

ASU works with industry to unlock next generation of water savings

By Faith Kearns, ASU News
June 19, 2026

Arizona has long been a national leader in water conservation, cutting household water use even as its population has grown. Now, researchers at Arizona State University are turning to a new frontier: helping large industries rethink how they use water.

In the Phoenix metropolitan area, nearly 40% of municipal water use supports commercial, industrial and institutional, or CII, users, including semiconductor fabs, data centers, hospitals, airports and food producers. By partnering with these sectors, ASU researchers are identifying new ways to reuse water and improve efficiency where innovation can have the greatest impact.

“We’ve made real progress on reducing residential water use in Arizona,” said [Paul Westerhoff](#), director of the [Global Center for Water Technology](#), a pillar of the [Arizona Water Innovation Initiative](#), a statewide effort led by ASU’s Julie Ann Wrigley Global Futures Laboratory in collaboration with the Ira A. Fulton Schools of Engineering. “If we’re thinking about the future of water in the state, we also have to look at the sectors where there is significant opportunity to do more.”

That shift comes as Arizona faces increasing pressure on its water supplies, from ongoing reductions in Colorado River deliveries to groundwater declines in some parts of the state.

Looking at water use and on-site reuse at scale

Public attention has increasingly focused on the water demands of high-profile industries like data centers and semiconductor manufacturing. But Westerhoff, Regents Professor in the School of Sustainable Engineering and the Built Environment, says those sectors are part of a much broader system.

“This isn’t about one industry,” he said. “It’s about how we manage water across all large users, which together make up a very significant portion of urban demand.”

A big share of that demand is tied to a common need for cooling.

“Cooling is one of the dominant uses of water in the commercial, industrial and institutional sector,” Westerhoff said. “It cuts across almost every type of large facility you can think of.”

In Arizona’s hot, dry climate, evaporative water cooling systems are widely used in commercial buildings and industrial facilities, creating both [challenges and opportunities](#).

“We are really good at evaporating water for cooling buildings, which works just like the human sweat that cools our bodies,” Westerhoff said. “Now, we are building an ecosystem of researchers, startup companies and large water end users who want to do the reverse — capture water vapor from the air to use for cooling, creating less need for other sources of water.”

Keeping water in the system

Researchers are exploring ways to capture water vapor from evaporative cooling systems and reuse it onsite. Because pure water evaporates and leaves salts behind, harvesting that vapor effectively turns cooling infrastructure into a form of on-site desalination.

“The [harvested water](#) is extremely clean,” Westerhoff said. “That creates opportunities for applications that require high-quality water, from semiconductor manufacturing to pharmaceutical production.”

Arizona's naturally [hard and salty water](#) presents another challenge. The same dissolved minerals that clog household appliances can create costly operational challenges for industrial facilities.

ASU researchers are investigating new treatment approaches that could lower costs while selectively recovering valuable minerals from water, helping industries improve efficiency and reuse. These solutions use light instead of chemicals, along with other novel techniques, to pick out water molecules while leaving salty ions behind.

A willing partner for solutions

Many companies are already motivated to improve their water use but lack the tools or expertise to move quickly.

“Water isn’t their core business,” Westerhoff said. “They’re focused on making products or running facilities. There’s a real interest in doing better, but they often need help identifying the right solutions.”

ASU researchers are helping bridge that gap by connecting industry needs with new [technologies and research](#) expertise. By working with partners in food and beverage or companies across the semiconductor supply chain, they are testing reuse strategies and identifying practical pathways for improvement.

“There’s a strong willingness from industry to engage on this,” Westerhoff said. “They’re looking for solutions, and this is where research institutions like ASU can really help.”

Building resilience for the future

Beyond efficiency, these approaches could help strengthen long-term water security by reducing reliance on external supplies.

“We can start to think about what it means for a facility to be more self-reliant,” Westerhoff said. “That becomes increasingly important as supplies become more constrained.”

With its rapid growth, extreme heat and diverse mix of industries, Arizona offers a unique environment to develop and test these solutions at scale, creating an opportunity for ASU to help shape how water is managed not only in arid regions.

“This is a great chance for Arizona to lead,” Westerhoff said. “Focusing first on high-profile industries will prove these new approaches that can then be replicated for the many smaller CII water uses across the state, region, nation and globe.”

As the state looks ahead, researchers say the path forward will build on past successes while expanding the focus to new areas of opportunity.

“We’ve already shown what’s possible with residential conservation,” Westerhoff said. “Now we need to bring that same level of focus and innovation to the sectors where the greatest opportunities for impact exist.”

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

Why this research matters

Research is the invisible hand that powers America’s progress. It unlocks discoveries and creates opportunity. It develops new technologies and new ways of doing things.

Learn more about ASU discoveries that are contributing to changing the world and making America the world’s leading economic power at researchmatters.asu.edu.

Main image



Commercial and industrial facilities make up a significant share of water use in the Phoenix metro area, creating new opportunities for conservation and reuse at scale in an arid climate. Photo courtesy of Wikimedia Commons

Text image(s)



Cooling equipment at ASU are typical of those employed at commercial, industrial and institutional facilities in the Phoenix area. These cooling towers are now equipped with vapor recovery devices that collect high-purity water otherwise emitted into the air. Photos by Gabe Rice/ASU



Mobile trailer containing equipment to treat industrial wastewater to be reused for ultrapure water and minimize salty wastes. Photo by Shahnawaz Sinha/ASU