

Reflecting on the Past, Looking to the Future: The Groundwater Management Act

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Arizona Department of Water Resources

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Looking Back



Looking Back



Long-term groundwater overdraft

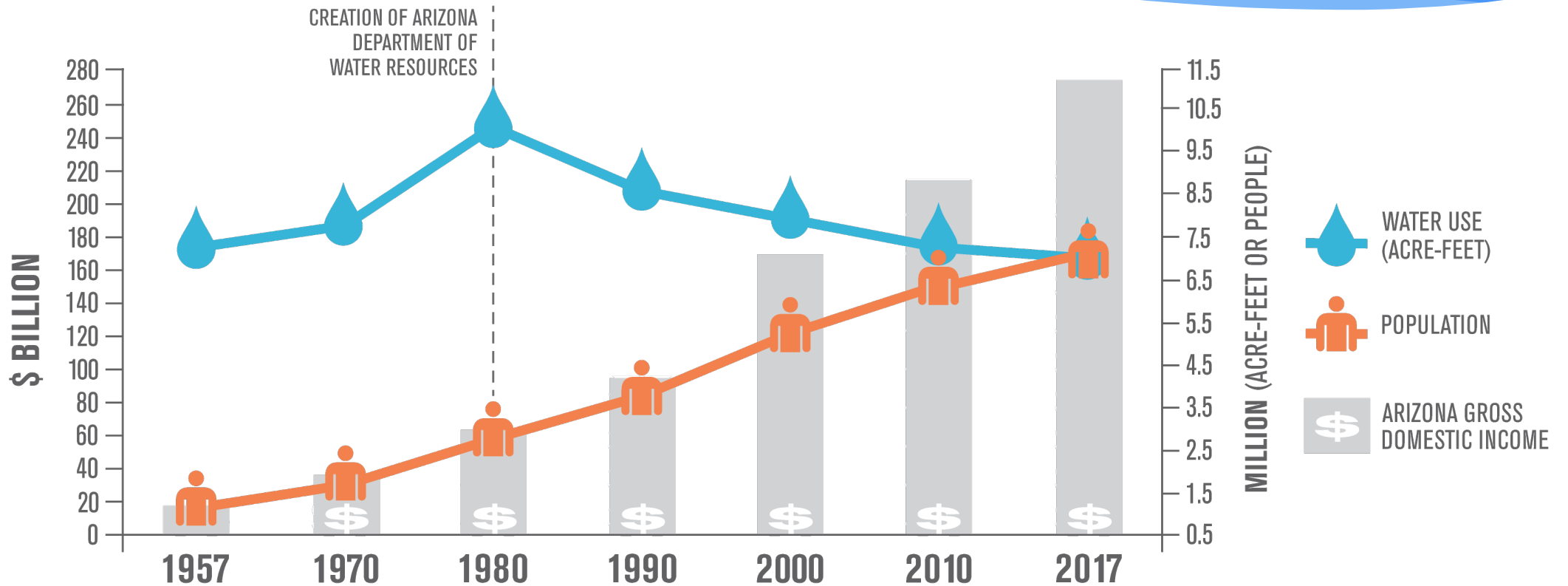
Subsidence, water quality issues, cost impacts

Rapid growth

Imbalance between supply and demand

Concerns for economic development

Arizona Water Management



SOURCE: ADWR, 2018



CAP & Colorado River Supplies



credit: USBOR

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“It was obvious that if we didn’t use the new supply to help achieve a balance, we’d be in an awful mess in forty or fifty years.”

– Wes Steiner



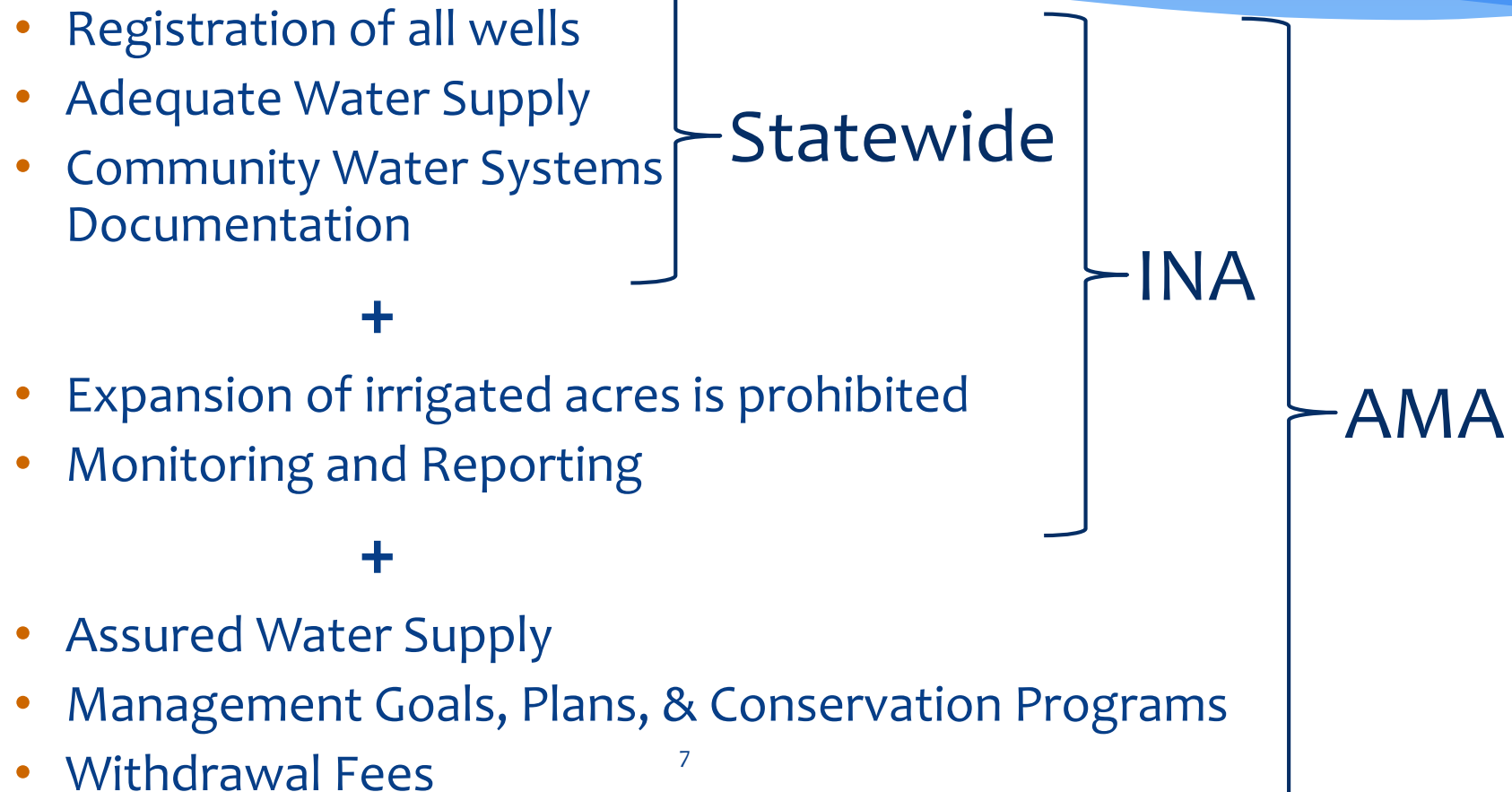
Groundwater Management Act

Established the Arizona Department of Water Resources

Gave the Department the authority to regulate water uses and consumption



Regulatory Structure



Management Goals (A.R.S. § 45-562)

Safe-yield:

“A groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area.”

(A.R.S. § 45-561(12))

Prescott, Phoenix, and Tucson AMAs:

Safe-yield by the year 2025

Pinal AMA:

To allow development of non-irrigation uses and to preserve existing agricultural economies in the AMA for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses.

Santa Cruz AMA:

To maintain a safe-yield condition in the AMA and to prevent local water tables from experiencing long term declines

Management Plans

A.R.S. § 45-563 (A)

“The director shall develop a management plan for each initial active management area for each of five management periods... and shall adopt the plans only after public hearings... The plans shall include a continuing mandatory conservation program... designed to achieve reductions in withdrawals of groundwater.”

Industrial Users

Certain industries that have their own groundwater rights, e.g.: dairies, cooling facilities, power plants, mines, turf facilities

Regulatory requirements include conservation allotments, design limitations, and implementation of BMPs

Turf facilities, including golf courses

required to have site-specific landscape water conservation plans
water allotments

limits on the acreage of turf and lake surface area

Irrigated Agriculture

Cannot be expanded beyond acreage irrigated during the late 1970s

Each farm (Irrigated Grandfathered Right) is assigned a maximum annual groundwater allotment or is enrolled in a BMP program

Irrigation system distribution losses are not to exceed 10%



Credit: UA CALS



Municipal Users

Large municipal providers are required to meter all connections and limit distribution system losses to no more than 10 percent. Small providers must limit their water losses to 15%.

The conservation requirements for municipal water users are based on reductions in per capita use or appropriate conservation measures.

Landscaping in irrigated public medians and rights-of-way is restricted to low-water-use plants identified in Regulatory Plant Lists specific to each AMA.

Conservation Impacts



credit: C Ward

Increased water use efficiency across the sectors

Large municipal provider GPCD **declined 16%** from **2000 to 2017** alone

Cultural transformation

Water demand has flattened, even as population continues to increase

Assured Water Supply Program

A new subdivision will not be approved and homes may not be sold or leased in an AMA unless the applicant can demonstrate that there is sufficient water of adequate quality for at least 100 years or they can get a commitment of service from a water provider with a designation

Applicant must prove:

- physical, continuous, and legal availability of the water
- water quality
- financial capability
- groundwater use is consistent with the AMA's management goal and plan

Subdivisions proven to meet the criteria are issued a certificate of assured water supply

Assured Water Supply Program

A water provider may choose to demonstrate an assured water supply, enabling them to service subdivisions in their designated service area

A designation of assured water supply requires that pre-existing as well as committed and projected demands are met with renewable supplies

More than 80% of the population of the AMAs is served by designated providers

The AWS Program provides the greatest level of consumer protection



Assured Water Supply Program

1988: Proposed Assured Water Supply Rules to require demonstration of AWS based primarily on renewable supplies meets with stiff opposition

Compromise mechanism is developed to recognize use of renewable supplies through replenishment

1993: Replenishment authority is created (Central Arizona Groundwater Replenishment District)

CAGRDR provides mechanism to prove consistency with water management goals as part of effort to demonstrate an AWS through replenishment of groundwater pumping

1995: Assured Water Supply Rules are established, requiring replenishment with renewable supplies or extinguishment credits

Recharge Program

The **Underground Water Storage and Recovery Program** allows the storage of surplus water supplies underground to be recovered at a later time for use by the party storing it.

Further defined by the **Underground Water Storage, Savings, and Replenishment Act**.

Includes:

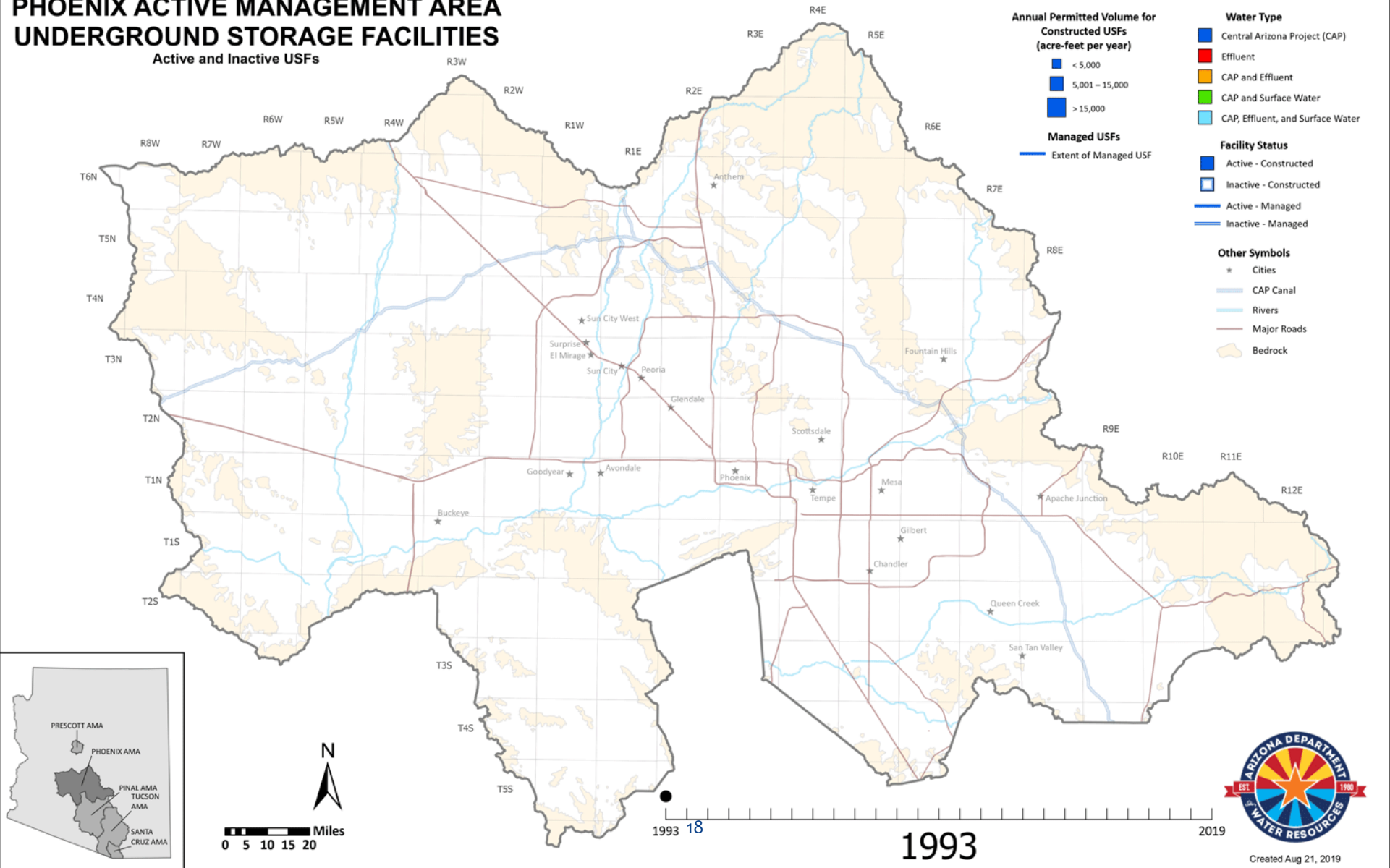
- water supplies that are stored underground
- water supplies that are released into natural stream channels to recharge the aquifer
- farms or irrigation districts that use a renewable water supply instead of groundwater that would have otherwise been pumped

Important tool in managing supplies efficiently, ensuring supplies for the future, and meeting goals of the management plans

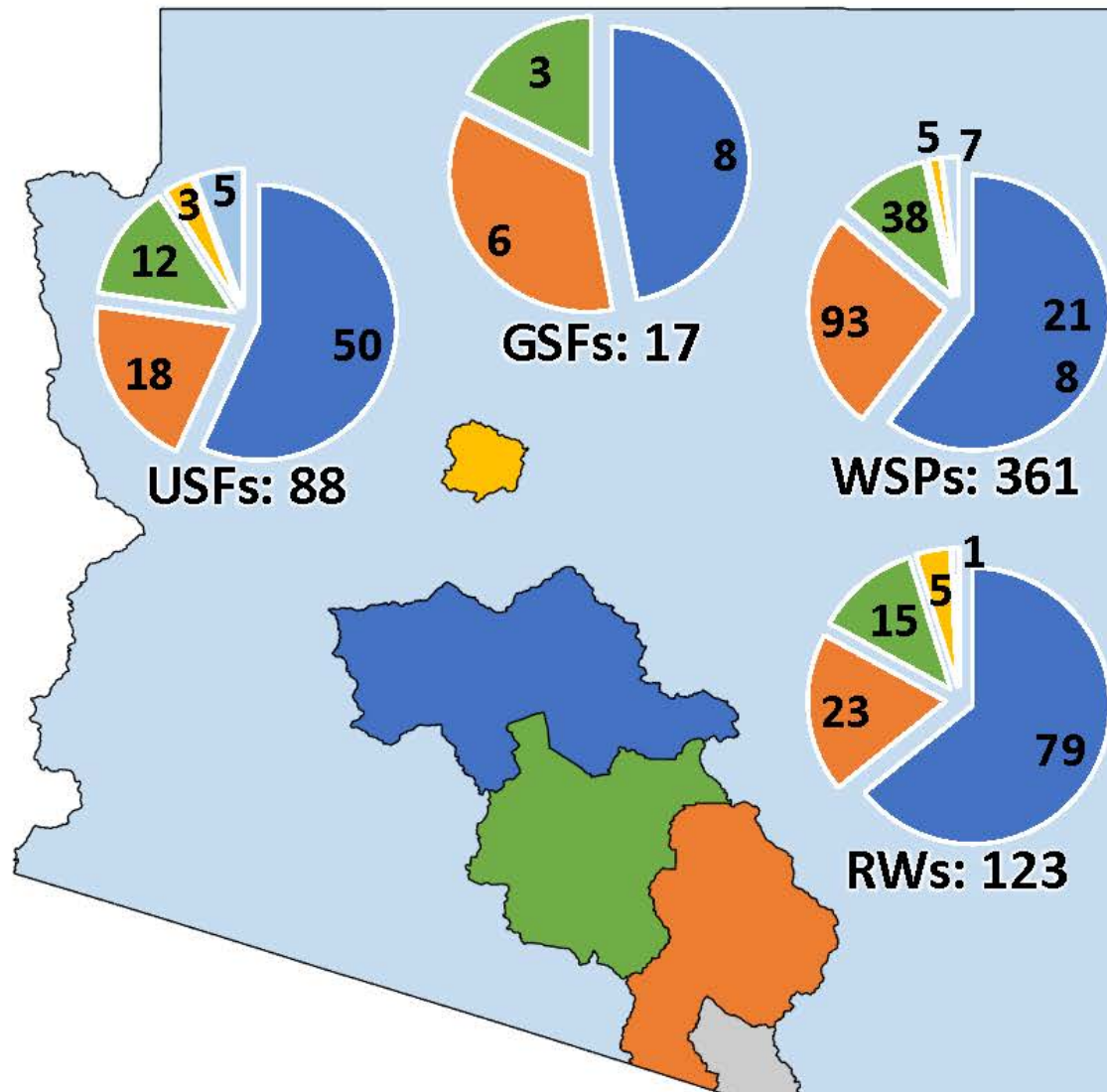
Underground Storage Facilities Through Time

PHOENIX ACTIVE MANAGEMENT AREA UNDERGROUND STORAGE FACILITIES

Active and Inactive USFs



Permits & Facilities by AMA



Number of Permits by AMA

(as of Oct 7 2019)



USF: Underground Storage Facility

GSF: Groundwater Savings Facility

WSP: Water Storage Permit

RW: Recovery Well



Long-Term Storage Credits

When eligible water is stored underground, **Long-Term Storage Credits (LTSCs)** may be issued

Credits can be recovered in the future to be used for various reasons, including establishing an assured water supply or fulfilling replenishment obligations



credit: City of Tucson

Arizona Water Banking Authority

Established in 1996 to increase utilization of the state's Colorado River entitlement and develop LTSCs for the state

Stores or "banks" unused Colorado River water to be used in times of shortage to firm (secure) supplies

Later expanded to store water for use as part of water rights settlement agreements among Indian communities and to assist California and Nevada through interstate banking arrangements

Arizona Water Banking Authority

4.26 MAF of LTSCs accrued since inception

3.65 MAF for Arizona uses, more than 2x what CAP delivers to central Arizona annually

610 KAF are interstate credits on behalf of Nevada

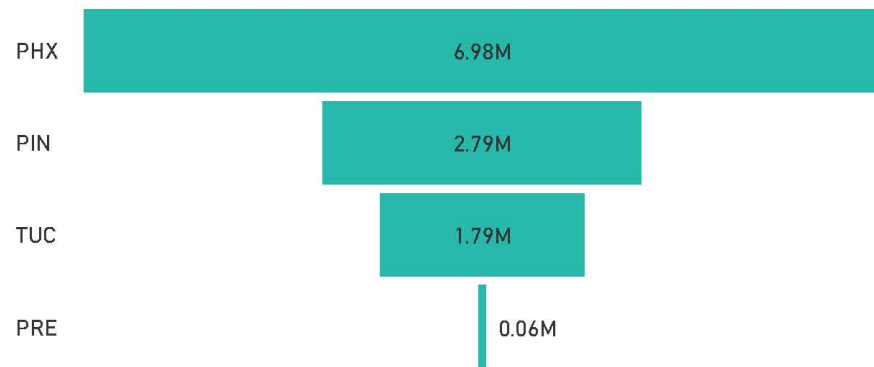


credit AWBA

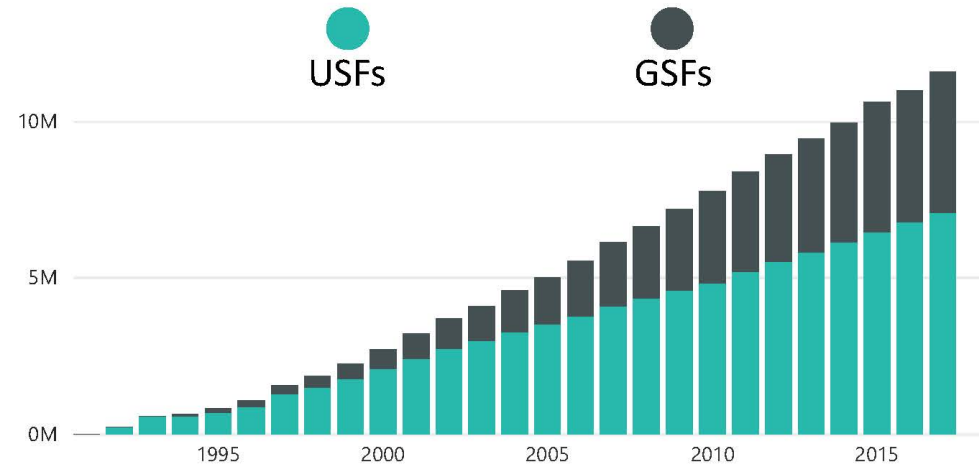
Cumulative Long Term Storage Credits Earned Statewide Through 2017

11.62 million acre-feet

Cumulative Long Term Storage Credits Earned by AMA



Long Term Storage Credit Accumulation by Year



Effluent Reuse



credit Arizona Farm Bureau



Tres Rios, credit City of Phoenix



Palo Verde NGS, credit APS

95% of the wastewater generated in the Phoenix, Pinal, and Tucson AMAs is reclaimed to serve beneficial uses, including:

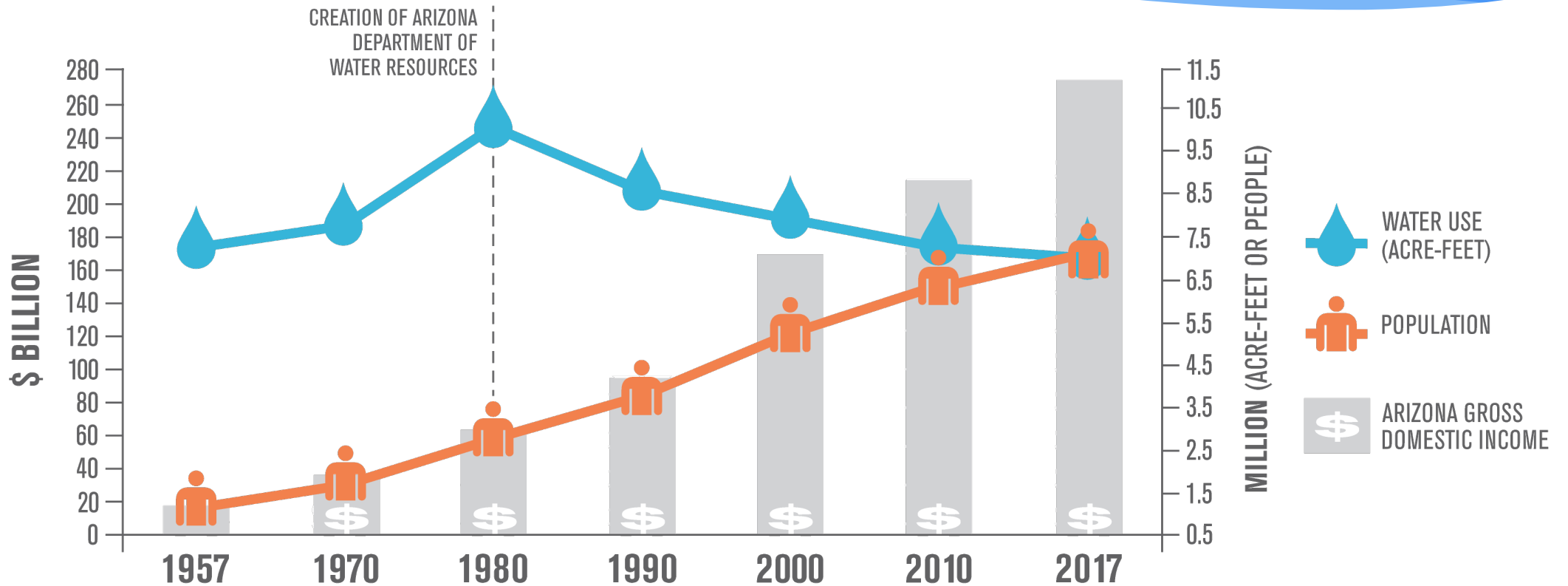
- Agricultural & turf irrigation
- Underground storage for future use
- Industrial uses
- Power generation
- Riparian habitat

As of January 2018, interim rules to allow direct potable reuse of reclaimed water went into effect

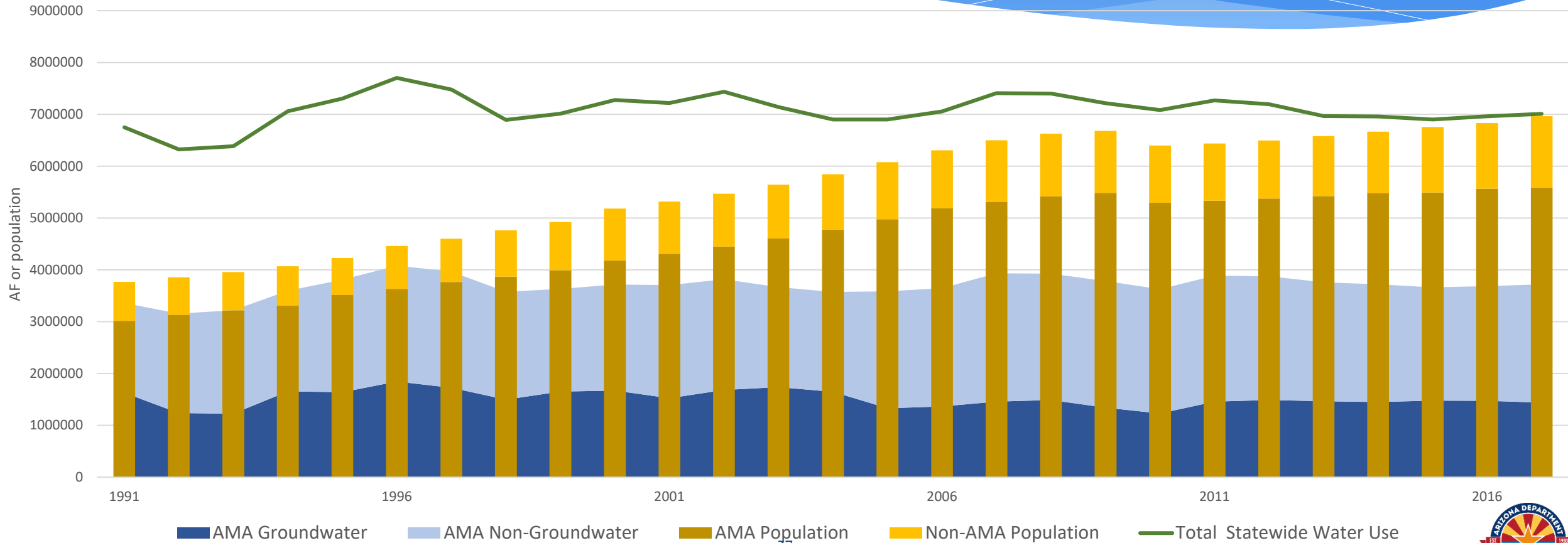
Arizona's first permit for DPR recently issued to City of Scottsdale

Impacts of Water Management

Arizona Water Management

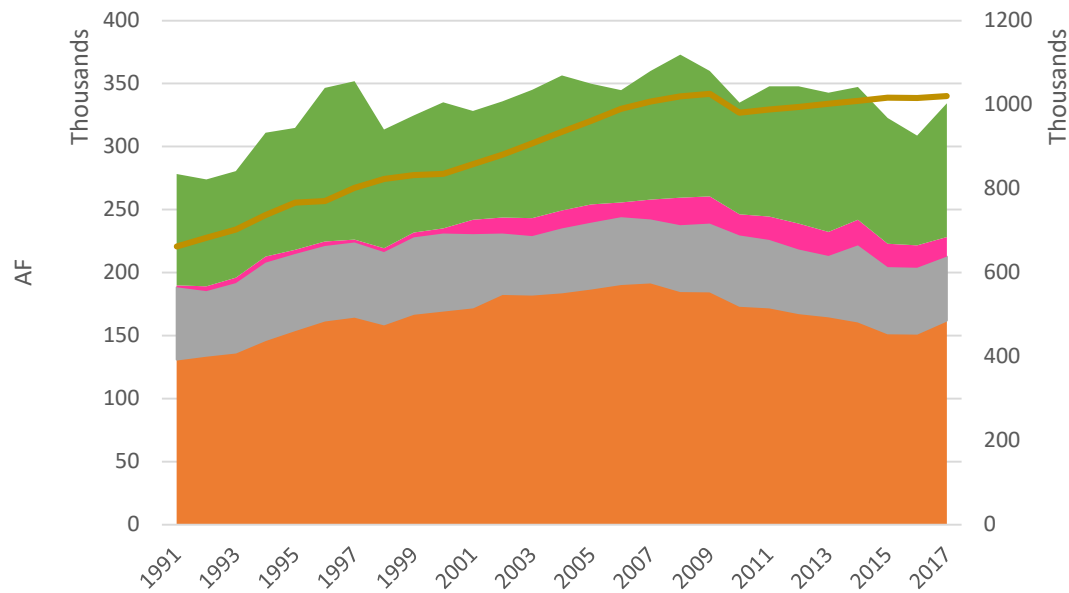


AMA Water Management

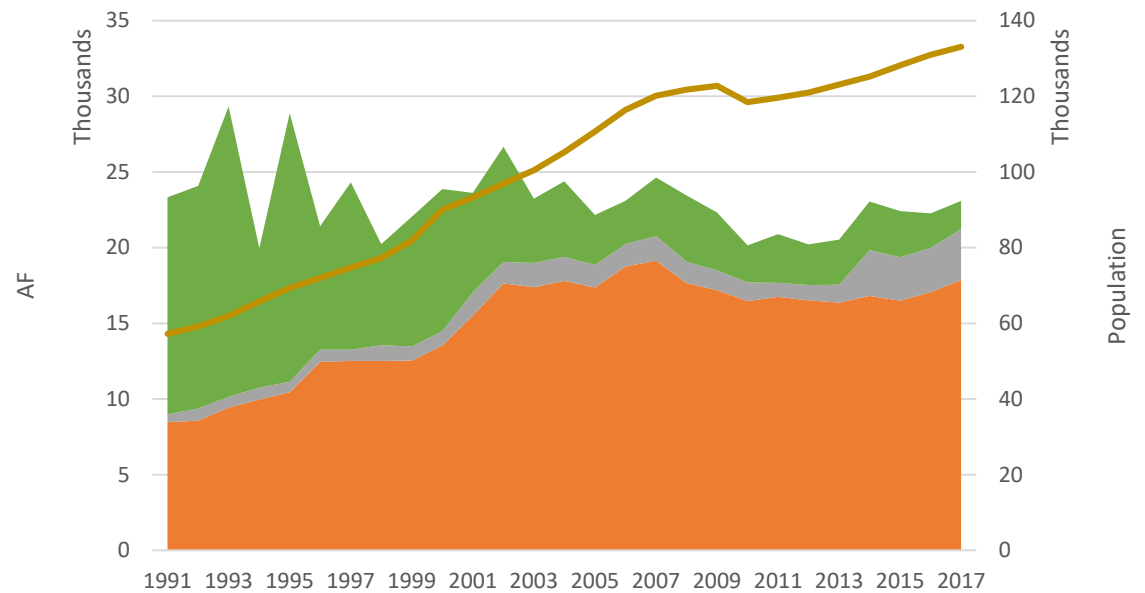


Water Demand

Tucson AMA



Prescott AMA

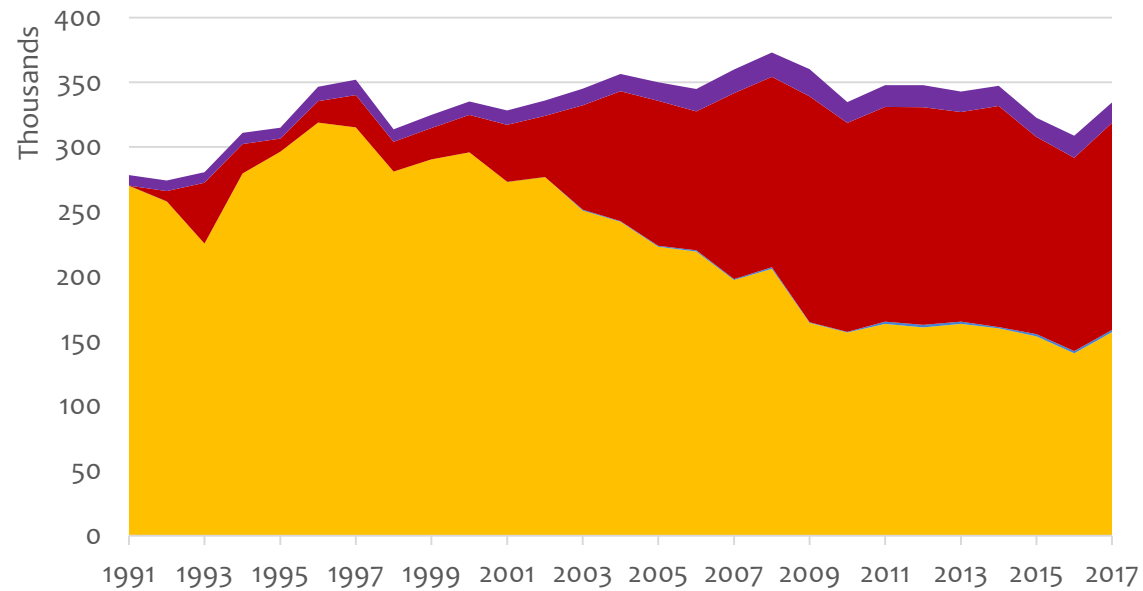


Municipal Industrial Indian Agricultural Population

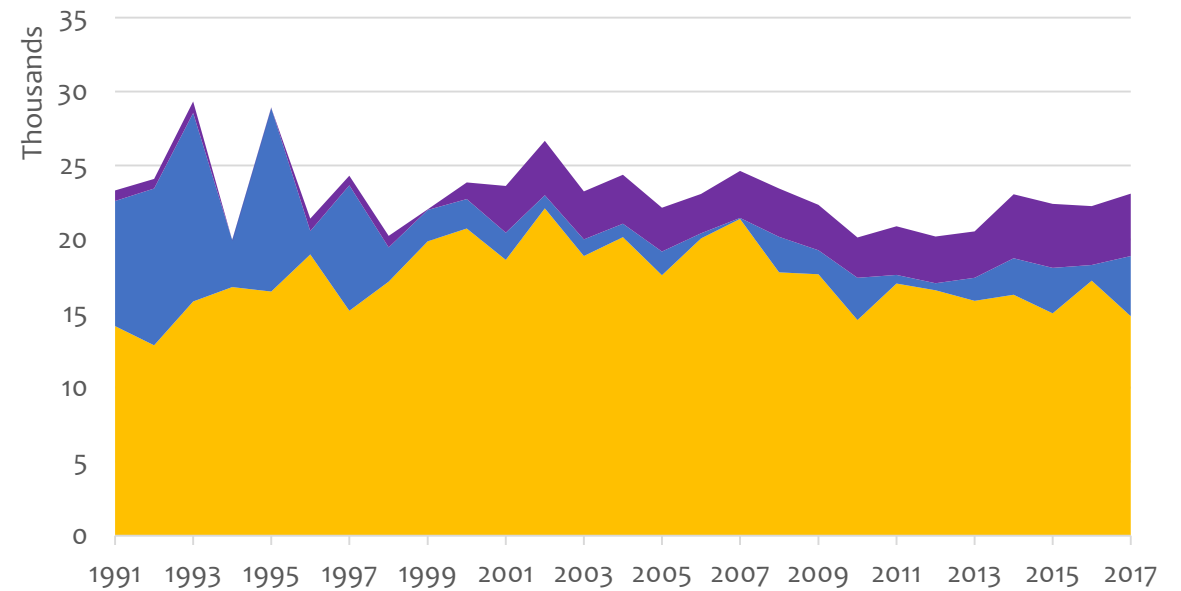


Water Supply

Tucson AMA



Prescott AMA

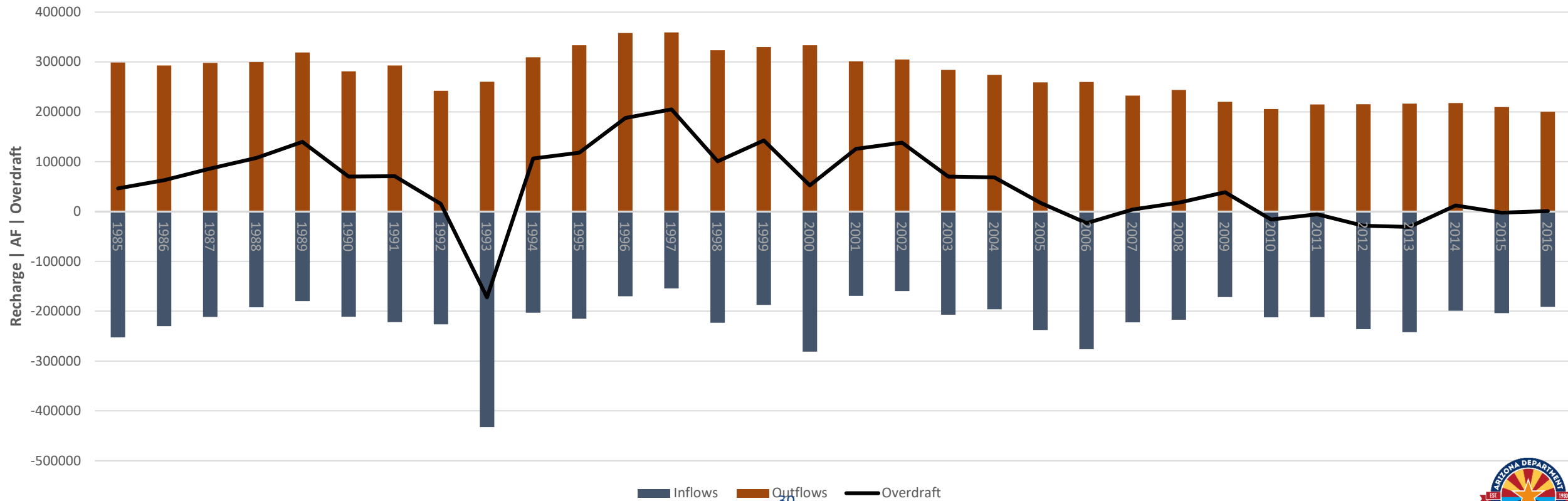


■ Groundwater ■ Surface Water ■ Colorado River ■ Reclaimed



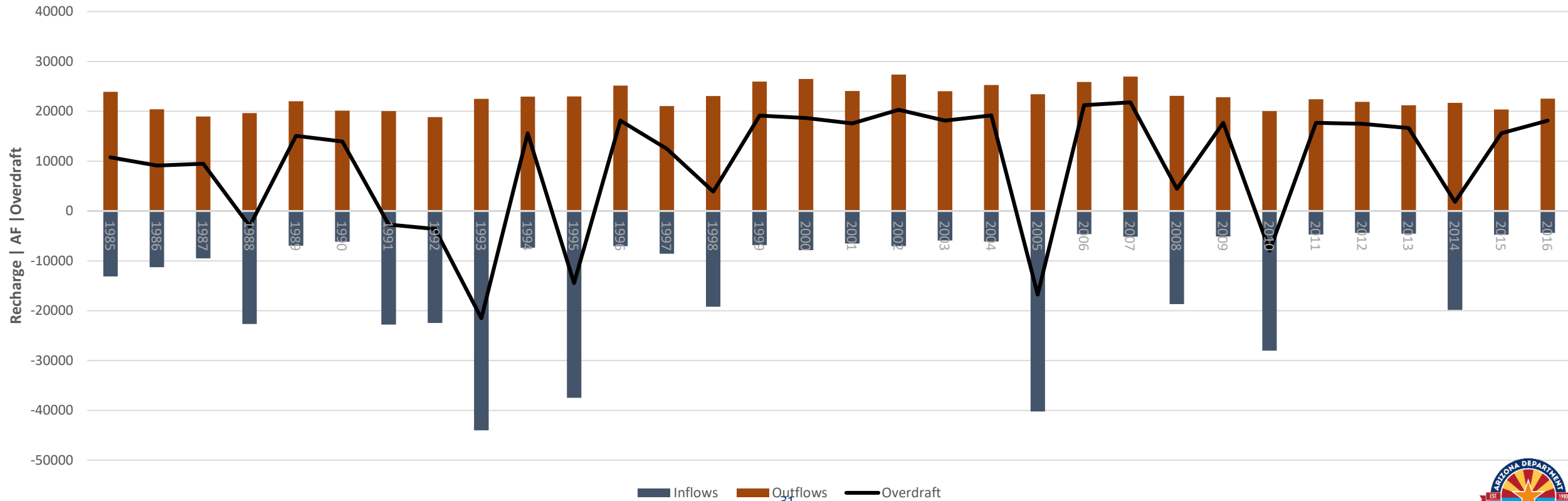
Tucson AMA

Annual Overdraft – Inflows & Outflows



Prescott AMA

Annual Overdraft – Inflows & Outflows



4th & 5th Management Plans

Timeline

4MP

Phoenix
AMA
Adoption

Pinal AMA
Adoption

Santa Cruz
AMA
Adoption

2019

2021

2022

2023

MPWG

Drafting
Plans

Adopting
Plans

5MP



Estimated 4MP Adoption Timeline

1. Initial Draft Published

2. GUAC and Public Comments

3. Updated Draft Published

4. Public Hearing

5. Final Adoption

Phoenix AMA

- **Final Adoption: Summer 2020**
- **Programs Effective: January 2023**

Pinal AMA

- **Final Adoption: Fall 2020**
- **Programs Effective: January 2023**

Santa Cruz AMA

- **Final Adoption: Winter 2020**
- **Programs Effective: January 2023**

Conservation Program Requirements go into effect at least 2 years after a plan is adopted. ADWR shifts the actual effective date past the 2 year mark to line up with Reporting Years.

MANAGEMENT PLANS WORK GROUP

A.R.S. § 45-563 (A)

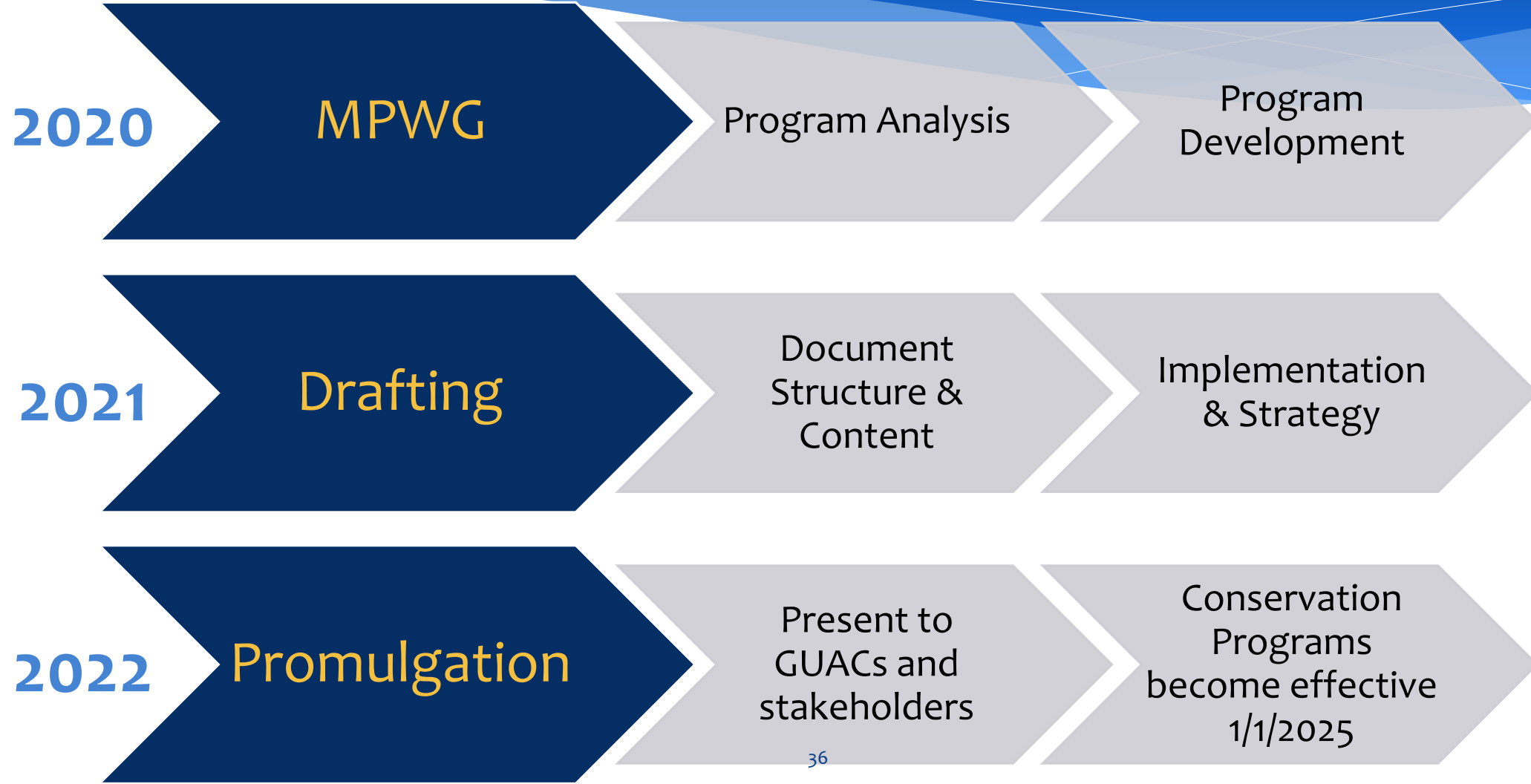
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ADWR-led stakeholder forum for the development of the 5th Management Plans

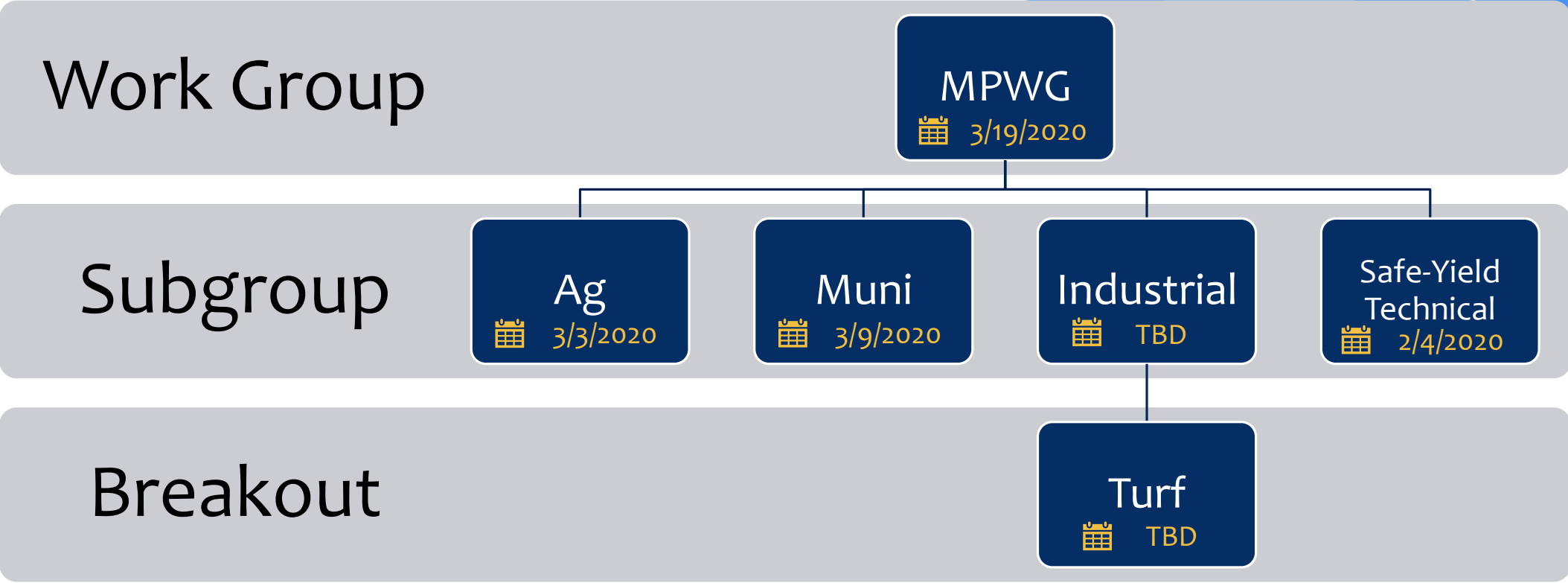
Goals:

- * Assess existing conservation programs
- * Update existing management strategies
- * Develop new management strategies

Estimated 5MP Timeline



MPWG Subgroups



Governor's Water Augmentation, Innovation, and Conservation Council Post-2025 Active Management Areas Committee

Objective: Identifying challenges within the regulated areas and generating strategies and solutions beyond 2025.

2020: Process of issue identification and analysis, culminating in a list of issues, each briefly described, for the Council's consideration and feedback.

2021: Committee will begin development of solutions and strategies to address the priority issues as confirmed by the Council.

Looking Forward





Presenters:

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