

# What does the Colorado River shortage mean for ... water conservation?

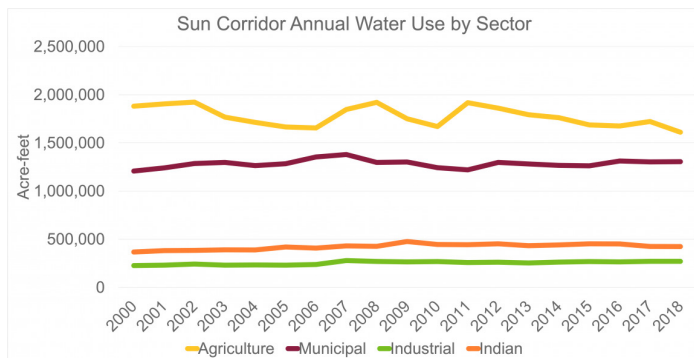
Over the past two decades, the water level in Lake Mead, the huge Colorado River reservoir that serves Arizona, California, Nevada and Mexico, has been declining at a concerning rate. In accordance with an interstate plan designed to mitigate the risk of Lake Mead falling to catastrophic levels, next year Colorado River water supplies will be cut for the first time ever.

- The biggest cut will be to entities in Maricopa, Pinal and Pima counties that receive Colorado River water delivered by the Central Arizona Project (CAP).
- The cut amounts to about a third of the water CAP delivers in a “normal” year.

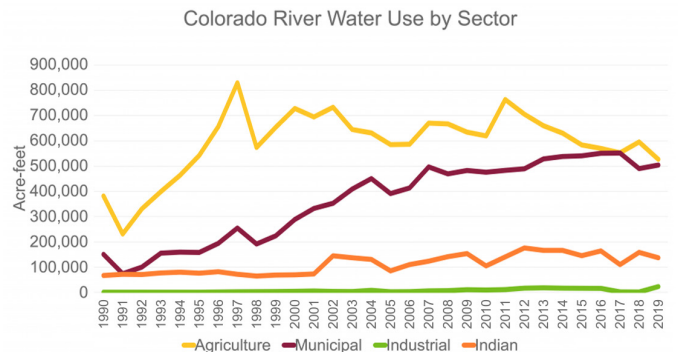
Irrigation Districts in Pinal County will bear the brunt of the cut, because they have a lower priority to Colorado River water than municipalities and Indian tribes with long-term rights to this water. The agriculture sector is currently the largest user of Colorado River water delivered by the CAP.

## Should urban water users step up their water conservation efforts?

- Municipal demand comprises less than 40% of total water demand in Central Arizona, and Colorado River water makes up only about 40% of that demand. Groundwater, Salt River Project water and reclaimed water make up the rest.
- Long-term reductions in water use by urban users are helpful because they enable water providers to stretch available supplies to serve more people and businesses. Because over 90% of water used indoors is reclaimed and reused, reductions in water used for outdoor landscaping provide the biggest benefits.
- While helpful, especially at a local level, reductions in municipal water use won't necessarily translate into water left in Lake Mead: Junior priority users are entitled and eager to use water that more senior contract holders leave in the system.



This graph shows the annual water use by sector in the Phoenix, Pinal and Tucson Active Management Areas. (Data Source: Arizona Department of Water Resources)



This graph shows annual Colorado River water use in Arizona by sector. (Data Source: Arizona Department of Water Resources)

## For more information:

Arizona's Most Precious Resource: Arizona's Water Story

<https://asu.maps.arcgis.com/apps/Cascade/index.html?appid=a44299ef542a479d8a63b72c348dd1ba>

Arizona Water Augmentation Concepts

<https://asu.maps.arcgis.com/apps/Shortlist/index.html?appid=ac3c8db6aeef4b8fb8612734675e8192>

A Joint ADWR/CAP Statement On Colorado River Shortage Preparedness

<https://azwaternews.com/2021/04/02/adwr-cap-statement-on-co-river-2021/>

Colorado River study means it's time to cut water use now, outside experts say

[https://tucson.com/news/local/colorado-river-study-means-its-time-to-cut-water-use-now-outside-experts-say/article\\_20dafb95-3d43-5a8d-85ff-92c76708145b.html](https://tucson.com/news/local/colorado-river-study-means-its-time-to-cut-water-use-now-outside-experts-say/article_20dafb95-3d43-5a8d-85ff-92c76708145b.html)

CAP Priority Explainer

<https://knowyourwaternews.com/a-matter-of-priorities/>

# What does the Colorado River shortage mean for ... residential water users?

Most Arizonans' primary relationship to water is when it comes out the tap in their kitchen or rains down on them from their shower. So it's only natural that most Arizonans' primary question about the Colorado River shortage is how it will affect them, personally, as residential water users.

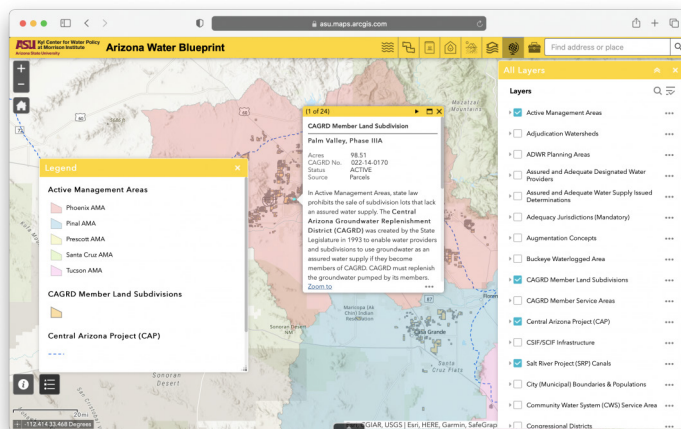
Will the Colorado River shortage impact me?

Probably not this year ...

- Nearly all of the impacts in 2022 will fall on farmers in Central Arizona, who gave up their long-term contracts for Colorado River water decades ago in exchange for subsidized water that is first to be cut during a shortage.

But in the next few years ...

- The cost of water delivered through the Central Arizona Project will increase and if you live in Central Arizona your water bill may rise.
- Your property tax bill may increase if you live in a subdivision that is a member of the Central Arizona Groundwater Replenishment District (also called CAGRD; check your property tax records or the Arizona Water Blueprint interactive map) because the district partially relies on Colorado River water to replenish groundwater pumped for its members and may need to acquire more expensive replenishment supplies.
- There will be less water available to artificially recharge Central Arizona aquifers, which will exacerbate groundwater depletion.



The Arizona Water Blueprint shows CAGRD Member Land Subdivisions. (Data Source: <https://asu.maps.arcgis.com/apps/webappviewer/index.html?id=54b4c387e70d41918f02c862babc71c>)

Hoping for good snowpack is not a valid water management strategy ...

- Water providers plan proactively to ensure reliable water deliveries even in shortage. Many water utilities have access to alternative supplies — groundwater, reclaimed water, and Salt and Verde river water, for example — but alternative supplies and the infrastructure necessary to deliver them may be more expensive, and increased costs will be passed on to customers.
- Water conservation has been mandatory in Central Arizona since the 1980s, and per-capita water consumption rates have fallen steadily over that time, but if water levels in Lake Mead continue to decline, your water utility may implement stricter requirements.

For more information:

What is the CAGRD? Here are Three Things You Need to Know

<https://knowyourwaternews.com/what-is-the-cagr-d-here-are-three-things-you-need-to-know/>

The Elusive Concept of an Assured Water Supply: The Role of the CAGRD and Replenishment

<https://morrisoninstitute.asu.edu/content/elusive-concept-assured-water-supply>

Colorado River Shortage Highlights the Importance of Improved Groundwater Management

<https://www.amwua.org/blog/colorado-river-shortage-highlights-the-importance-of-improved-groundwater-management>

# What does the Colorado River shortage mean for ... groundwater pumping?

**From the Kyl Center report The Myth of Safe-Yield:** “The iconic images of the bathtub ring around Lake Mead caused by falling water levels have been viewed by millions around the country and the world. Lake Mead has become the symbol of what happens when climate change meets over-allocation of a fragile water supply. Seeing is believing, and there is now a near-universal belief that changes are needed to help sustain the Colorado River.

“If we could see the groundwater aquifers that serve as our underground reservoirs, many of them would be showing similar signs of stress as groundwater levels fall, the aquifers collapse, land subsides, and minerals and pollutants concentrate in the diminished supply that is left. If we could see that with our own eyes, perhaps we would understand, as we do with Lake Mead, the need to manage better the use of these finite water supplies.”

## How will the Colorado River shortage impact groundwater pumping in Arizona?

- Arizona has stored a large amount of Colorado River water in aquifers in Central Arizona in preparation for shortage.
- However, groundwater pumping will increase as farmers in Central Arizona get less Colorado River water delivered through the Central Arizona Project (CAP).
- Increased groundwater pumping reduces the availability of this finite water supply for future needs, including municipal and industrial uses.
- While groundwater use in the three Central Arizona counties that receive CAP water has decreased since 1980, groundwater is still being pumped at unsustainable levels.
- Overpumping of groundwater supplies has well-documented environmental and health-related consequences, including land subsidence, water quality degradation and increased costs.

## For more information:

The Myth of Safe-Yield: Pursuing the Goal of Safe-Yield Isn't Saving Our Groundwater

[https://morrisoninstitute.asu.edu/myth\\_of\\_safe\\_yield](https://morrisoninstitute.asu.edu/myth_of_safe_yield)

Explore Groundwater Level Changes in Arizona Sub-Basins

<https://asu.maps.arcgis.com/apps/webappviewer/index.html?id=40ab99d10a224d6c83818fb0e1c153e0>

# What does the Colorado River shortage mean for ...

## my pocketbook?

### The cost of water will very likely increase.

- Your water bill comes from your local water utility. Most water utility costs are related to infrastructure — water mains, pumps, tanks, treatment plants, and meters, for example — but the cost of wholesale water supplies is also significant.
- The Central Arizona Project delivers Colorado River water on a wholesale basis to some, but not all water utilities in Central Arizona. The cost of these deliveries is passed on to customers.
- The cost of wholesale Colorado River water delivered through the Central Arizona Project will increase due to shortages.
- Different water utilities depend on wholesale supplies from the Central Arizona Project to varying degrees. Those that are more dependent will experience cost increases that are relatively higher.
- Many water utilities have access to alternative supplies — groundwater, reclaimed water, and Salt and Verde River water, for example — but alternative supplies and the infrastructure necessary to deliver them may be more expensive, and increased costs will be passed on to customers.
- Your property tax bill may increase if you live in a subdivision that is a member of the Central Arizona Groundwater Replenishment District (also called CAGR; check your property tax records or the Arizona Water Blueprint interactive map) because the district partially relies on Colorado River water to replenish groundwater pumped for its members and may need to acquire more expensive replenishment supplies.

### For more information:

Community Water Systems Web Map — Identify water providers in your area and view contact information, service areas, wells, annual reports, and system water plans

<https://gisweb3.azwater.gov/cws>

Arizona Water And Wastewater Rates Dashboard

<https://efc.sog.unc.edu/resource/arizona-water-and-wastewater-rates-dashboard>

How CAP planned rate stabilization funds — How a shortage would impact water rates

<https://knowyourwaternews.com/financial-impacts-of-water-shortage-how-cap-planned-rate-stabilization-funds/>

Arizona Water Blueprint interactive map

<https://asu.maps.arcgis.com/apps/webappviewer/index.html?id=54b4c387e70d41918f02c862babcf71c>

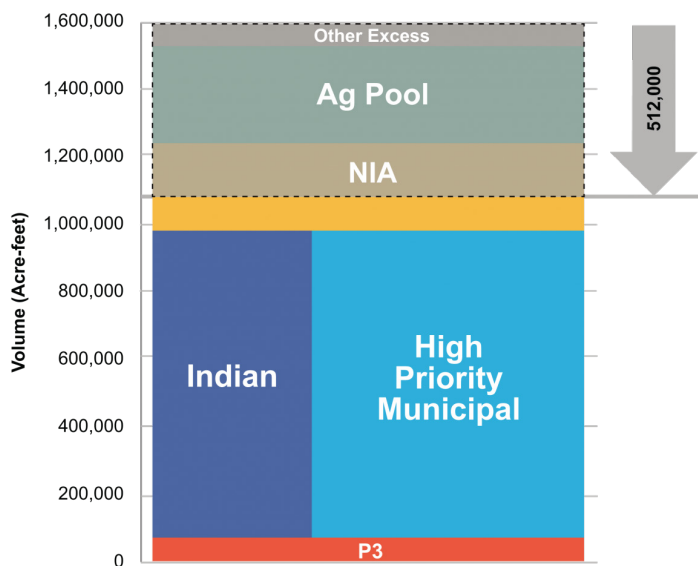
# What does the Colorado River shortage mean for ... urban growth?

A shortage declaration has been anticipated for many years, so the shortage will not come as a surprise to Arizonans involved in planning for water for growth, and Central Arizona still has some water for growth.

## Two important things to keep in mind:

- Population growth and water demand have become “decoupled” as municipal water users have become increasingly efficient in their water use. In the last two decades, the municipal population of CAP’s three-county service area has grown 45% but municipal water demand has increased only by 14%.
- In Central Arizona, municipal water planning occurs on long timelines, and for many years plans for urban growth have not counted on the Colorado River supplies at high risk of being cut.

The shortage will impact water users in the CAP service territory, which covers most of Maricopa, Pinal, and Pima counties. The supplies of Colorado River water for users in western Arizona will not be cut.



The high-priority water allocations to cities and tribes will not be impacted by a Tier 1 shortage.

Some Central Arizona communities will not be significantly impacted because they have sufficient water supplies to support their projected growth and have factored potential Colorado River reductions into their long-term water resource plans. (But even in these communities, reduced Colorado River supplies may mean water rates must increase to pay for the infrastructure needed to deliver alternative supplies and to cover the higher costs of the water supplies available.)

Some Central Arizona communities are actively reckoning with how to ensure water for growth, and the prospect of long-term declines in Colorado River supplies has helped focus their attention on finding new water supplies and new ways to stretch available supplies to meet greater demand.

## For more information:

Return to Watering the Sun Corridor

[https://morrisoninstitute.asu.edu/sites/default/files/sun\\_corridor\\_2021\\_final.pdf](https://morrisoninstitute.asu.edu/sites/default/files/sun_corridor_2021_final.pdf)

CAP Priority Explainer

<https://knowyourwaternews.com/a-matter-of-priorities/>

# What does the Colorado River shortage mean for ... projects to bring new water supplies to Arizona?

**Many communities in Central Arizona have sufficient, reliable renewable water supplies to meet their future demand.** But some communities don't have all the water they need for their projected growth, and anticipation of the first-ever declaration of curtailment of the Colorado River has increased interest in augmentation projects — that is, projects to bring new water supplies into Central Arizona. This year, the Arizona Legislature set aside \$160 million to help fund future augmentation projects.

## **Three things to think about with respect to new water supply projects:**

- The water users who will be most immediately impacted by the Colorado River shortage — Pinal County farmers — are unlikely to benefit from a water augmentation project. Why? Because any new supplies of water will be too expensive to be used to grow crops.
- Typically, the communities that benefit from new water supplies are the ones who must pay for that water and the infrastructure to treat and deliver it. For a water supply project to be financed, the lender must have some assurance that the borrowers have the capacity to pay back the loan. Proving that there will be enough future demand to pay off that financing can be challenging.
- Investments in efficiency, conservation and re-use are in many instances less expensive, gallon-for-gallon, than investments in new water supplies.

## **For more information:**

Water Augmentation Concepts on the Arizona Water Blueprint

<https://asu.maps.arcgis.com/apps/Shortlist/index.html?appid=ac3c8db6aeef4b8fb8612734675e8192>

Arizona WIFA (Water Infrastructure Finance Authority of Arizona)

<https://www.azwifa.gov/>

# What does the Colorado River shortage mean for ...

## water rights?

**In the American West, the use of water is controlled by long-standing rights that can't be altered just because water is scarce.** This water rights system has given cities, towns, industries and Indian tribes the needed certainty to invest in the infrastructure necessary to treat and deliver water and helps to ensure reliability in times of shortages.

**While some would like to “take” water from existing uses and give it to a different use, that's unlikely to happen. Here's why:**

- The use of Colorado River water is governed by a complex set of agreements, court decrees and federal laws, collectively known as the Law of the River.
- Most rights and contracts to use Colorado River water are “in perpetuity,” meaning they last forever.
- Colorado River water delivered by the Central Arizona Project (CAP) is regulated by a master agreement between the U.S. Secretary of the Interior and the Central Arizona Water Conservation District, a state-created entity that operates the CAP and is responsible for repayment of CAP construction costs to the federal government.
- In 1983, the Interior Secretary allocated Colorado River water delivered by the CAP to municipal and industrial water users, Indian tribes and agricultural entities in Central Arizona, which then signed individual contracts with the Central Arizona Water Conservation District and the Interior Secretary for delivery of this water.
- While agricultural entities in Central Arizona subsequently gave up their contracts, municipal and industrial users and Indian tribes retain permanent contracts.
- The ability to use water from Arizona's in-state streams, such as the Salt River, is similarly regulated under court decrees or state-granted water rights. Arizona follows the doctrine of prior appropriation, often referred to as “first in time, first in right,” which allows those with higher priorities to divert water first in times of shortage.
- Water rights — whether granted pursuant to a contract, a court decree or a permit from the state — are vested rights, which generally cannot be taken away or diminished without consent of the owner.
- However, water managers in Arizona have created innovative, voluntary leases and exchanges that allow them to move water to preferred purposes to create additional value and resiliency, all while respecting our existing water rights structure.

### For more information:

A Matter of Priorities

<https://knowyourwaternews.com/a-matter-of-priorities/>

Arizona Water Blueprint News

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