

# Colorado River basin under increasing strain; will cutting back on water use be enough to help?

**ASU professor and colleague say we need to accelerate other solutions as climate pressures intensify**

By Sandy Keaton Leander, ASU News  
April 8, 2026

As drought conditions intensify across the American West and the impact of climate change accelerates, cities such as Phoenix, Denver and Las Vegas may face a sobering reality.

While it certainly helps, water conservation may no longer be enough.

For decades, cities across the Colorado River basin have successfully implemented and relied upon conservation efforts to reduce water use and stretch limited supplies, all while planning for the future and supporting economic growth.

The basin itself supplies water to nearly 40 million people and millions of acres of farmland, but it is under increasing strain. Prolonged drought, rising temperatures and declining water flows — combined with Lake Mead's falling storage levels — are redefining the limits of what conservation alone may achieve.

In a [new article](#) published in The Conversation, Professor [Dave White](#), director of the Arizona State University Global Institute of Sustainability and Innovation, and [Renee Obringer](#), an assistant professor with Penn State, highlight that while water demand management remains essential, we need to accelerate other solutions as climate pressures intensify.

The article highlights [recent research](#) that combines climate modeling, behavioral science and policy analysis. The study underscores how interdisciplinary collaboration is driving new insights into water management. It also reflects the growing importance of integrating academic research

with real-world decision-making, particularly in fast-growing urban areas.

Crucially, the findings suggest that while engaging communities and shifting public attitudes toward conservation can produce lasting reductions in water use, these efforts alone cannot offset the scale of future shortages. Cities may need to consider costly and complex alternatives — from water-reuse systems to desalination and changes in agricultural water use — raising difficult questions about affordability, governance and long-term sustainability.

The research was supported in part by federal investments in ASU's [Global Institute of Sustainability and Innovation](#) within the [Julie Ann Wrigley Global Futures Laboratory](#), and the National Socio-Environmental Synthesis Center within the University of Maryland.

*Note: This conversation has been edited for length and clarity.*

**Question: How can interdisciplinary research — combining climate science, social science and computational modeling — better inform water policy and decision-making in rapidly growing cities?**

**White:** Interdisciplinary research is essential for making smarter urban water decisions because no single field captures the full picture: Climate science helps us understand changing risks to supply, social science reveals how communities experience and respond to those changes, and computational models integrate both to test policies before they're implemented.

In rapidly growing cities, this combined approach allows decision-makers to move beyond static plans toward flexible, scenario-based strategies that account for uncertainty, highlight trade-offs and prioritize equity — ensuring that solutions are not only technically sound, but also socially viable and resilient over time.

**Q: What does your research show us about the success and shortcomings of conservation programs, such as limiting lawn watering, using desert landscaping or installing water-efficient household fixtures?**

**Obringer:** Our research showed that changing consumers' attitudes towards conservation can have a noticeable long-term benefit for water availability in Southwestern cities. These shifts in attitudes can complement short-term scarcity-driven mandates. However, conservation can only cut down on water consumption and may not always counteract supply-side shortages.

**Q: If we invest now in water technology, such as desalination and wastewater reuse, will that be enough to help us manage the water that is available, and will those technologies be operational soon enough?**

**Obringer:** While these technologies have been shown to be an effective means of expanding the water supply, they are costly, multi-year projects. Investing in solutions sooner, rather than later, is critical, but we also need to think about the system as a whole — desalination uses a lot of energy, which may require cooling water, creating new water issues elsewhere. Thinking through these systemwide issues, alongside obtaining investments and funding for novel technologies, is critical to ensuring a sustainable water supply into the future.

**Q: Professor White, you serve as the chair of the city of Phoenix Water/Wastewater Rate Advisory Committee and work closely with city policy makers. How does this research**

## inform future decisions for local and regional water policy?

**White:** The city of Phoenix is deploying a range of immediate actions to promote water security and resilience, including water conservation programming, maximizing the use of renewable supplies via the [drought pipeline project](#), activating Phoenix's groundwater infrastructure and recovering water previously stored with other partners including SRP and the city of Tucson.

This research is particularly useful to inform conservation efforts by, for example, promoting pro-environmental attitudes and behaviors among residents and enhancing citizen participation in conservation programs. This research shows that these actions can have tangible effects to increase water storage, which can alleviate short-term stress while longer-term solutions are implemented.

### **Q: What role can long-term behavioral change and public participation play in sustaining water conservation beyond temporary drought restrictions?**

**Obringer:** Temporary drought restrictions are an important policy tool, but there is often a rebound effect after they are lifted. That is, people often start using more water once it is no longer mandated that they use less. Long-term behavioral shifts, which can be induced by encouraging participatory attitudes, can mediate this rebound effect, leading to less water consumption overall, even during non-drought years.

### **Q: Are there positives about the water situation in the Southwest? What are we doing right, what should we keep doing and what can we do better?**

**White:** The Southwest is a national and international leader in water policy, management and innovation. For thousands of years, humans have innovated water systems to thrive in the region, and contemporary approaches build upon the foundational knowledge and ingenuity of Indigenous peoples.

This process of innovation continues through the development of new knowledge, new technologies, new policies and new approaches to public engagement. Technologies such as advanced water purification, desalination and atmospheric water harvesting hold promise for augmenting our existing supplies, but require significant capital investments.

We need to continue efficiency gains across all sectors — municipal, industrial and agricultural — to produce more semiconductor chips, more food, more housing, with less water. And, as this research shows, we need to anticipate the future and adapt to changing climate conditions with more flexible policies, flexible infrastructure, dynamic institutions and engaged citizens.

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*This story originally appeared on [ASU News](#).*

## Main image



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**Text image(s)**



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Penn State Assistant Professor Renee Obringer