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Without a deal on the Colorado River, deeper cuts loom. How 9 Arizona cities will respond

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Key Points

- Central Arizona cities have kept the taps flowing to residents without restrictions, even as a 30-year drought deepens on the Colorado River. That may change in the next year or two.
- What happens to water supplies depends on negotiations among the seven Colorado River states and 30 tribes, who are trying to finish a new drought-management plan to replace an expiring plan.
- Most cities can draw on stored groundwater for short-term cutbacks, but if Arizona is forced to take deeper cuts, the cities would likely ask residents to conserve more or pay higher rates.

As Chuck Cullom addressed an audience at a June water conference in Colorado, the snows high in the Rocky Mountains behind him were warming into water, which would soak into dry soils, evaporate into sere air and yield only a paltry portion to the runnels, streams and small rivers that collected in the Colorado River's strangled southwestern march to the sea.

In 2025, the river had only half its normal flow. And even water content considered "normal" is smaller than it once was, as the drought plaguing the river has lasted long enough to alter the 30-year averages scientists use to judge a river's normal flow.

"We've built culture, economies, myths and legends around what the Colorado River is," Cullom said. "We're at a point where we need to adapt our expectations and how we manage the river, the river we have, and not the river as we want it to be."

Cullom is the executive director of the Upper Colorado River Commission, but spoke in a personal capacity, describing a region mourning the loss of an era, a time when western cities and farmers saw the Colorado River as "river of dreams."

“We are a box constructed from hydrology. People are trying to turn this thing upside down and sideways. Trying to find a unicorn," Cullom said. "But there is probably not an operational scheme that prevents us from the challenges that this drier future brings to us.”

Perhaps no region stands to take larger hits to its Colorado River water than central Arizona, owing to the low priority of its water rights. So far, Pinal County farmers have absorbed all the losses as the river went into shortage. Long-range planning and in-state supplies helped most cities avoid cutbacks, even as water providers in Nevada and California imposed restrictions.

But the clock is ticking on that scenario.

The Colorado River sustains cities and farms in seven U.S. states and Mexico, helping to make life possible for more than 40 million people. It has seen dry times before.

For years, scientists believed that while human-caused climate change would dry the river in the long term, the river was experiencing an abnormal dry period. And even as the river dried, basin states hoped to negotiate a water-sharing deal to avoid the worst consequences of drought.

Now, those expectations seem more far-fetched.

Two studies published in 2025 found that the Colorado River basin’s drought is not just a passing dry period. Both studies, one from the University of Texas at Austin and one from the University of Colorado in Boulder, concluded that human-caused climate change may be permanently altering weather patterns in the western U.S., meaning the basin will see less precipitation and rivers will fill with less snowmelt. If those studies are correct, the river is not experiencing a passing “megadrought,” but a long-term decline.

“The drought could continue at least until the end of the century, if not longer,” a news release for the UT Austin study read. “Although some scientists anticipate that natural climate variability will bring relief, new research suggests that ongoing warming could be disrupting the natural rhythm of an important climate cycle that brings needed rain to the region.”

“The team found that emissions have been responsible for nearly all of the precipitation decline in the western United States over the past three decades,” a release for the CU Boulder study said.

Shrinking supplies: How much water flows down the Colorado River? The right answer is more important than ever

Ask residents to conserve or draw down savings?

Officials say negotiations and dealmaking can't save the basin, or Arizona, from that reality. States in the upper and lower reaches of the basin have struggled for two years to find a workable agreement and failed.

But even if a deal were in place, most states would still have to cut their water use. If Upper Basin states had accepted Arizona's own proposal for sharing the Colorado River, Arizona would still take sizable cuts in its water use for the foreseeable future. If negotiations break down entirely, the states go to court and Arizona wins, it may still take cuts.

The lower basin has historically consumed more than its legal entitlement under the Colorado River Compact, meaning it may have to reduce its use even if it wins full access to that entitlement in court. Cuts related to reservoir management would still go into effect regardless of compact allocations.

Unless Arizona's farmers and tribes can strike deals to bail out the state's growing cities, Arizona's largest population centers will bear the brunt of these cuts. Cities like Phoenix, Scottsdale and Tucson could lose more than 20% of their Colorado River water, triggering public debates in council chambers and municipal offices over how to respond, what to sacrifice and what to prioritize.

While no one is predicting Mad Max scenarios or dry taps, shortages could kill gardens and trees, turn lawns to gravel, worsen housing shortages, burden local government budgets, increase taxes and water rates and throw a wrench into local economies.

Arizona's cities have been shielded from existing cuts for three years by agreements with tribes and through compensation from fast-depleting pools of federal money. But those agreements and that money are set to run out by the end of 2026. Water managers and officials don't know how big the cuts will be, but most agree on one thing: real cuts are possible.

Some cities will face a tough decision: draw down long-term savings or constrict their residents' water use.

The stretch to keep supplying billion-dollar economies and millions in population could push some cities into, or toward, a “negative water balance,” where municipalities draw down saved groundwater to fill gaps between their supplies and demands.

Most cities have enough water to keep themselves going for years, saved through their own efforts or through the Arizona Water Banking Authority, established in 1996 to store unused Colorado River water in central and southern Arizona.

Cities can pump and use the saved water during shortages, but living on savings is unsustainable in the long run. Some cities may have to halt growth until they can find new long-term supplies, possibly worsening housing shortages and leading to lawsuits from developers who were promised water for their projects.

“The megadrought we are experiencing is the most significant challenge we face as a state. It's the number one potential threat to our economic development, to the world-class economy that we are building in the state of Arizona,” Rep. Greg Stanton, D-Ariz., said at a news conference in Phoenix on Aug. 8. Stanton represents urban areas vulnerable to Colorado River cuts.

Meanwhile, some cities may add drought surcharges to their water rates or impose mandatory reductions in customers’ water use.

Regardless of the short-term tactics they choose, almost all large Arizona cities will face a journey to find new supplies at a time when water is becoming more expensive than ever. To find long-term supplies, cities are investing in a small basket of common projects, including a proposed expansion of the Bartlett Dam on the Verde River, accessing untapped groundwater resources in the Harquahala Basin west of Phoenix and finding ways to treat or exchange wastewater so it becomes usable again.

Some of these projects can be useful soon, but others could take more than a decade. And for younger, growing cities, these projects are bridges to get central Arizona to another “big project,” a moonshot to bring the next big source of water to the state’s major economic hubs.

For decades, Arizona has grown critical industries for national security, metropolitan areas with millions of people and a thriving leisure economy on some of the most vulnerable water rights in the western U.S. Now, experts and officials say, the weight of those investments

could finally rationalize the projects needed to keep that development going. As Arizona squeezes more money from its decreasing share of river water, freighting every drop with critical industries and a booming housing market, the price of water is bound to keep climbing.

And if the price is right, even the most outlandish projects can start to seem more reasonable, experts say. Kathryn Sorensen, director of research at the Kyl Center for Water Policy at Arizona State University, pointed out at the Boulder conference that data centers backed by deep-pocketed tech companies and large tech manufacturers are part of Arizona's busy market for new water rights.

As the price of additional water rises, private speculators are joining the action too. All those financial resources enhance the logic behind expensive projects like desalinating seawater and transporting it, desalinating local brackish groundwater or acquiring surplus water from some limited areas in California.

"The market is tough, especially in the face of Colorado River shortages, so (desalination) might be what we have to turn to, though it's going to be crazy expensive," Sorensen said at the Boulder conference.

In the meantime, cities are squeezing more from their existing supplies through conservation and wastewater reuse, and even these projects have come with huge price tags.

Water planners of the 20th century, modern legislators and community leaders say they see the financial sense in those big investments. While the west mourns the decline of "the river of dreams," the dreams themselves seem alive and hot.

"The answer has been, and always must be, 'Yes, we have enough water,'" Stanton said.

A new water reality: The Colorado River used to be predictable as a water supply. What happens when it's not?

How will your city handle potential cuts?

The Arizona Republic reached out to nine cities and one private water provider to ask how they would handle possible cuts on the Colorado River. While patterns run through all their discussions, every city and water provider faces unique challenges and relies on unique strengths.

The tiny town of Cave Creek may have to cut off new development, while Tucson will still enjoy a surplus in Colorado River water under the specific shortage conditions analyzed. Phoenix and Scottsdale may struggle to cover the vast areas of their cities that rely entirely on Colorado River water.

Mesa is building a new pipeline that will bring fresh water just as the cuts are kicking in, and Queen Creek will have to pay more to replace its groundwater use. Some cities, like Glendale and Scottsdale, may enter “severe” shortage conditions, according to their drought plans, potentially triggering reductions in customers’ water use.

The Arizona Republic specifically asked water managers how they would sustain a 20% cut in their allocation of “municipal and industrial” water from the Central Arizona Project, the aqueduct that brings Colorado River water to the Phoenix and Tucson metro areas. This is the level of cuts in CAP water that Arizona originally proposed to take under most hydrological circumstances after 2027, unless farmers in western Arizona agree to take some of the burden off the CAP — which they are not obligated to do.

The CAP has the lowest priority water rights on the lower Colorado River, meaning it will take all of Arizona's cuts unless cities can strike a deal with farmers. The CAP has low-priority rights because Arizona leaders agreed to that status in exchange for federal money to build the canal in 1968. The agreement is effectively consistent with the long-standing principle of "prior appropriation" in western water law, which privileges older water rights over newer ones, the CAP being the most recently constructed major diversion of Colorado River water in the Lower Basin.

The Republic used this scenario, roughly described by Arizona Department of Water Resources Director Tom Buschatzke in an interview, as a hypothetical benchmark for understanding the possible effects of water cuts on Arizona's cities. It is referred to as the "unmitigated static reduction scenario" in this story.

While this exact arrangement of cuts may not occur, it stands as a baseline for what the state will likely experience. Without a reversal of climate change or an unlikely series of wet years on the river, the only thing that can save Arizona’s cities from this level of water reduction is to strike a deal with farmers and tribes in the western part of the state.

Those groups hold vast, high-priority water rights that won’t be curtailed under the currently proposed cuts. State leaders are in talks to explore such a deal. Farmers are wary of long-

term agreements to strip their water from their land, but it could bring a big payday for some water users.

“We don't want to see an outcome in which the CAP takes all the cuts. I've said for the last two and a half years that everyone in the basin, but also everyone in Arizona who benefits from the river, should be contributing in some way," Buschatzke said. "But that's a little bit controversial because senior water right holders along the river are saying they shouldn't have to cut.”

Otherwise, the state or large cities would need to pay huge sums to fellow CAP users to persuade them to forgo their water and let more vulnerable users stay wet.

“That's going to be a very difficult thing. Because of the magnitude of the cuts and the duration of the guidelines, we're not talking about a four- or five-year deal here," said Patrick Dent, water policy director for the Central Arizona Project. "We're talking about something that might go a couple of decades.”

The “unmitigated static reduction” scenario as discussed in this story is purely hypothetical. Real cuts will depend on ongoing negotiations between states and within Arizona. But they give an idea for the level of cuts Arizona officials expect, and accept, given the critically low flows in the river.

Managing resources: Colorado River shortages will continue through 2026, with 'dire' predictions beyond

Phoenix: Falling back on a $280 million lifeline

Without a deal with farmers, Colorado River supplies for Phoenix could drop below what it needs to meet its normal usage, triggering the use of backup supplies from the Salt River and underground aquifers. Because those backup supplies are limited, the city may face a choice between filling the holes left by Colorado River shortages or asking residents to reduce their use, according to city officials.

A vast swath of northern Phoenix relies almost entirely on Colorado River water, which provides about 40% of the city’s clean water. If proposed cuts fall entirely on the CAP without any creative deals with farmers or tribes, it will affect the tap water supplies for more than 400,000 residents — almost every Phoenix resident or business north of Dunlap Avenue (more specifically, north of the Arizona Canal).

Phoenix typically provides about 147,000 acre-feet of Colorado River water to its customers each year. In the unmitigated static reduction scenario, Phoenix's delivery of CAP water could drop below that amount, reaching 127,956 acre-feet. That would leave about 20,000 acre-feet of unmet demand for Colorado River water, roughly equal to the annual water use of 200,000 Phoenix residents.

Understanding the true scale of what may happen with Phoenix's water is always tricky, Phoenix Water Resources Management Advisor Max Wilson said. City officials have struggled to predict water availability in the recent past, especially as the ongoing drought on the Colorado River has continued delivering terrible water years.

As the city was planning a drought pipeline in 2015, officials estimated a 5% chance that the Colorado River would go under official shortages in Arizona, and yet that exact scenario came true less than a decade later.

Phoenix has been preparing for worst-case scenarios by building access to backup supplies. The city completed a $280 million "drought pipeline" in 2023, designed to bring supplies of Salt River water to the areas of Phoenix that rely on the Colorado. Phoenix has also stored water underground for use in times of emergencies.

"I know that was a very long project, and as somebody who loves going to the mountain preserves every weekend, I know it was a project that sometimes caused some ire in the community, but that pipeline is a very critical part of being able to ensure that we can continue to meet demands all throughout the city," Wilson said.

Growth issues: What could hold Phoenix back: Power, water, heat and perceptions

Still, the capacity to deliver that backup water, and the backup itself, is also limited. There's only so much water in SRP reservoirs that the city can use to fill holes in Colorado supplies, and Phoenix only has so many wells hooked up to its water delivery system that it can draw on at a given time.

The city would not tell The Republic exactly how much Salt River water it had available to use in CAP-dependent areas, or how much groundwater it could pump on demand, meaning it is impossible to calculate how much CAP water the city can replace with its backup supplies at a given time. ("Due to the ongoing negotiations among the Colorado River Basin

states, it would be premature for the City to comment on specific supply and demand conditions at this time," a city spokesperson wrote in an email.)

Nonetheless, Wilson suggested that in some scenarios, the shortages in CAP water may be too large to comfortably address with backup supplies alone. Wilson said Phoenix doesn't want to use up those backup supplies too quickly, meaning the city may have to decide between replacing all the lost Colorado River water and conserving some of its backup supplies.

"You can't live on your backups forever — backups are supposed to be backups. So we need to invest in infrastructure that will allow us to be able to offset those impacts," Wilson said.

If it doesn't replace all lost Colorado River water, the city could ask users to make up the difference by using less water.

"That's a management choice that every city in the Valley is going to have to make as they look at the pool of backup resources that they have available and decide how they want to utilize those," Wilson said. "If (backup supplies) do prove to be insufficient, the drought management plan authorizes the director to get to work with the community to make the types of demand reductions that would be necessary."

Under Phoenix's drought management plan, the city can impose water use reduction regulations and a drought surcharge on customers once it reaches Stage 2 of its drought plan, triggered by an "insufficient supply situation." The city entered Stage 1 of its drought plan in 2022, triggering a public education campaign and outreach with water users.

The process of deciding whether to impose restrictions will likely be public. Wilson said the Phoenix City Council will debate the issue in public meetings, and the city's drought management plan allows for the creation of a stakeholder group representing different Phoenix communities to guide the city's policies when dealing with shortages.

"There's not a simple answer of, 'we have X gallons available, it's going to go to Y demands.' It will depend on how the mayor, council, city manager and the community want us to utilize those resources," Wilson said.

In the meantime, the city will have to manage with continued growth in areas that rely on the Colorado River. That includes development around the new Taiwan Semiconductor Manufacturing Company plant in far north Phoenix. The facility is spurring an explosion of

growth and development meant to serve businesses and workers at the new plant, all in the area of Phoenix that relies on the Colorado River.

“North Phoenix is experiencing remarkable growth, anchored by TSMC, a massive semiconductor investment, and the dozens of businesses that are following. None of this growth is possible without reliable, sustainable water infrastructure,” Phoenix Vice Mayor Ann O'Brien said at an Aug. 8 news conference.

Cutting off growth is not an option if Phoenix wants to “thrive,” Wilson argued.

“I've got three kids,” Wilson said. “I want them to be able to grow up in a world where they have jobs, right, where they have opportunities. And ultimately, I'm only gonna be able to give my house to one of them. So we're gonna need two more houses, unless they need to go someplace else.”

'A thirsty operation': TSMC plant arrives amid water doubts, but Phoenix isn't worried

Tucson: Surplus city, with a catch

Tucson has a deep surplus in its water budget, meaning it can take expected shortages without digging into its savings. That said, shortages bring Tucson ever closer to a point where it tips into unsustainability.

Of all the large Arizona cities, Tucson is perhaps the most reliant on the Colorado River, with almost 100% of its drinking water somehow arriving in the city through the CAP Canal. Yet, through conservation and advanced planning, Tucson has one of the largest buffers in its water portfolio of any central Arizona municipality. That means the city has not only weathered past shortages, but it has taken voluntary water cuts while simultaneously building its water savings underground.

In an average year, Tucson residents and companies demand about 100,000 acre-feet of water for showers, golf courses, data centers and factories. Under the unmitigated static reduction scenario, Tucson would still receive about 15,000 acre-feet of excess water per year, leaving it with extra water to continue banking as savings.

John Kmiec, director of Tucson Water, said Tucson’s aggressive conservation programs have made that kind of surplus possible. Tucson has one of the lowest residential per capita water

usage in the southwest, at around 76 gallons per customer per day (Phoenix residents use more than 100 gallons per person per day).

“The way our customers have been so responsible in water management over a decade has actually allowed the water resource portfolio in Tucson to be as robust as it is,” Kmiec said.

Meanwhile, the city has used limited-time federal programs to earn money for leaving some of its surplus in the Colorado River to prop up declining reservoir levels. Tucson has made its water systems more efficient and invested in advanced water purification, which it could use to bolster its drinking water supplies with treated wastewater.

“Because of the nature of the Colorado River, our community asked the utility to look at more diversification options when it comes to water resources,” Kmiec said. “With this diversification option, partnering with the United States to build an advanced water purification project, that’s exactly what we're doing.”

Still, the cutbacks push Tucson closer to being unsustainable. The static reduction trims Tucson’s surplus by roughly two-thirds, limiting the excess water it has to put toward savings and keep itself in a positive water balance.

Tucson also faces outside threats to its water supplies, namely pollution. Tucson retrieves all its water from underground aquifers, which it fills using Colorado River water. Underground sediments naturally filter the Colorado River supplies, meaning the water is easier to treat and less harsh on pipes and people’s palates.

But now the city is suing the federal government over claims that personnel at the Davis-Monthan Air Force Base allowed firefighting foams to flow into parts of the local aquifer for decades, contaminating them with PFAS, so-called “forever chemicals,” and forcing the city to shut down drinking water wells in the area. The city has invested in treating the groundwater and preventing the spread of PFAS, but that process is expensive.

The PFAS issue could also raise the cost of its advanced water purification plant. In exchange for Tucson leaving 56,000 acre-feet of water in the Colorado River over 10 years, the federal government will pay the city $86 million for the treatment plant.

That cost could climb if the city discovers, as many others have, that PFAS contamination in its treated wastewater exceeds federal drinking water standards, or if newer, stricter standards come in. PFAS exposure can lead to reduced fertility, developmental delays in

children, increased risk of some cancers, weakened immune responses, and other effects, according to the Environmental Protection Agency.

Tech industry: Amazon's planned data center won't be cooled with as much water. Here's what it will use

Mesa: Wastewater doesn't go to waste

Mesa is planning to complete a new pipeline just in time for deeper cuts to hit Arizona cities in 2027. But even with that project, the static reduction scenario would push Mesa close to the edge of long-term sustainability.

The new pipeline will double the water Mesa receives through an exchange agreement with the Gila River Indian Community. The water from the agreement gives the city a surplus in its CAP supplies, and it is essentially shortage-proof, meaning it will continue to arrive in every case except the most extreme shortage scenarios. The agreement has no end date.

Under the agreement, Mesa receives 8,000 acre-feet of GRIC's Colorado River water and delivers 10,000 acre-feet of its treated wastewater to GRIC in exchange. The new pipeline will double those numbers. The deal is a win-win, according to Mesa Water Resources Director Chris Hassert: While Mesa would have to invest in expensive treatment options to reuse the wastewater as tap water, GRIC can use the water for irrigation.

Without that project, Mesa would have to cover a hole in its Colorado River supplies under the static reduction, meaning it would likely need to draw on other supplies from the Salt River Basin and its groundwater allotment, potentially dipping into long-term savings. The new project is scheduled to arrive just in time to avoid that scenario.

"The timing works out really well, where our major project is going to be done just before the announcement of those cuts," Hassert said.

Still, the pipeline may only barely put Mesa's water budget in the black under the static reduction. Any further cuts could push the city to use its long-term savings, depending on groundwater and Salt River supplies.

Mesa has a wealth of stored water — enough to cover its entire Colorado River demand for about a decade — but cities generally don't like to lean on their stored water as it can threaten their legal status as a designated water provider. Mesa is hoping to gain more water supplies from the proposed expansion of the Bartlett Dam on the Verde River and a pending

lease with the White Mountain Apache Tribe. The city could also pursue even more exchange water or engage in further water conservation measures.

“There are just so many levers we can pull,” Hassert said. “But even though we're doing well, we're not resting on our laurels. We're trying to look for those next buckets of water.”

Shrinking supplies: Arizona recycles more water than most Colorado River states, study finds

Scottsdale: City could face a 'severe' water shortage

Under the unmitigated static reduction scenario, Scottsdale would probably enter a “Severe Water Shortage,” coming very close to using its emergency savings to meet the city's usual demands.

Scottsdale is heavily dependent on the Colorado River for its potable water supplies. The river provides roughly 70-75% of the city’s tap water. Like Phoenix, Scottsdale’s northern portions cannot access most Salt River water supplies, meaning most of the city — practically everything north of Old Town (more specifically, everything north of the Arizona Canal) — relies almost exclusively on the Colorado River.

Shortages on the Colorado River, which have been mitigated by voluntary conservation efforts, financial compensation and special arrangements within Arizona, have not yet affected Scottsdale’s operations. But a 20-25% reduction in Scottsdale’s Colorado River deliveries could force the city to start pumping water it has stored underground over the decades for emergencies. In that case, the city could begin drawing down its nonrenewable water resources, which isn’t sustainable in the long term, legally or physically, according to officials.

“It’s like we're looking into our finances in the future, and our savings account and our 401(k) is not as stable as it once was, and we're not getting the income that we used to get,” said Gretchen Baumgardner, Scottsdale’s water policy manager. “As we walk through the future and recover (stored water savings), and everyone turns on groundwater wells it will put a stress on the aquifer, so how do we continue to manage our aquifer appropriately as we walk through shortages that last long on the Colorado?"

The unmitigated static reduction would bring Scottsdale to the point of using its savings, causing the city to teeter on the edge of long-term unsustainability until it can acquire

additional water supplies. If cuts go any deeper, the city would have a gap between its water supplies and water demand, meaning it would have to call on finite savings.

“The static reduction zone would be reductions that Scottsdale has not experienced before. While this level of reduction is not expected to affect customers at the tap, we do expect to use more of our groundwater infrastructure at a higher capacity,” Baumgardner said in an email.

The “severe shortage” in Scottsdale’s drought preparedness plan could mean mandatory water reductions for customers, fines or other measures, though Scottsdale’s plan is fluid, leaving community leaders to decide how it reduces water use and responds to cutbacks.

“There's going to be several other departments that have to buy in on it and help make those decisions,” Baumgardner said. “The plan is written like that for a reason, so that once we get into a place we've never been, we can be a little bit my dynamic.”

Baumgardner said the public would be part of the decision-making process around how to deal with shortages.

“This is something that everyone has to play a role in. And it is scary,” Baumgardner said. “I want people to understand that we are planning for this, and also they are a part of this.”

These measures would need to stretch backup groundwater supplies until new water sources come online. Scottsdale has more than three times its annual potable water demand stored underground, but reducing that water could damage the city’s standing with the state, which requires all designated water providers to have enough supplies to meet current and future needs for 100 years.

Scottsdale is part of a range of efforts to acquire new water supplies, including a project buying land in the rural Harquahala Aquifer, where they hope to pump groundwater and transport it through the CAP canal. The aquifers there are finite, meaning they will eventually run out, and there are other cities vying for the same unregulated supplies, but they should still provide a large bonus to Scottsdale’s water portfolio. The city is also participating in the Bartlett Dam expansion project, which could provide a more renewable supply.

Baumgardner said she hopes Scottsdale residents will understand that the oncoming shortages have been foreseen for some time and the city has planned for them. Going

forward, she asked that Scottsdale residents prepare to contribute to Scottsdale's water future in two ways: conserving their use at home and helping the city invest in new infrastructure. There may come a time, she said, when the community will need to agree to financial sacrifices for secure water supplies.

"Everything, as we walk into the future, even if it's a conversation about backshoring, depleting supplies or finding something additional, comes with a cost," Baumgardner said. "Infrastructure investment is going to be really important as we walk through the future. And any infrastructure project has an investment tied to it, and that is a challenging conversation because we're talking dollars."

Glendale: Deeper cuts could be a 'stretch'

Glendale has already asked residents to shave down their water use after shortages hit the Colorado River. Deeper cuts could push the city to ask for more from businesses and residents, including the possibility of mandatory cutbacks.

Under the unmitigated static reduction scenario, Glendale could lose about 19% of its full allocation of Colorado River water, pushing the city into "Stage 3" of its drought management plan. Stage 3 is the first phase of the plan that includes the option of mandatory restrictions on water use.

Under Stage 3, the city will ask residents for a 15% reduction in their normal water use. The plan lists "restrictions on outdoor water use" as a mandatory drought measure under Stage 3.

"Stage three becomes mandatory for both the city and water users," Zacary Richards, Glendale's water resources manager, said in an interview.

Entering Stage 3 is not automatic, and the city will decide in real time how to manage the situation, according to the plan, but a 15-20% reduction in Colorado River supplies is listed as one possible trigger for that action.

The Colorado River provides about 40% of Glendale's overall water supplies, with the Salt River, groundwater, and reclaimed wastewater accounting for the rest. When conditions are dry on the Salt River, Glendale can only comfortably take small cuts in its CAP water.

In an effort to test its ability to conserve water, the city attempted to give up 7,000 acre-feet of water per year between 2023 and 2025 (the city received payment from the federal government in exchange). In 2023, however, Glendale conserved the full 7,000 acre-feet because a wet year on the Salt provided the city with enough water to make up for losses in Colorado River water. But in 2024, a dry year on the Salt, the city could only manage a fraction of that conservation (1,000 acre-feet).

“Seven thousand acre-feet is a bit of a stretch for us. Typically, we only have a couple thousand acre feet of water that we could potentially conserve, so we were trying, as a goal, to stretch ourselves, to see what it was that we could conserve,” said Megan Sheldon, deputy director of the Glendale Water Services Department.

So far, these voluntary conservation efforts have been Glendale’s only reductions in the Colorado River because mitigation arrangements have shielded the town from harsher cuts. Once those arrangements go away in 2026 and 2027, and if they are not replaced, the town could take on mandatory cuts for the first time. The unmitigated static reduction scenario could cut back Glendale’s Colorado River water by around 4,000 acre-feet, four times larger than the cut the city was comfortable taking in 2024, though smaller than the cut it willingly took in 2023.

Aside from its ever-changing Salt River supplies, the city also has groundwater it can rely on, including years of excess Colorado River water it has stored underground. But like other cities, Glendale has said it is hesitant to fall back on those supplies, which are finite (the city has enough water to cover about 10 years of full Colorado River water demand).

Glendale, like other Arizona cities, is exploring options to boost its water supplies so it can compensate for long-term reductions. The city is involved in discussions about building a new, expanded Bartlett Reservoir on the Verde River. Glendale is also working to build new wells so it can pump more groundwater at a given time if needed (some of Glendale’s groundwater can be pumped without drawing down on savings).

The city is also working on a water exchange agreement with Goodyear, which would allow the city to make more CAP water available. The city wouldn’t gain additional water from the agreement, but it would trade SRP water for CAP water that can be used in a larger range of its service area, making its water supplies more flexible.

Still, Richards said conservation from users will continue to be an important part of keeping Glendale's water situation healthy.

"Water is a very precious resource here in the desert, and so we want to make sure that folks are using it wisely, using what they need, but conserving where they can," Richards said.

Drought planning: How will Arizona deal with Colorado River shortages? Cities need a 'Plan B,' expert says

Goodyear: City ready to handle bad years

The static reduction scenario would push Goodyear close to, but probably not into, a negative water balance.

Goodyear only uses about 75% of its Colorado River allotment, meaning it puts the other 25% in the ground as savings. Goodyear can therefore take about a 20-25% cut in its CAP supplies before it may need to start burning its savings.

"A 20-25% cut in our Colorado River supplies, I think we are okay with, just from the numbers we've been looking at," said Ray Diaz, water resources and sustainability manager at the city of Goodyear. "If it's deeper than that, then we would be more alarmed, and would be looking at, kind of digging into those long-term storage claims."

Goodyear has stored around 95,000 acre-feet underground, about enough to replace all of the city's Colorado River supplies for nine years. Because the city would only need to replace some of its Colorado water, the savings could stretch out much further, hopefully until better times come to the Colorado River or until Goodyear can find new water resources.

Most cities prefer not to use their savings if they can avoid it because it affects their ability to claim a long-term sustainable water supply. Goodyear has some groundwater it can use before dipping into savings, but Diaz said the size of the cuts on the CAP will determine whether those supplies can cover the hole on their own.

Only in extreme cases would the city halt new growth, according to its drought preparedness plan. Instead, the city would probably ask residents to cut back on outdoor water usage and monitor for leaks. Goodyear would only see mandatory reductions when the city's demand reaches more than 95% of the amount of water it can deliver.

Importing supplies: Queen Creek begins receiving Colorado River water transfer

Queen Creek: Waiting for that 'big project'

Older Valley cities like Phoenix and Scottsdale have had decades to build up their water supplies. Newer communities like Queen Creek are entering the game now, right as the state is trying to wring the last drops out of its existing accessible supplies.

Its young age is a double-edged sword for the town. On one hand, it means the town never had time to develop the kind of dependency on Colorado River water that other cities have; on the other, Queen Creek pays a lot for its water and its future growth is tied to the dreams of unlocking large, new water sources that may be decades away, if they arrive at all.

In that sense, shortages on the Colorado River will have a small relative impact on Queen Creek — likely bringing about three years of higher water rates for residents — but the town is still far from a long-term renewable water supply that can meet its growth potential.

So far, Queen Creek hasn't taken any cuts in its water use because of special mitigation agreements inside Arizona, but those agreements will run out in 2026 and 2027, meaning Queen Creek will probably lose about 85% (or 4,000 acre-feet) of its Colorado River water.

"We would imagine that we'll never see it again for at least the next 30 years. It's gone in our lifetimes," said Paul Gardner, Queen Creek's water resource director.

The other 15% of Queen Creek's CAP water might, or might not, take cuts. That water is under a special priority designation. It comes from a deal in which Queen Creek paid a private equity firm $24 million for water rights associated with farmland in La Paz County and started transporting its water through the CAP Canal. The acquisition was hugely controversial for western Arizona farmers, who want to keep central Arizona cities from "buying and drying" agricultural regions.

Queen Creek delivers about 23,500 acre-feet of water to its customers every year. Almost all of that is groundwater, and most of it needs to be replenished in some way to keep from draining limited aquifers. Queen Creek uses its limited Colorado River supplies to replenish that groundwater pumping, as well as storing treated wastewater underground and paying the Central Arizona Groundwater Replenishment District to do it for them. With its Colorado River water cut back, the town will have to lean more heavily on CAGRD, which is expensive.

Queen Creek estimates it will pay $66 per customer each year to have CAGRD replace that water.

That situation will last a few years, until Queen Creek can start transporting new groundwater from its land holdings in the Harquahala basin, where private equity firms are also buying up land, which will replace its Colorado River water. Queen Creek began working on the Harquahala project around 2018, and it's coming online "just in time" to deal with Colorado River shortages, according to Gardner.

Queen Creek also holds the second-largest stake in the proposed Bartlett Dam expansion, which it hopes will bring around 10,000 acre-feet of surface water each year. With those supplies secured, Gardner said, the town will finally be well on its way to weaning itself off groundwater and meeting most of its needs with renewable surface water, potentially allowing it to become a "designated" water supplier under state law, joining other, older towns and cities in central Arizona.

"We're very bullish on all these different future (water supply projects)," Gardner said. "We're going to have to do more with less, and we're going to have to figure out trying to bring in some Water supplies that make us more resilient across the board."

Investing in those big projects will be easier on residents' pockets, Gardner said.

"Water is just going to get more expensive. So we feel like the more water we buy up front, the more we can offset the cost to the end user," Gardner said.

Still, Gardner said the journey doesn't end there. Many cities describe their groundwater savings as a "bridge" to get from Colorado River water to new Harquahala and Bartlett supplies, but Gardner goes one step further. For Queen Creek, he said, both the Harquahala and Bartlett projects are bridges in themselves, leading to "the next big water project or two."

"(Harquahala) is a nice, large volume, but it's not like the panacea for the state, right? It's like a bridge," Gardner said. "We really need to start looking at what we could be doing statewide and then interstate."

Gardner referenced several ideas for a big new project, which other municipalities have also discussed at recent meetings. One was desalinating groundwater in western Arizona, which

is less salty than seawater but would still require massive infrastructure and energy investments.

Another is leasing excess water from the San Diego area, which that city has produced using its own seawater desalination plant. A third would be a new seawater desalination plant on the Gulf of California in Mexico, though the project was controversial because of its potential local impacts in Mexico and its cost.

Gov. Doug Ducey successfully passed a measure to give $1 billion to the state's Water Infrastructure Finance Authority in 2021 in an effort to get the desalination project or another large water supply online. Since then, the state has drawn down that fund for other purposes, hoping to cover its budget deficit.

Metropolitan Water, Pima County: Money matters

The Metropolitan Domestic Water Improvement District, or Metro Water, is a public water provider, not owned or managed by any particular municipality, that serves more than 21,000 customers in regions scattered around the Tucson area. Metro has a strong buffer against shortages in its water supplies, meaning the district could stay in a positive water balance, and potentially even continue building its savings, in an unmitigated static reduction scenario.

Metro would have to take two times the level of cuts in the unmitigated static reduction scenario before it started drawing down its savings, according to Wally Wilson, Metro's water resources manager. The scenario would cut a little more than 20% of Metro's CAP water, while a cut of more than 40% would be necessary before the town could no longer meet its demand without drawing on savings.

In normal years, when Metro receives all its entitled water, it stores the excess underground, building up its emergency reserves. Even in the extreme worst-case hydrological scenarios on the Colorado, Metro would probably still have enough stored water to meet its demands through 2060, according to Metro staff.

"There's no brownouts when it comes to water," said Wally Wilson, Metro's water resources manager.

Because of that buffer, Metro Water customers likely wouldn't see impacts at their taps even if cuts do get extreme enough that they force Metro Water to start using its savings. Metro

could ask customers to conserve, but it can't impose any mandatory reductions because the district is not a local government with law enforcement powers. That would leave any enforcement and rule-making powers to Pima County.

The real costs of draining saved water supplies are probably financial, Wilson said. Though it can't enforce mandatory cuts, Metro can charge more for water during shortages and already uses rates to discourage high water use.

"The only thing that we can really do to incentivize more conservation is, is through the rate structure and as reductions in our cap allocation occur, that's going to directly affect rates," Wilson said.

In any case where Metro begins drawing down its savings, the district could look for new supplies or squeeze more efficiency out of its existing system, which costs money. Those costs would pass on to ratepayers, who may already be paying more to incentivize their conservation.

Metro could also face some tricky legal ramifications from relying on its savings. If the district is in a negative water balance, it could struggle to prove that it has the 100-year water supply required to be a state-designated water provider. That would cut off any new growth in the district. Still, those consequences wouldn't hit Metro like they could hit other water providers, because most of the district's service territory is already built out.

Metro is already funding a major infrastructure project with Marana and Oro Valley, a pipeline that will bring the district's CAP water straight to its main service area. The main service gets much of its water now by pumping the local aquifer. While it replenishes that water with Colorado River supplies on paper, the river water doesn't actually go into the ground in the same place where Metro pumps. The new pipeline will ease pressure on the local aquifer, which has been declining at a rate of about two feet per year in some areas, according to Wilson.

Carefree: Backup supplies would fill gaps

Carefree relies heavily on Colorado River water, with only a small, vulnerable aquifer as its current backup supply. The static reduction scenario would likely push Carefree to start using those backup supplies, forcing it to draw down its limited groundwater savings until it can find new water sources. The town has already asked residents to reduce their water use

in anticipation of CAP cuts, and further reductions could be necessary when more cuts arrive.

For decades, Carefree relied entirely on its local aquifer. In the 1990s, as aquifer levels were plummeting, Colorado River water saved the town. Carefree switched the large majority of its public water system from groundwater to river water, meaning it receives about 70% of its water from the CAP.

Today, that river water is less reliable than it had once seemed. Carefree has continued receiving nearly all of its Colorado River water through Colorado River shortages since 2022, but the unmitigated static reduction scenario could cut deep into the town's supplies, causing Carefree to return to its limited groundwater resources as a backup.

"We're always thinking about water or water portfolio, and especially these days, when there's talk of the significant cap cutbacks," Carefree Mayor John Crane said.

Like most municipalities, Carefree has rights (or entitlements, as they're formally known) to two different kinds of water in the CAP. A small share (6% of Carefree's total CAP water) is labeled as "Non-Indian Agriculture" water, while the bulk of its Colorado River water is labeled as "Municipal and Industrial" water. Carefree can afford to lose its NIA water without resorting to groundwater reserves, according to Crane, but cuts in its M&I water could force the town to draw on its savings.

That means a static reduction without a mitigation agreement or an arrangement with farmers would almost certainly push Carefree to start pumping more groundwater. Cuts under the static reduction would eliminate the NIA water pools for all users, and cut into M&I water by about 20%, according to the Arizona Department of Water Resources.

Pumping that amount of groundwater isn't sustainable for the town, even in the medium term. The town has enough groundwater saved to replace its full Colorado River demand for a year, so even covering 20% of that demand in a theoretical scenario could leave the town without adequate water supplies in around five years, assuming no deal arises and the town doesn't find a new water resource in time.

"That's a limited resource, and it's concerning to have to use that groundwater supply," said Carefree Water Company General Manager Greg Crossman.

Carefree has a stake in the Bartlett expansion project, but that project won't be completed for at least 10 years, according to most estimates.

The town has already asked residents to voluntarily cut their use by 10%. Crane and Crossman said they don't have data showing whether individuals are meeting those targets, but conversations with residents have led them to believe they're doing well.

If Carefree's water officials declare a Stage 3 emergency, per the Carefree Water Company's drought management plan, the utility can enforce mandatory reductions in water use and increase rates to encourage conservation.

Carefree has also limited what water hauling companies can take from the town's standpipe. Companies used the standpipe to bring water to the Rio Verde Foothills housing development after Scottsdale stopped supplying that community with water for several months in 2023. Carefree clamped down on those deliveries, and Scottsdale has since resumed delivering water to the town under a new agreement.

Having already asked residents to cut a tenth of their use, Crane and Crossman say it's critical to continue communicating about Carefree's reality with residents. It's especially important, Crane said, to enforce the idea that the Colorado River basin is still in drought, and that drought is not letting up.

"If you have a good rainstorm, that's probably the time when you really need to enforce that message. Because folks think, 'Oh, the drought is over.' But nothing could be further from the truth," Crane said.

Cave Creek: Keeping 'the wolf away from the door'

Colorado River cuts could hit the tiny town of Cave Creek harder than any other municipality, town officials say, potentially grinding growth to a halt and pulling the town government into lawsuits over unfulfilled water contracts.

Cave Creek is almost entirely dependent on its Colorado River supplies, which were stretched even before the shortages. Under new cuts in 2027, Cave Creek may have to halt all new development, potentially dragging the town into court, according to town officials. Cave Creek is exploring options to gain new water supplies and stay out of lawsuits, but all those options come with large price tags that the 5,000-person town may not be able to afford.

Cave Creek gets more than 90% of its water from the Colorado River. The town's only other water resource is groundwater, which is rapidly declining in the Cave Creek area.

"We do not have a source of water to replace (the Colorado River) right now. We're working on it, but the best we'll be able to do is find some temporary source to keep the wolf away from the door for a couple of years," said Cave Creek Mayor Robert Morris.

The town once used groundwater to meet all its needs, but switched to CAP water when it became available in the 1990s. That switch has not totally saved local aquifers, though, as other nearby developments have continued pumping. The nearby community of Desert Hills, for instance, continued pumping groundwater until the development nearly ran out. Cave Creek purchased the flailing Desert Hills Water Company in 2007, and now supplies the development with its Colorado River water to keep it going.

And the aquifer has only continued to drop: Kreuzwiesner said the wells in Desert Hills only produce half of what they produced when Cave Creek took over the system.

"We are surrounded by unincorporated Maricopa County, and there's other people drilling exempt wells," Kreuzwiesner said. "There's a lot of straws in that bathtub out in Desert Hills,"

The drop in groundwater, combined with the possibilities of local growth, meant that Cave Creek's Colorado River water was stretching thinner even before the shortages (though Kreuzwiesner said Cave Creek was generally in "good shape"). To keep Desert Hills wet, Cave Creek now transports about 20% of its Colorado River water to the neighboring development, and that number has been growing as Desert Hills loses groundwater.

In Cave Creek proper, the town had water to sustain some growth, including the subdivisions and certified developments to which it has promised water through legally binding agreements, but not enough to also supply all the single-home lots that could be developed in town, as well as the properties currently using declining groundwater resources, which may need to switch to the utility's river water at some point in the future.

"With all the neighborhoods and subdivisions, if you factor in all the single lots that could potentially tie into the system, that would tip us over," Kreuzwiesner said.

Kreuzwiesner said it's unlikely they would ever need to meet all those demands suddenly. Even so, that situation meant that Cave Creek would already need to find new water sources

to meet all its future needs, even before Colorado River shortages were an issue. Some of those demands might arrive soon, according to Morris, as north Phoenix and nearby areas have seen a spurt in development related to the new Taiwan Semiconductor Manufacturing Company plant and an ongoing race to meet growing housing demand in the Phoenix area.

Now, Colorado River shortages could make it impossible to meet existing growth demand, meaning the town may not even be able to provide water to new developments that are promised water service through legally-binding agreements, the mayor and Kreuzwiesner said. The unmitigated static reduction scenario would push Cave Creek right to the brink of a negative water balance, according to Kreuzwiesner.

“When we start looking at a 20 or 25% cut, that's, that's, that's the thing that's pushing us over,” Kreuzwiesner said.

To deal with that scenario, the town could run afoul of water service agreements called “water certificates” that it has given a limited number of subdivisions and planned developments. Some of the certificates date back as far as the 1980s, but developing them is becoming more appealing as the far northern edges of Phoenix begin to fill out. The town had the water supply to back up its promise before shortages, Kreuzwiesner pointed out, but now a drought and an overallocated river system are failing to provide what they once did.

“For example, we have a fairly large subdivision that's going in, that was started 20 years ago, and they had their water rights from 20 years ago. Well, they're just now going to start building here in the next couple of years,” Morris said. “And so there is no buffer because there are all kinds of obligations we have that will not be able to be fulfilled.”

Cave Creek already had to clamp down on developments without certificates in the areas it serves. The utility temporarily banned any new water hookups in Desert Hills in 2021. Property owners have also come forward to challenge the town’s refusal to serve single-home lots, which the town’s utility provided with “will-serve” letters, effectively promising to provide water when the lots were developed.

Technically, Kreuzwiesner said, the will-serve letters are not legally binding. The town’s attorneys have had to make that case to several property owners in the utility’s service area already, basing their views on prior court cases from other Arizona towns.

Even Cave Creek's water savings won't get rid of the issue of water certificates, Morris said. Deeper cuts would force the town to use its savings, which it hopes to recover from aquifers using a pipeline from North Phoenix. Cave Creek has enough stored water to meet its entire demand for about two years, and relying on those savings is not sustainable in the long term.

"That's two years of supply. But that still doesn't deal with these, all these sorts of certificated water that has been promised out there. There's going to be a lot of lawsuits," Morris said.

Cave Creek is exploring a few ways to boost its supplies and become more sustainable. Like other municipalities across central Arizona, the town is looking into groundwater in the rural Harquahala Aquifer and participating in talks to build a new, expanded Bartlett Dam on the Verde River.

All of those options have big price tags, and some could be out of reach for a small utility with only 4,500 customers. According to Kreuzwiesner, the finances are such an important part of Cave Creek's situation that even if he could cut off Desert Hills from Cave Creek's system and regain the extra water for the town's main customer base, he wouldn't because the utility would lose revenue from the Desert Hills customers.

"We've got some big checks today to secure these water resources in the future, which we have to do right away," Kreuzwiesner said.

Morris said making those tough financial decisions would be much easier if they had some certainty around the level of cuts Arizona will face. As negotiations move forward, now testing a new, unrefined concept for interstate river management, Morris and Kreuzwiesner said they are desperate for some degree of predictability, a sentiment echoed by water managers across Arizona.

"I've frankly lost faith in the governmental system that is allocating the Colorado River. I mean, it's a period of incredible uncertainty," Morris said. "We have no way to provide certainty to our customers in our town.'

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