

# ASU launches center to enhance water quality, sustainably

## Global Center for Water Technology introduced at DC event on May 19

By Annie DeGraw, ASU News  
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Just five years ago in the U.S., the electric power sector used [47.5 trillion gallons](#) of water — equivalent to approximately 72,000,000 Olympic-sized swimming pools.

Water and energy play a vital role in every part of our society. They are closely related; water is needed to produce energy, and water cannot be moved without energy.

“We’re really trying to push these boundaries of, you know, what is it? What does water and energy mean?” said [Paul Westerhoff](#) in an interview before a recent event on the relationship between water and energy at the Barrett & O’Connor Center in Washington, D.C.

On May 19, Westerhoff — who is the deputy director of the National Science Foundation Nanosystems Engineering Research Center for Nanotechnology Enabled Water Treatment, an interdisciplinary, multi-institution nanosystems engineering research center headquartered at Rice University — kicked off the event, acknowledging the launch of [ASU’s Global Center for Water Technology](#), which he’ll be leading.

Part of [ASU’s ongoing work with the Arizona Water Innovation Initiative](#), which began in 2022, the new center will advance innovative technologies that enhance water quality while generating an additional 250,000 acre-feet per year of sustainable water annually within a decade.

The center’s work will be for and about Arizona: “We looked at what do we need in Arizona that Arizona State University can provide,” Westerhoff said.

As the demand for both water and energy rise, leaders from across the sector are working together and forming partnerships to work together on new, sustainable strategies.

Hosted by ASU’s School of Sustainable Engineering and the Built Environment — part of Ira A. Fulton Schools of Engineering — in collaboration with Rice University, the back-to-back event in D.C. discussed challenges in water and energy policy and how the center may help shape the future of these interconnected systems.

## **Out with the old, in with the new — or nano**

“Nanotechnology can help us solve a number of hard challenges. There are 43 million Americans who lack access to municipal water, and industries in remote locations need water treatment and reuse,” said Pedro Alvarez, director of the Rice WaTER Institute at Rice University.

“But nanotechnology can also help save energy by tapping local, unconventional sources of water, which helps avoid transport of water, which is a heavy commodity over long distances.”

The complex filtration systems of nanotechnology can provide contaminant-free water that is very useful for advanced oxidation processes or advanced reduction processes. Alvarez said that the emerging technology will improve the efficiency of water delivery and represents an enormous step forward from outdated, leaky and aging water infrastructure dating back to the Victorian era.

Additionally, Robert Crain, an executive vice president at the Texas Pacific Land Corporation, suggested that in energy producers should focus less on downstream uses — the process of converting oil and gas ultimately into selling energy products — and more on improving production efficiency and recognizing the essential role of water in the process.

“I tell everybody when you think about ... a gallon or a barrel of water in the oil and gas industry, don't think about it in ... terms of (a) barrel. Multiply it by the water, because that's the true economic hit to that operator. Multiply it by four,” Crain said.

Policy issues also come into play.

Michelle Foss, a fellow at the Baker Institute, shared a story about one mining company that has treated the water in the Southeast Missouri Lead Mining District — known to be one of the leading producers of lead in the world.

Because of the stigma around lead toxicity and the surrounding mining area itself, people were afraid of possible contamination, even when the company followed EPA and Missouri requirements.

“One of the mine operations was so good that the water could be bottled as drinking water,” Foss said. “That's a policy failure, in my view, because that water is not useful. It's sitting in a disposal pond, evaporating and not providing beneficial use to communities.”

## **Managing supply and demand with less water and energy**

At the event in D.C., Dave Palumbo, acting commissioner of the Bureau of Reclamation, highlighted the relationship between what happens when water levels drop and what that means for hydropower generation.

Palumbo, who oversees the bureau's dams, power plants and canals across 17 Western states, described the region as the largest wholesaler of water in U.S. and second-largest producer of hydropower and the close links in the region between water and energy.

“As our reservoirs decline in the Colorado River Basin, just looking at Hoover and Glen Canyon ... the two largest reservoirs in the United States, they're about 35% full. It's a constant cycle as that fortification manifests itself in less water behind reservoirs. This means less energy produced. It means higher cost to move that water,” Palumbo said.

But Westerhoff is optimistic about the sector's next five years and stressed that partnerships will play a significant role shaping the future.

“We're looking forward rather than looking back,” Westerhoff said.

Through this academic cross-partnership with the NEWT Center, ASU — alongside Rice University, the University of Texas at El Paso and Yale University — has worked with more than 50 partners, like Shell, Baker Hughes, UNESCO, the U.S. Army Corps of Engineers and NASA to protect human lives and support sustainable economic development with innovative technology.

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

## Main image





Arizona Falls in Phoenix is part of a Salt River Project hydroelectric plant. Photo by Charlie Leight/ASU News

## Text image(s)



From left: Paul Westerhoff, director of the new Global Center for Water Technology at ASU; Matthew Grandbois, vice president of business development at AirJoule; Albert Cho, senior vice president and chief strategy and external affairs officer at Xylem; and Dave Palumbo, acting commissioner for the Bureau of Reclamation, discuss the importance of water in daily life and energy at a May 19 event in D.C. Photo by Hager Sharp