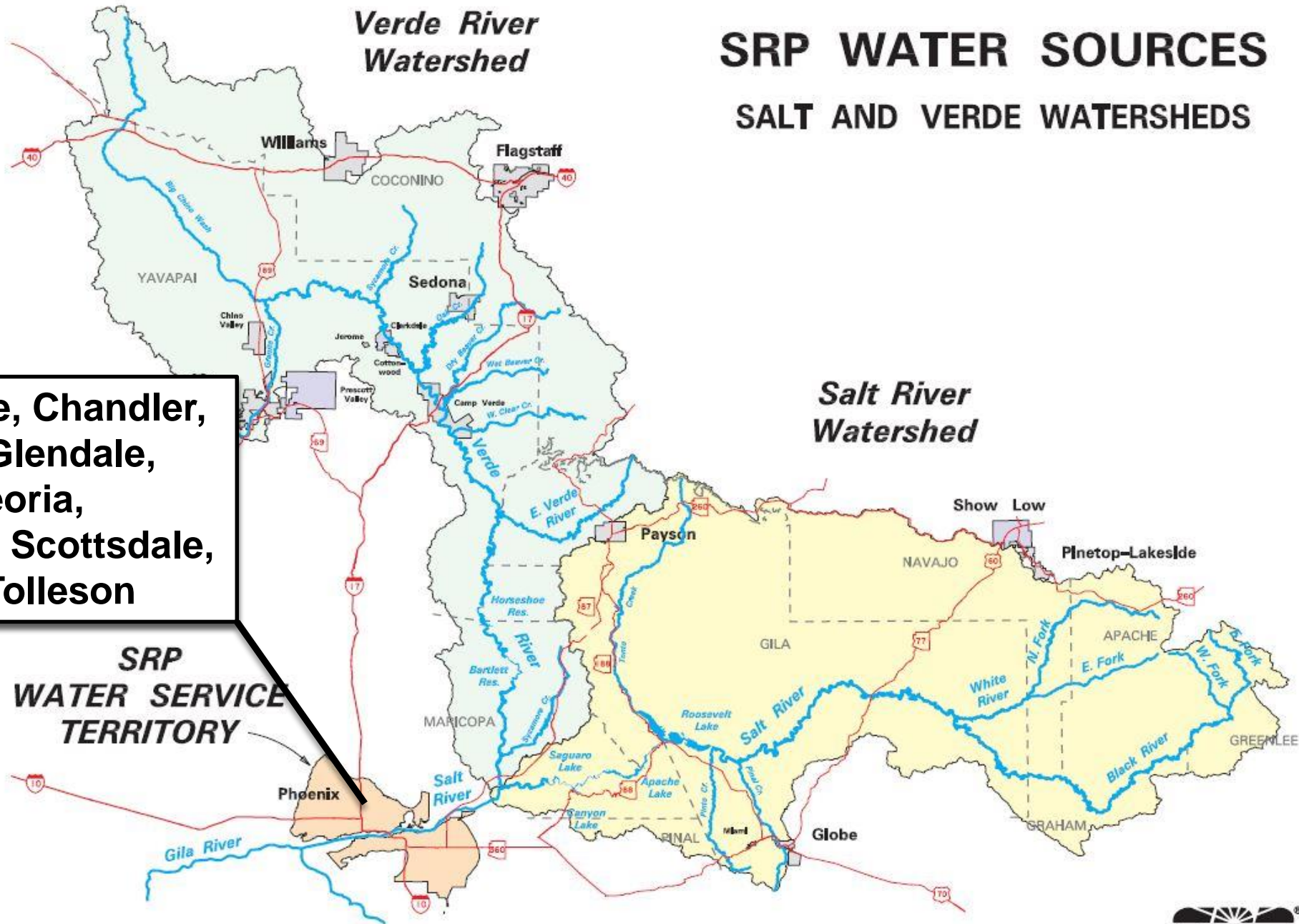
# Central Arizona Project Canal

- 336 miles
- 2400' elevation change
- 83% Arizonans live in the service territory
- Maricopa, Pinal & Pima Counties



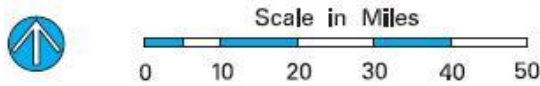
# SRP WATER SOURCES

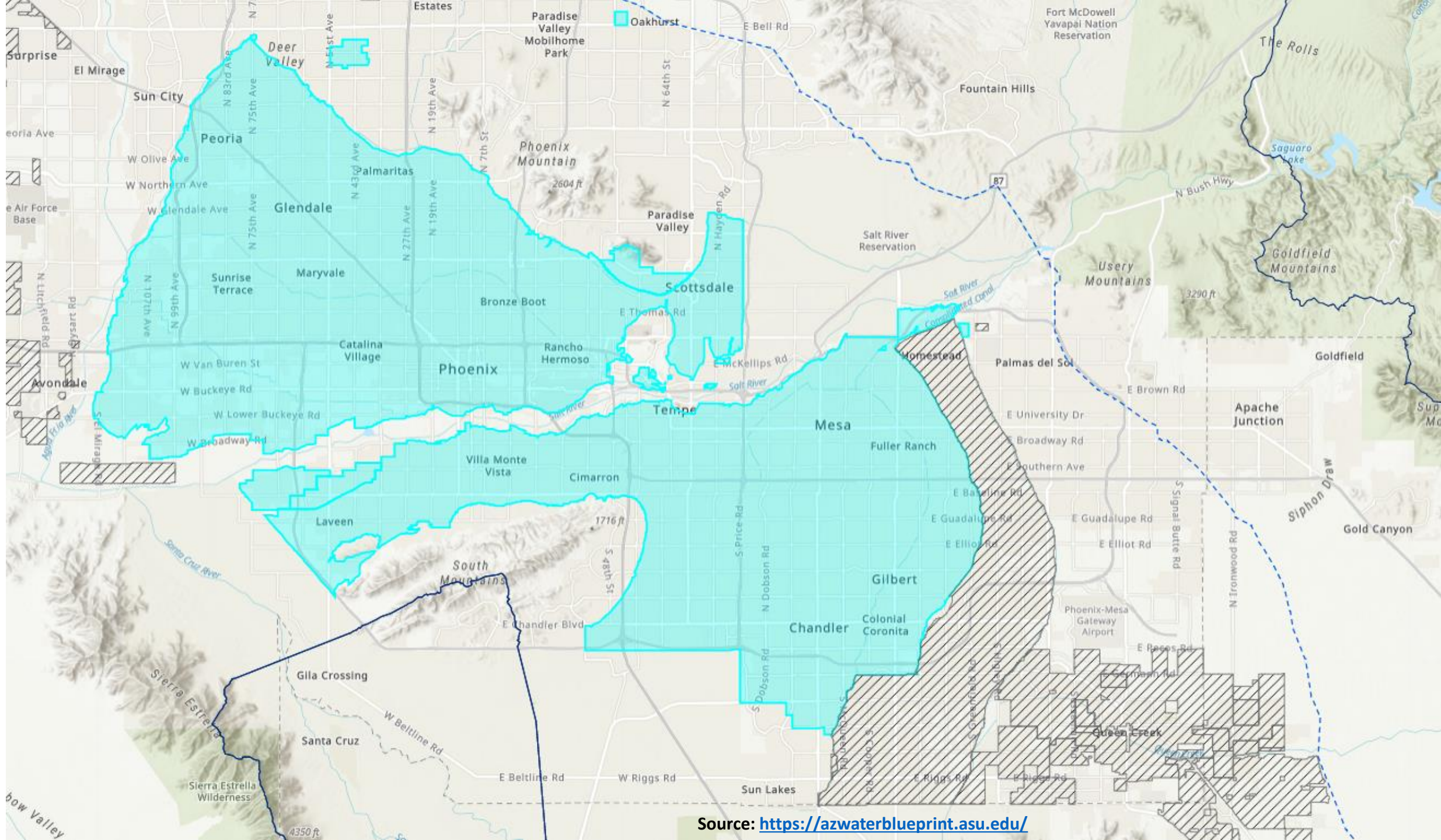
## SALT AND VERDE WATERSHEDS



Avondale, Chandler,  
 Gilbert, Glendale,  
 Mesa, Peoria,  
 Phoenix, Scottsdale,  
 Tempe, Tolleson

**SRP  
 WATER SERVICE  
 TERRITORY**





Source: <https://azwaterblueprint.asu.edu/>

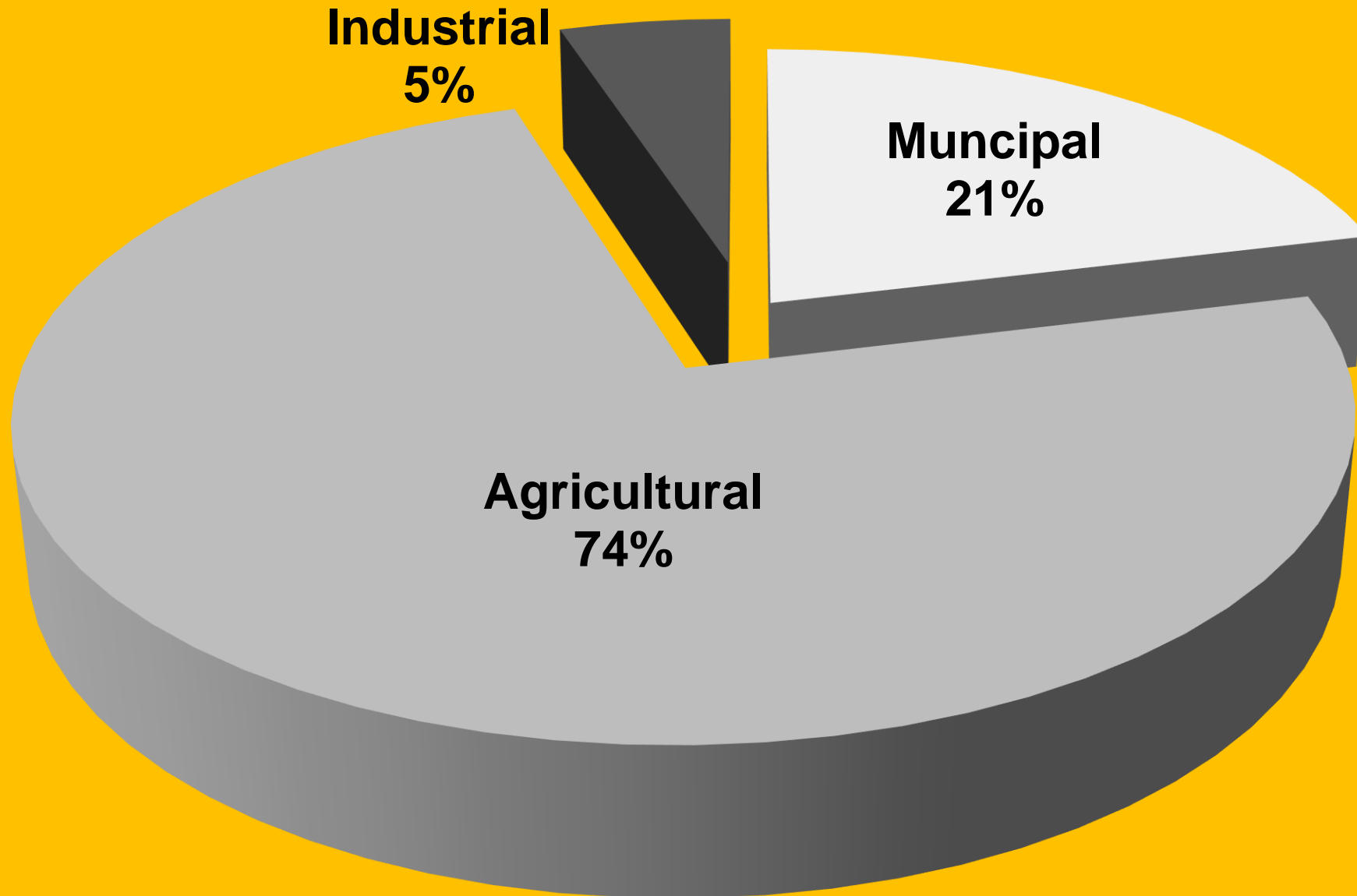


# Arizona Watersheds

Source: Univ. of Ariz. Coop. Extension

# Arizona's water uses

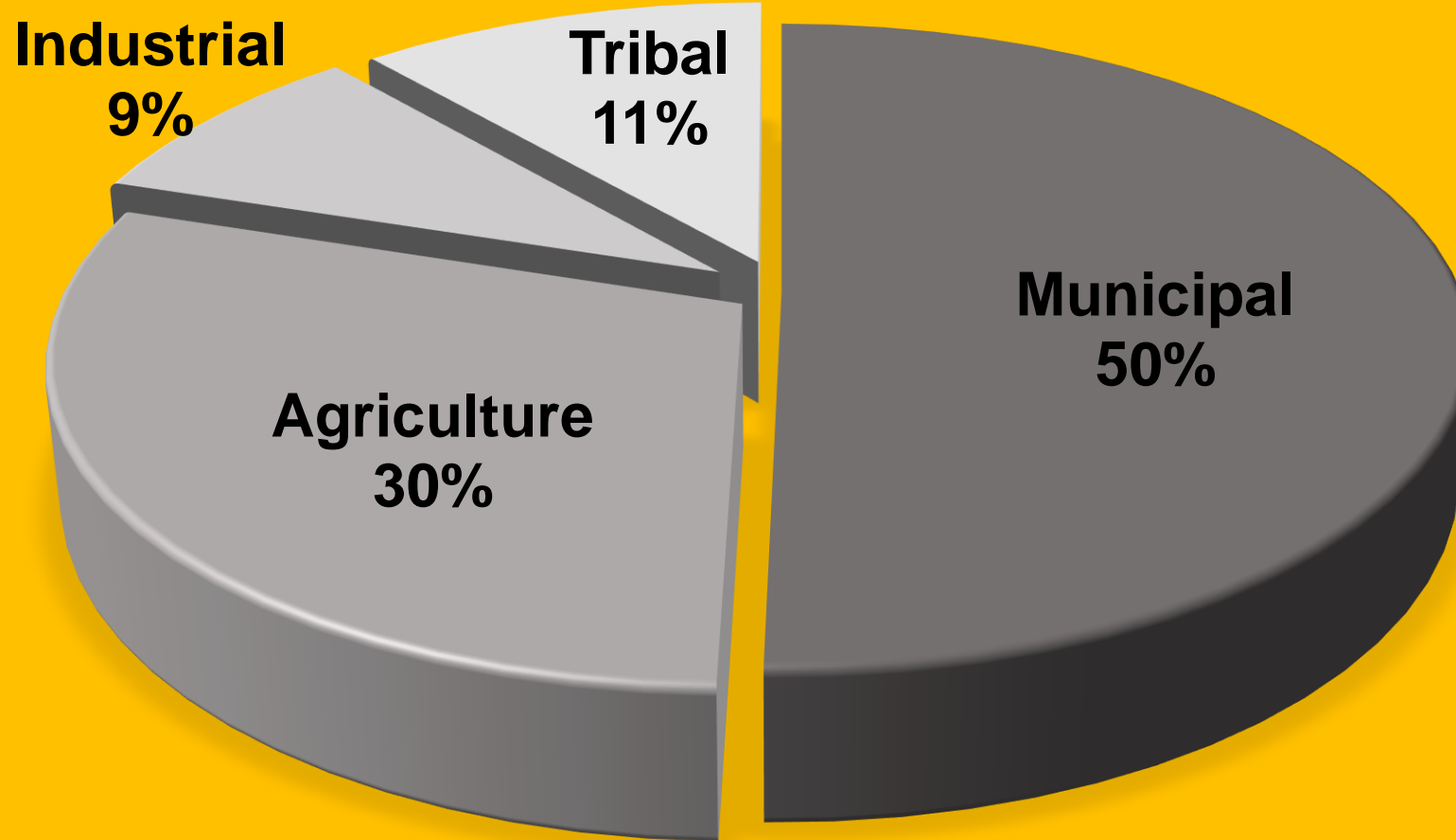
# Arizona Water Demand by Sector



**Annual Demand  $\approx$  7 MAF**



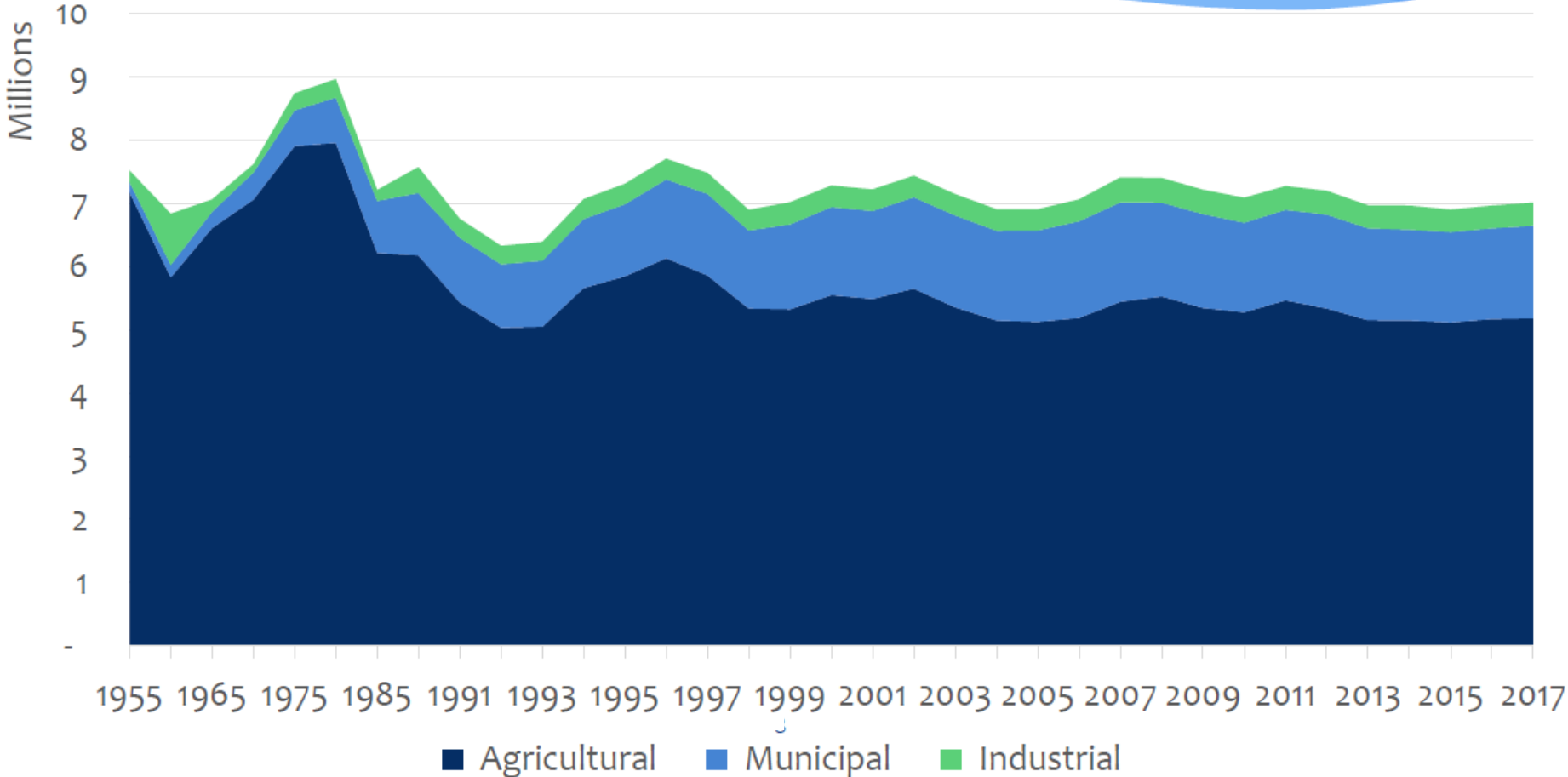
# Phoenix Area Demand



**Annual Demand  $\approx$  2.29 MAF**

Source: ADWR Phoenix AMA Data (2018)

# Statewide Demand



# Water management accomplishments

# Salt River Project

## Salt River Valley Water Users' Association

- Rights are appurtenant to the Project lands
- Water allocations governed by local board, that can vote to reduce allocations to protect reservoir levels
- SRP developed wells that can also feed into the canal system as a redundant supply during drought
- Deliveries have declined with urbanization
- There is “give” in the system



**Resilient System**

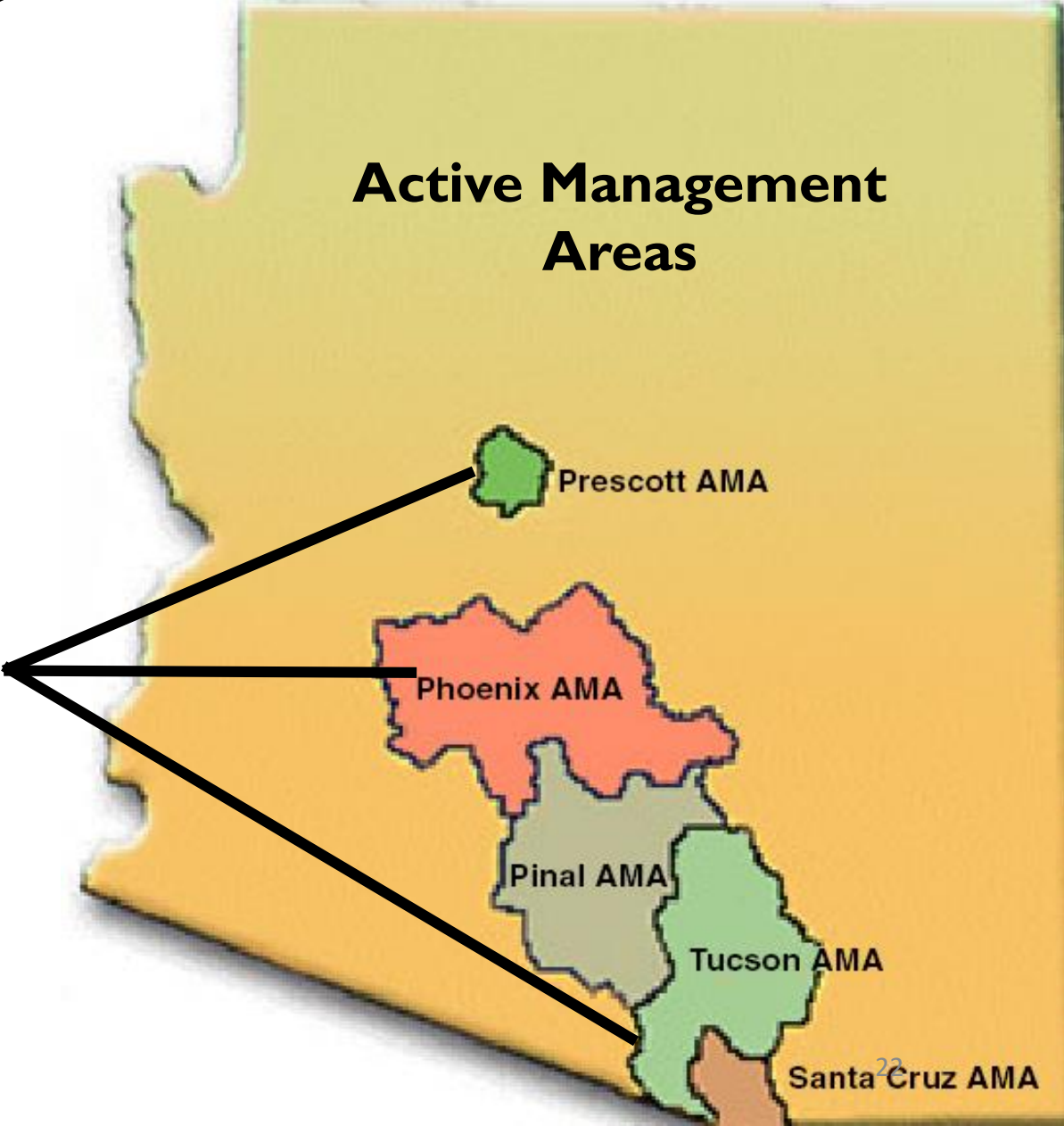
# Groundwater Management Act of 1980

- 83% of Arizonans
- Water banking
- 95% re-use
- Mandatory system-level conservation
- 100-year Assured Water Supply requirement



# Groundwater Management Act of 1980

growth is tied  
to renewable  
supplies



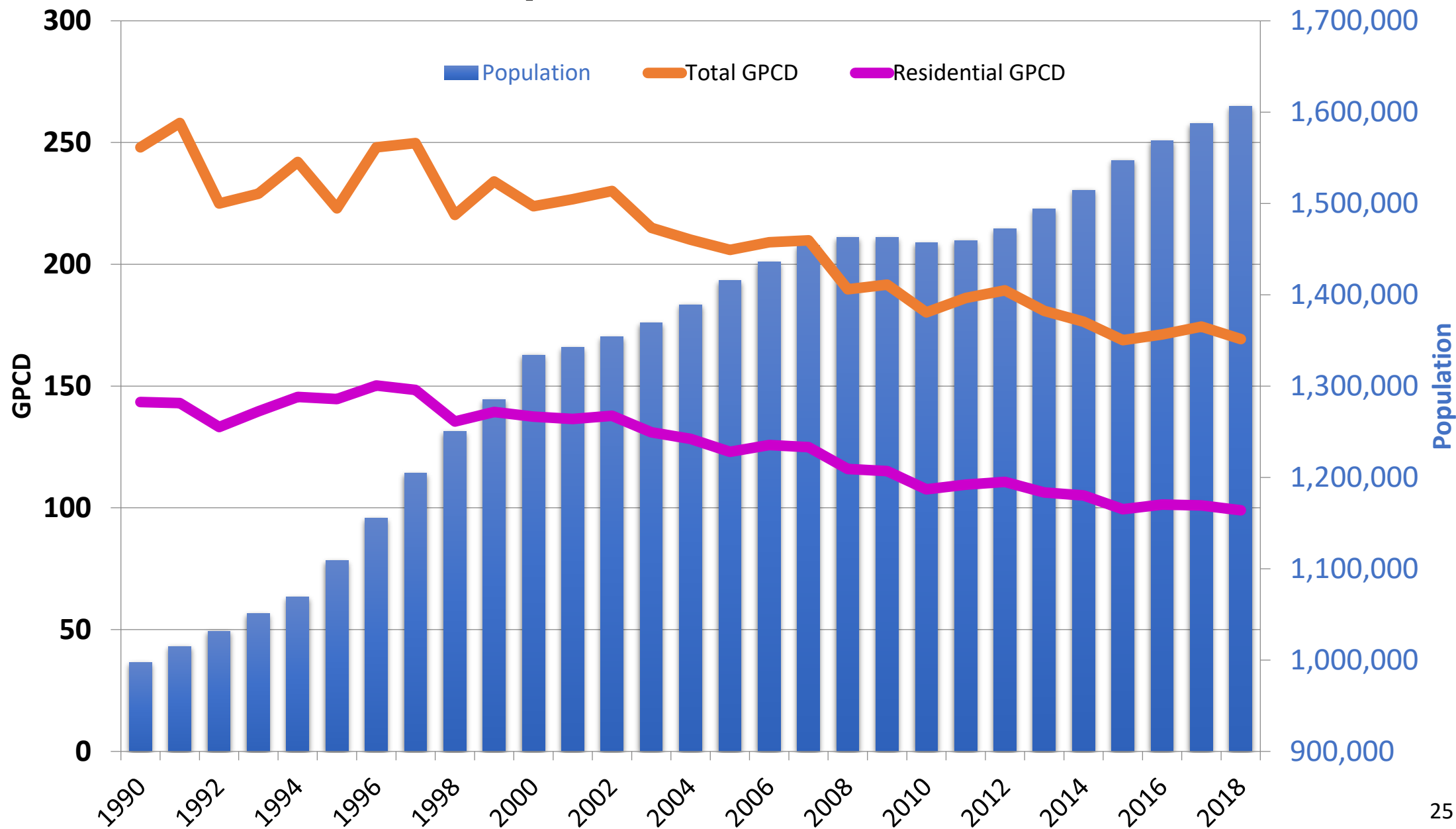
# Water banking



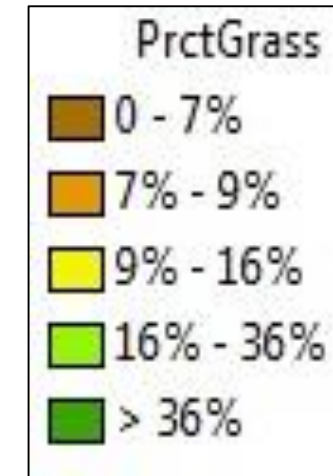
# Water conservation



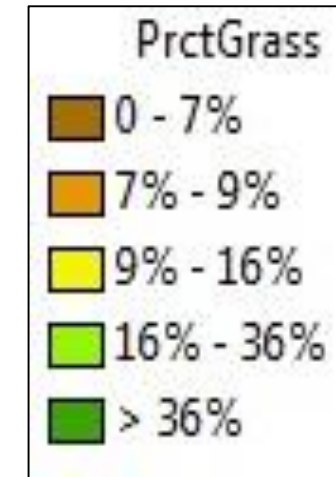
# Phoenix Population & Water Use



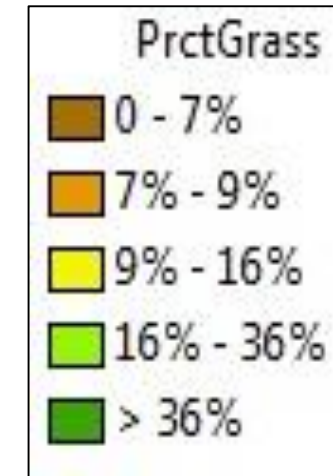
# Example of a Phoenix Neighborhood



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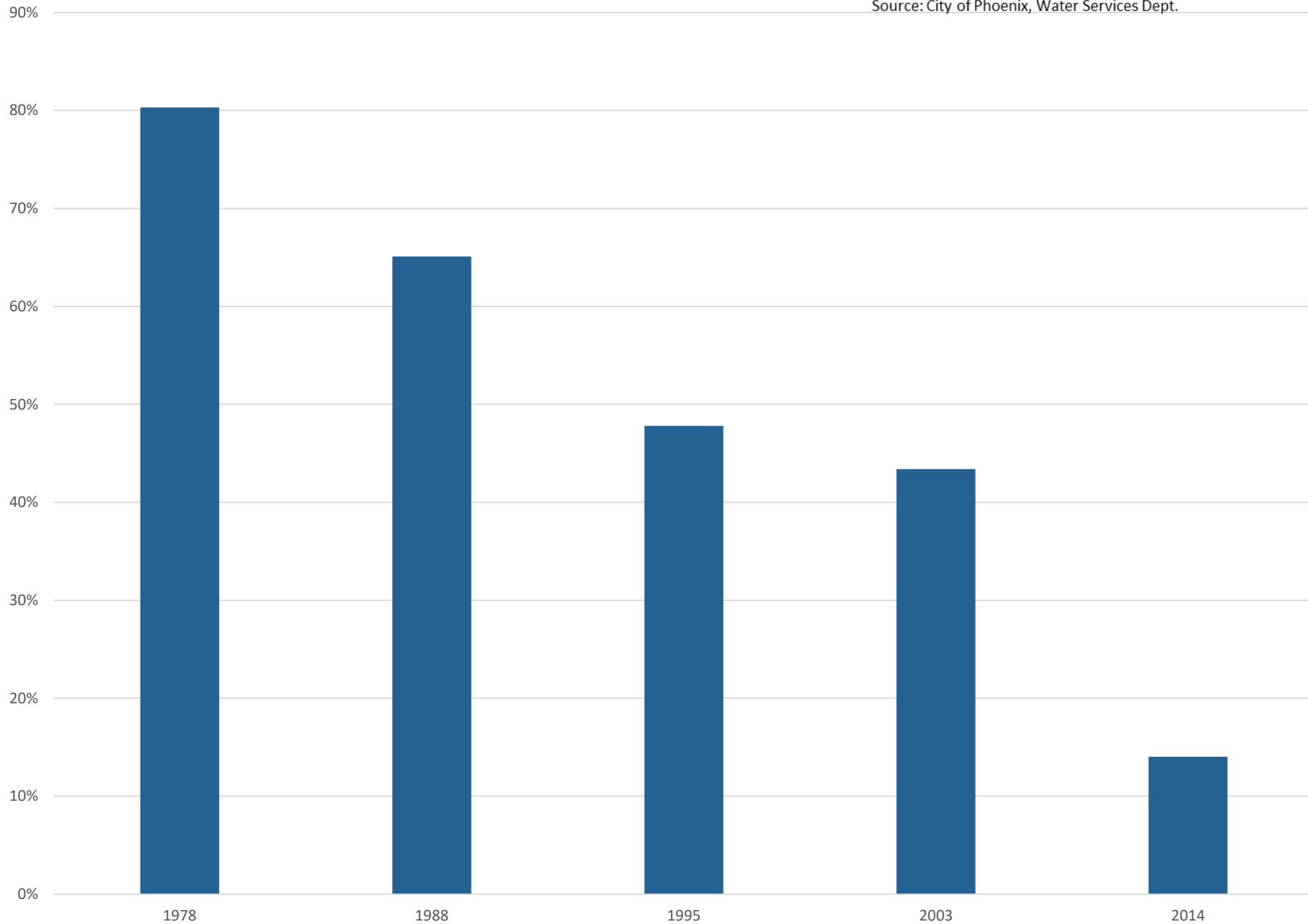


# Example of a Phoenix Neighborhood

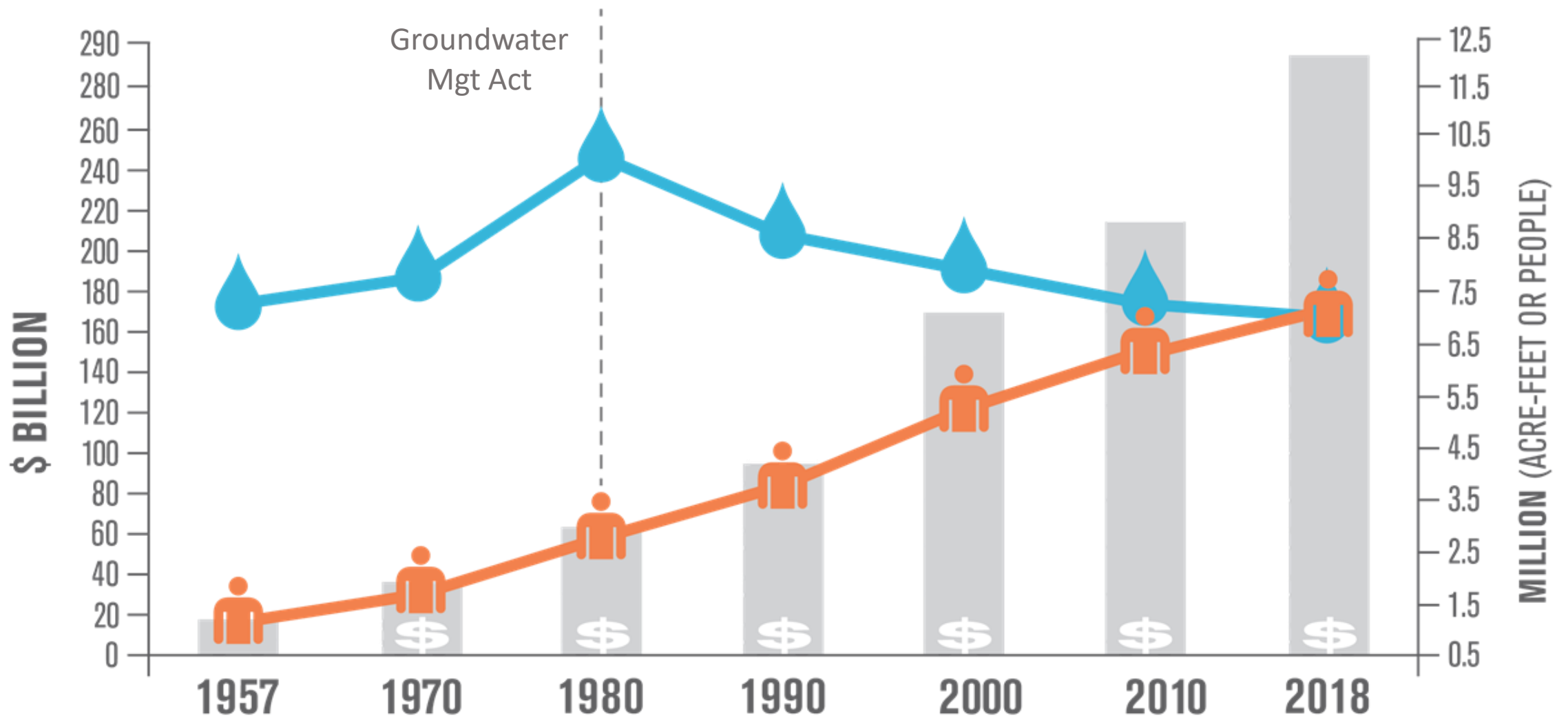


# Phoenix Proportion of SF Homes With Majority Turf, 1976-2014 Estimates

Source: City of Phoenix, Water Services Dept.



# Arizona water demand & growth



SOURCE: ADWR, 2020

 WATER USE (ACRE-FEET)

 POPULATION

 ARIZONA GROSS DOMESTIC INCOME

# Wastewater reclamation

# Wastewater Reclamation & Reuse



Industry – Palo Verde Nuclear Generating Station, Intel  
Schools, parks, golf courses  
Constructed wetlands, river restoration, snow making  
Agriculture



# Collaboration

# Indian water rights settlements

- Settled disputes over water rights between cities, Indian communities, federal government, agricultural districts, and rural communities
- Settlements brought certainty, created benefits for all communities, and developed new relationships



# Regional planning

- Arizona Drought Contingency Plan
- Lake Mead system conservation
- Water exchanges & leases
- Joint infrastructure development



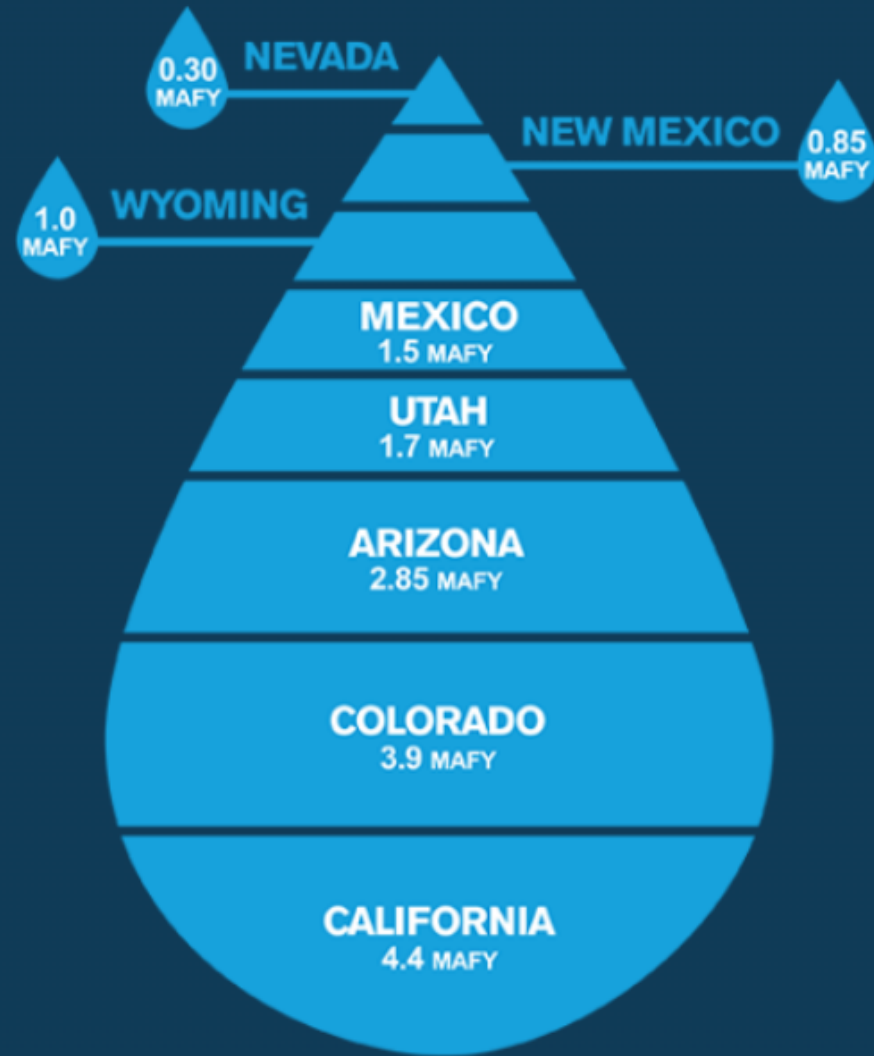
# Water management challenges

# Colorado River Supplies



# WHERE THE WATER GOES

Who Shares the Colorado River?



MAFY = million acre-feet per year

# Colorado River water in Central Arizona

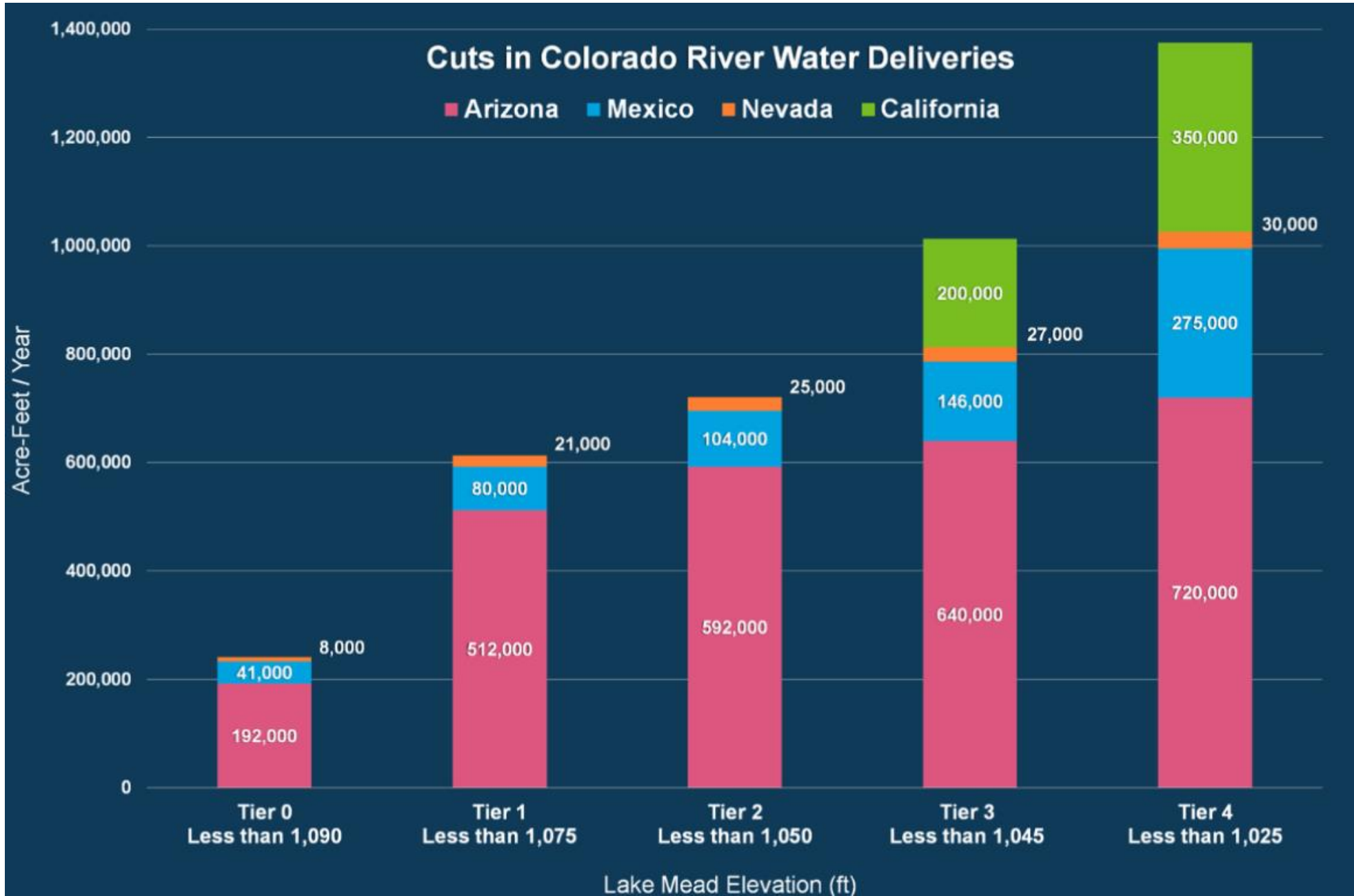
- Central Arizona's entitlement to Colorado River water is junior to that of Western Arizona and California
- Water allocations handled through the most complex governance system possible: "The Law of the River"
- Water not used by one entity is available for use by the next highest priority user
- Every single acre-foot available on the Colorado is allocated every single year
- No "give" in the system



**Not a Resilient System**

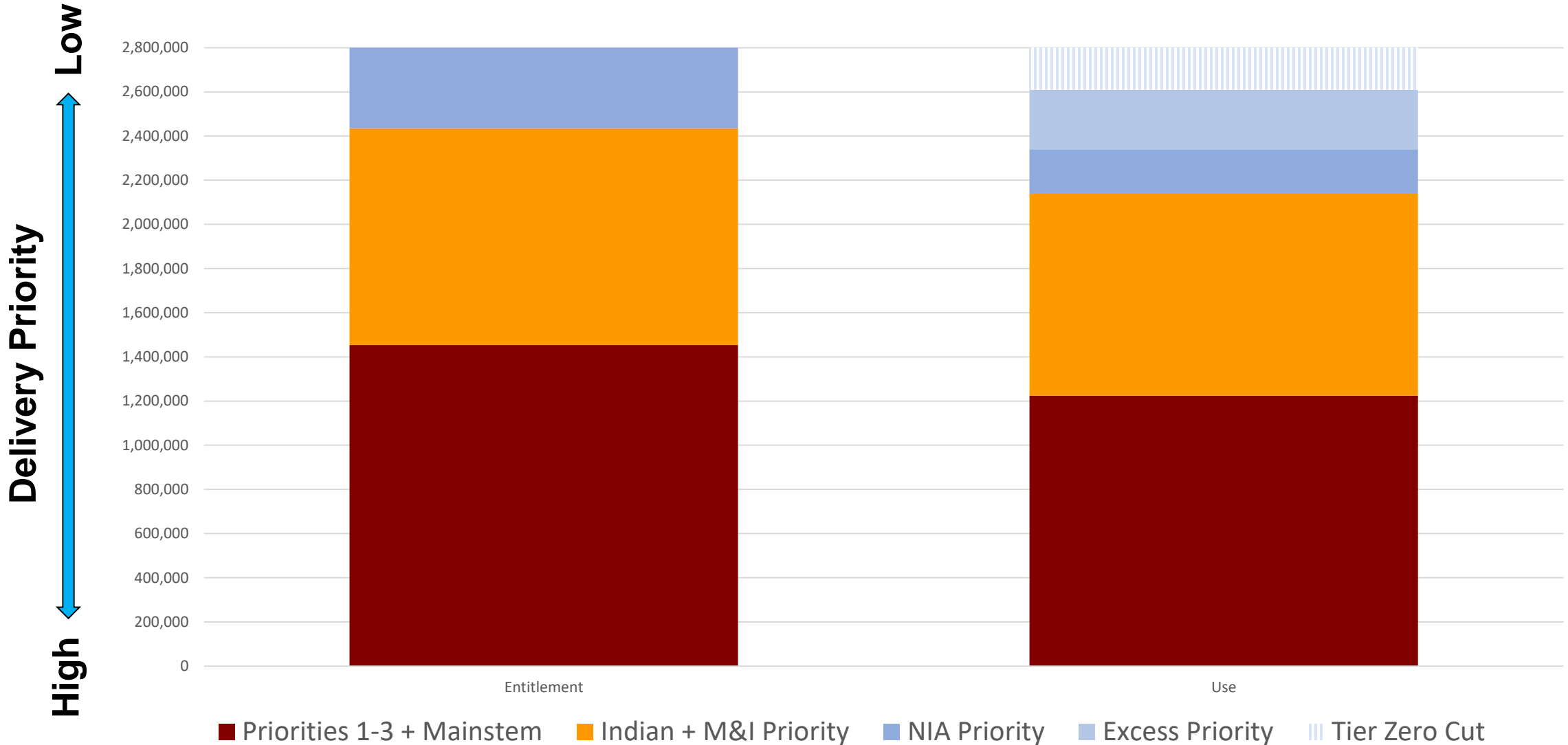
# Cuts in Colorado River Water Deliveries

Arizona Mexico Nevada California





# Arizona Colorado River entitlements vs use



# Infrastructure

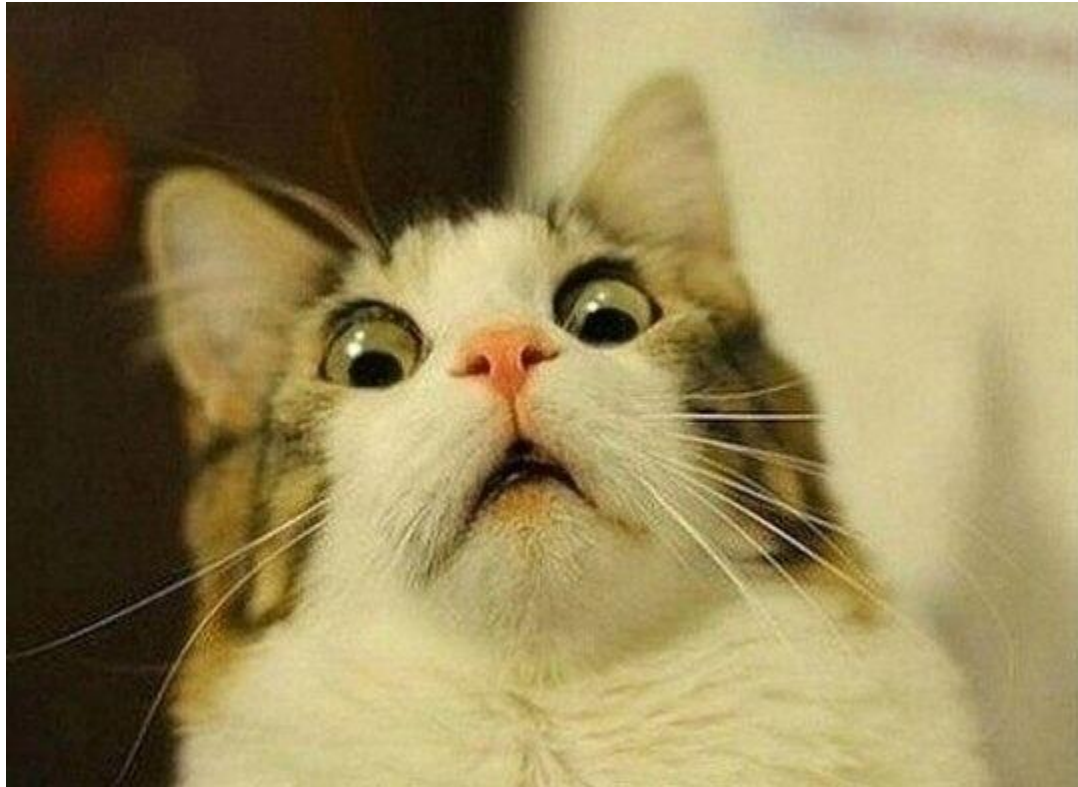


# Drinking water infrastructure needs



Source: Wall Street Journal, copyright TIL FOX

# Wastewater infrastructure needs



Source: Emergency Kittens @emrgencyKittens



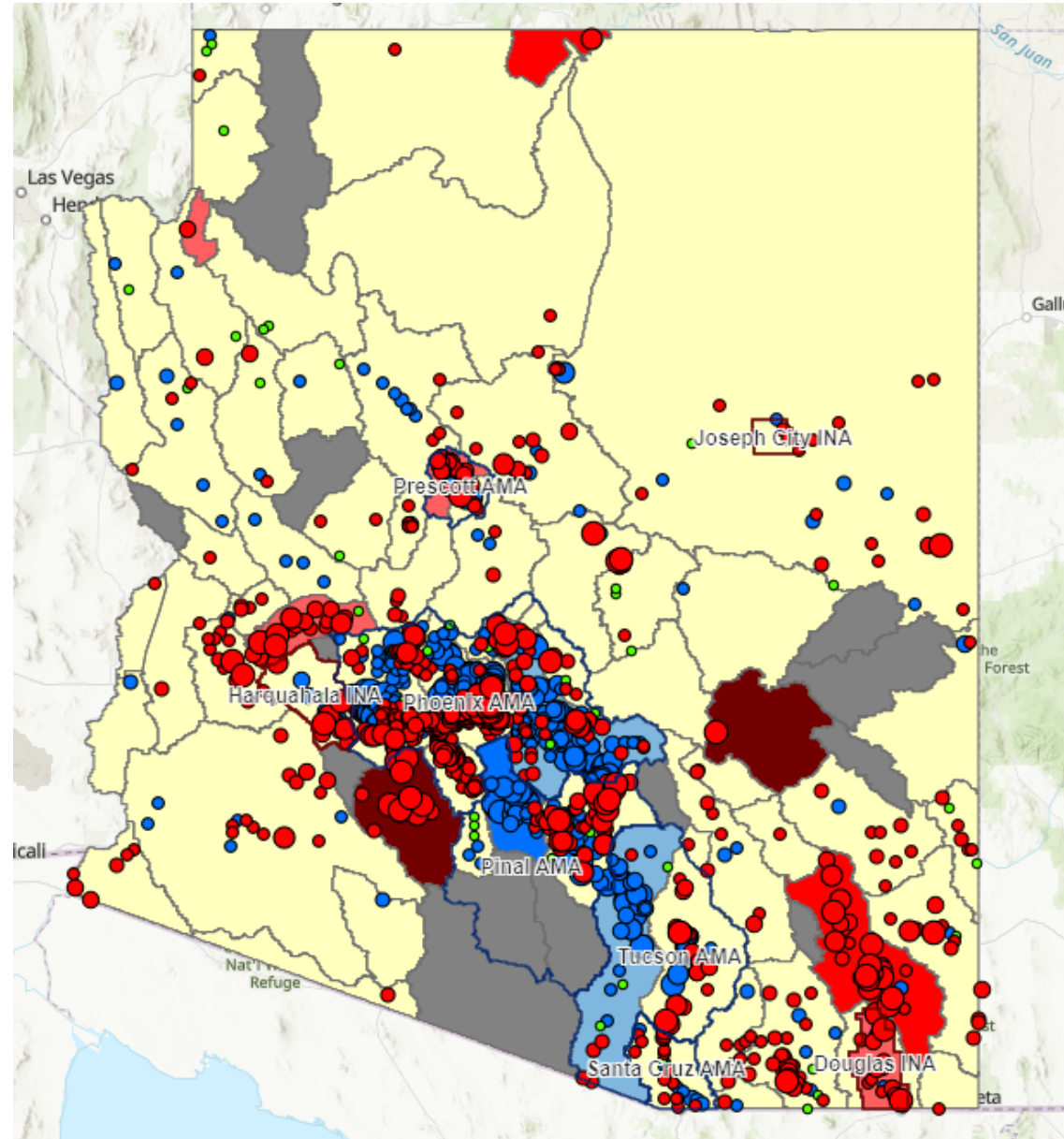
**BREAKING NEWS UPDATE**

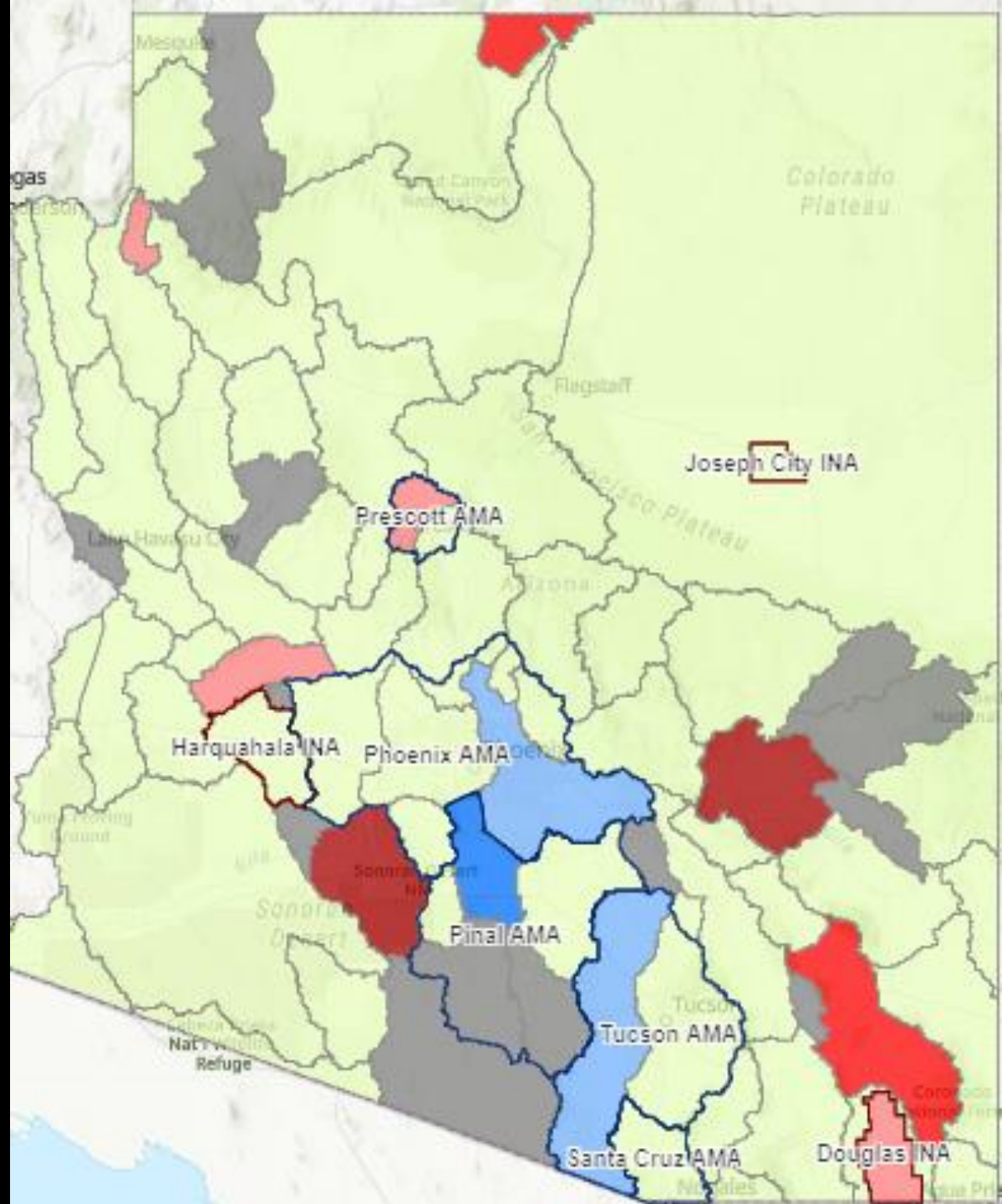
**LIVE  
DESK**

**CROWDS GATHER TO SEE BUS STUCK IN PHOENIX SINKHOLE  
WATER MAIN BREAK CLOSING 35TH AVE. AND VAN BUREN**

**abc 15  
ARIZONA  
5:02 100°**

# Groundwater in rural Arizona





# Conclusions

- **AZ has a strong legacy of wise water management**
- **Serious challenges remain**
- **Water resilience varies from community to community**



## In summary

Arizona has a **tremendous legacy in wise water management,**  
yet **serious challenges** remain.

Facing a **hotter and drier future,** we must work harder to secure **water resiliency** for all communities.



## Arizona Water Blueprint



Launch Blueprint

Story Maps

Getting Started

About the Project

About the Data



## Arizona Water Blueprint

Explore our interactive map and water data hub.



### Getting Started

Learn how to use the Blueprint to find out about water resources, policies, and your community's water resilience.



### Blueprint Viewer

Access the ArcGIS map and water resources-related data.



### Story Map Gallery

Use Story Maps to explain water-related topics, with visual narratives combining maps, data, and multimedia content.

<https://azwaterblueprint.asu.edu/>