GRAND CANYON INSTITUTE

Canyon Connections

September 2023

Canyon Connections is a newsletter from the nonpartisan think tank the Grand Canyon Institute (GCI), giving you the latest on the research and data surrounding important policy issues in Arizona.

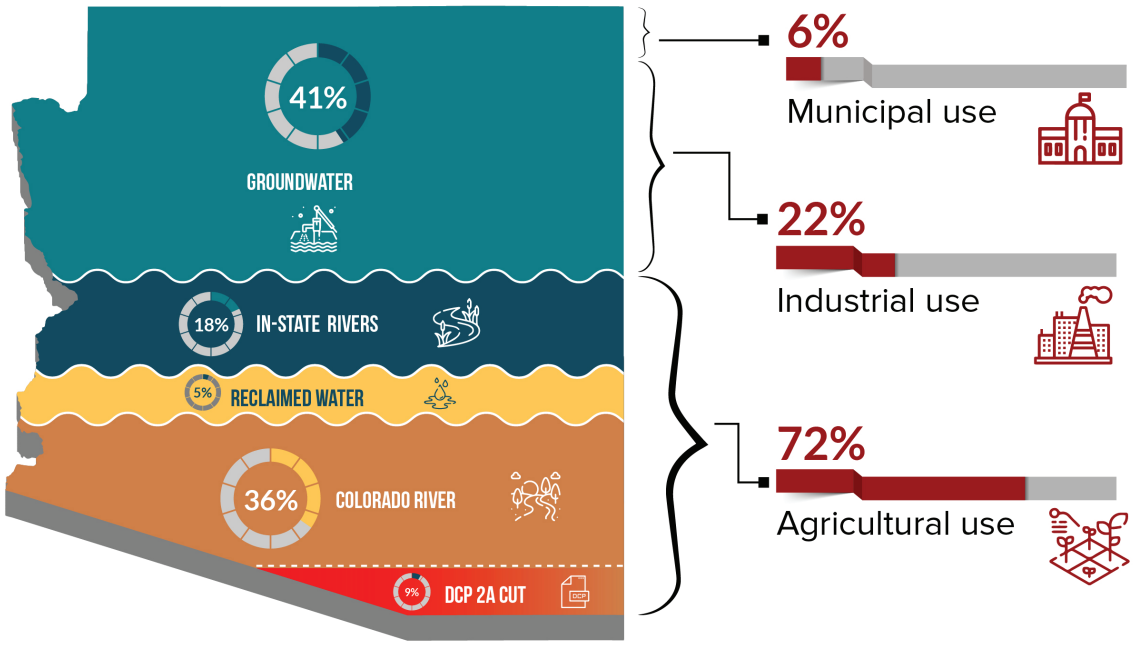
The Water Issue

For over a century, water sourcing and conservation has been at the forefront of Arizona's public policy conversation. With a once-in-1,200-year drought now strickening the region, consensus on pragmatic solutions is more important than ever. Yet it can be easy to get lost in the whirlwind of headlines covering a litany of drought plans, water rights, and shortage controversies. This newsletter aims to provide a crash course on where Arizona's water comes from, where it goes, and how it plans on dealing with the drought.

Where Water Comes From, and Where It Goes

Most of Arizona's water is sourced from groundwater and the Colorado River, and is used for agriculture. To protect the Colorado River, surrounding states agreed on a Drought Contingency Plan (DCP). Currently in a Tier 2a shortage, Arizona's share in the reductions accounts for 9% of the state's total water use.

Arizona's Supply and Use (2020)



Sources: Arizona Department of Water Resources, 2020; Central Arizona Project, 2022

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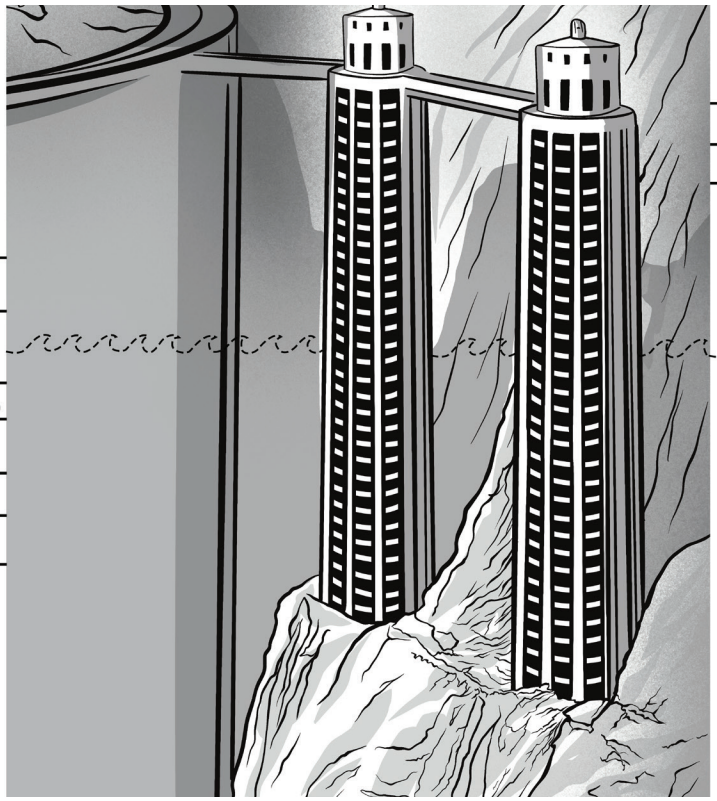
Lake Mead's Water Level

The Colorado River accounts for more than a third of Arizona's water supply. However, Lake Mead, the main reservoir for the Lower Basin states (Arizona, California, and Nevada), has dropped over 150 feet since the year 2000. In 2007, Colorado River Basin states agreed on a Drought Contingency Plan (DCP), which was further developed this plan in 2019 when it was clear that the two-decades-long drought was worsening.

In 2020 and 2021, the river experienced a Tier 0 shortage status, which cut Arizona's 2.8-million acre-foot annual entitlement by 192,000 acre-feet. Lake Mead's elevation continued to drop, leading to a Tier 1 shortage in 2022 and a Tier 2a shortage in 2023. An above-average winter snowpack has led to slightly higher water levels, returning the river to a Tier 1 shortage in 2024.

Significant Water Levels at the Hoover Dam (2023)



Sources: Arizona Department of Water Resources, 2021; National Park Service, 2022; Bureau of Reclamation, 2023; AZCentral, 2019; CNN, 2023

Drought Contingency Plan (DCP) Tiers

Tier 0: Between 1,090 ft to 1,076 ft, Arizona forgoes 192,000 acre-feet of its entitlement.

Tier 1: Between 1,075 ft to 1,051 ft, Arizona forgoes 512,000 acre-feet of its entitlement.

Tier 2a: Between 1,050 ft to 1,046 ft, Arizona forgoes 592,000 acre-feet of its entitlement.

Tier 2b: Between 1,045 ft to 1,026 ft, Arizona forgoes 640,000 acre-feet of its entitlement

Tier 3: Under 1,025 ft, Arizona forgoes 720,000 acre-feet of its entitlement

Hoover Dam Pool Levels

Pool levels indicate the impact that the water elevation has on the dam's operations.

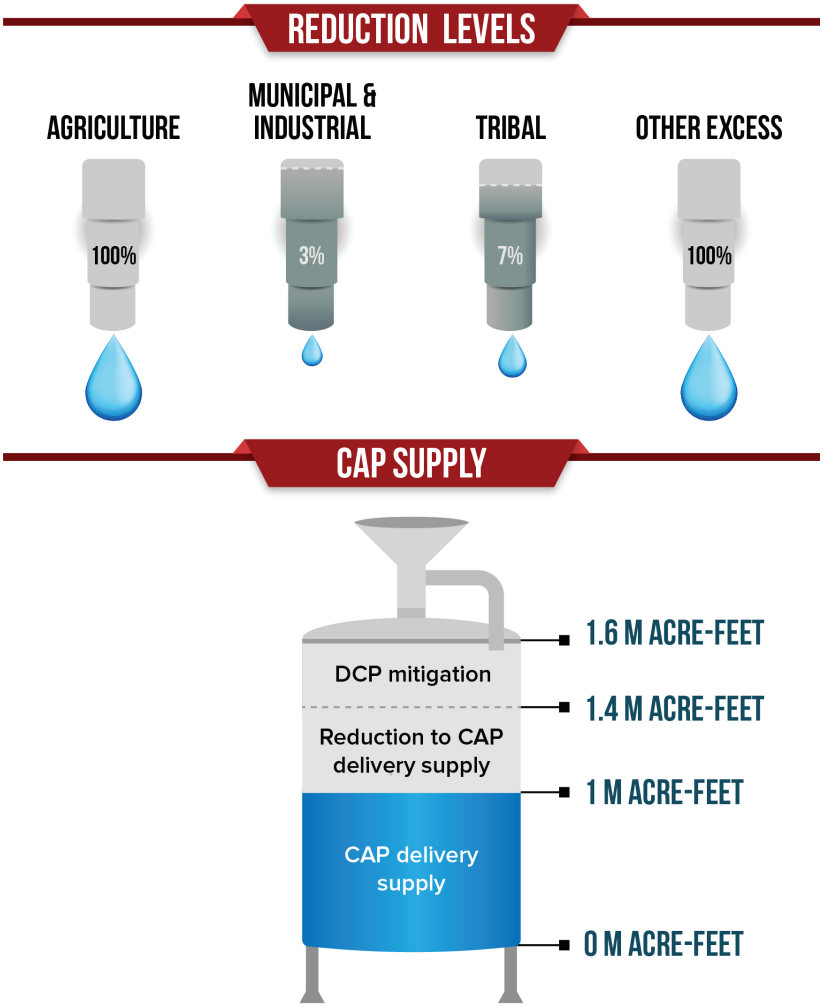
Full Pool: Between 1,219.6–1,229 ft, this is above operational capacity and represents the dam's flood control space.

Inactive Pool: At a water level of 950 ft, the dam is no longer able to generate power, but can still release water downstream.

Dead Pool: At 895 ft, the dam is no longer able to release water downstream.

Central Arizona Project Fulfillment

Central Arizona Project (CAP) Supply (2023)



As the Colorado River shrinks and the DCP tier climbs, different categories of users bear the brunt of water delivery cuts differently. The Central Arizona Project (CAP), the organization and infrastructure responsible for diverting water from the river to Central and Southern Arizona, currently delivers only 75% of the water that it is normally allocated.

With the River operating at a DCP Tier 2a shortage in 2023, agricultural users do not receive any water from CAP. With 2024 returning to a Tier 1 shortage, CAP will resume delivering water to agricultural users, but at a level 65% lower than normal.

Municipal, industrial, and tribal users also see reductions, albeit much less severe. This is in part due to CAP retaining water in Lake Mead and acquiring credits for an intentionally created surplus. This allowed CAP to use some of these credits to mitigate cuts to municipal, industrial, and tribal users, resulting in no net reductions during the Tier 1 shortage in 2022 and single-digit reductions during the Tier 2a shortage in 2023.

This mitigation accounts for 200,000 acre-feet of water in 2023. CAP will supply one million acre-feet from the River and see 400,000 acre-feet in reductions.

Sources: Central Arizona Project, 2022; Arizona Department of Water Resources, 2021 & n.d.; AZCentral, 2023

Solutions for the Future

In 2022, the legislature and Governor Doug Ducey took advantage of the record budget surplus to appropriate $1 billion to a “Long Term Water Augmentation Fund” managed by the Water Infrastructure Finance Authority of Arizona (WIFA). WIFA is the public body responsible for managing federal and state funding for water infrastructure projects. This investment was scheduled to occur over three years, with $333 million invested in 2022. However, the budget signed into law earlier this year by Governor Katie Hobbs only invested $189 million into this fund, $144 million less than expected.

The $1 billion investment in long-term water solutions was historic, and future budgets should maintain this investment, but there is no magic bullet solution to Arizona’s water woes. Instead, political attention and capital should be focused on high-impact solutions, such as improving the conservation capabilities of the state’s existing infrastructure. Additionally, 72% of water is used for agriculture which must rely increasingly on groundwater as allocations from the Colorado River run dry; stricter active management area (AMA) regulations must be enacted to protect the state’s groundwater aquifers. Finally, up to 70% of municipal water is used outdoors on low-priority activities, such as tending landscape and filling swimming pools. Cities can reduce demand through policies that restrict or disincentivize inefficient usage.

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