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Democracy Dies in Darkness

A new front in the water wars: Your internet use

In the American West, data centers are clashing with local communities that want to preserve water amid drought

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By [Shannon Osaka](#)

When Jenn Duff heard that [Meta](#), the parent company of Facebook, wanted to build yet another data center in Mesa, Ariz., she was immediately suspicious. “My first reaction was concern for our water,” Duff said. The desert city of half a million residents was already home to large data centers owned by Google, Apple and other tech giants, and Duff, a city council member, feared for the city’s future water supply.

“It’s not like we’re sitting fat and happy in water,” she said. “We’re still constantly looking at the drought situation.”

Mesa is only one of many cities and towns in the West wrestling with the expansion of water-guzzling data centers. For years, data centers have come under scrutiny for their carbon emissions. But now, as a “[megadrought](#)” continues to ravage the Southwest and the [Colorado River dwindles](#), some communities charge that the centers are also draining local water supplies.

In The Dalles, Ore., a local paper fought to unearth information revealing that a Google data center uses [over a quarter](#) of the city’s water. In Los Lunas, N.M., farmers [protested a decision](#) by the city to allow a Meta data center to move into the area.

More than [30 percent](#) of the world’s data centers are located in the United States; the power required to run those centers already accounts for about [2 percent of the nation’s electricity use](#). As the data storage requirements of the planet escalate — and as water becomes scarcer because of climate change — these operations may attract greater scrutiny.

It’s common to think of the stuff of digital life — the photos, the videos, the webpages, the e-books, the reams and reams of data — as somehow lighter than air, existing in “the cloud” or zipping along global wireless networks. The reality, however, is much more concrete. The dozens of zettabytes of data produced every year (a zettabyte is a gigantic unit of data, equal to about [250 billion DVDs](#)) are increasingly stored in thousands of data centers around the world, where massive servers keep the internet afloat.

Those servers require a great deal of energy and produce a great deal of heat. Without adequate cooling, the servers can overheat, fail or even catch fire. Companies can either use traditional air conditioning to cool the servers, which is expensive, or use water for evaporative cooling. The latter is cheaper, but it also sucks up millions of gallons of water. A large data center, researchers say, can gobble up anywhere between 1 million and 5 million gallons of water a day — as much as a town of 10,000 to 50,000 people.

According to a Virginia Tech [study](#), data centers rank among the top 10 water-consuming commercial industries in the United States, using approximately 513 million cubic meters of water in 2018. Much of that water use comes from electricity use — coal, nuclear and natural gas plants take water to operate, and hydropower also consumes water — but about a quarter is due to using water for direct cooling.

The researchers also found that a lot of data centers operate where water is scarce.

Part of the problem is that tech companies put many of these centers in areas where power is cheap and low-carbon — such as Arizona or other states with plentiful solar or wind power — to help meet their own climate targets. Water in those regions is scarce. Meanwhile, areas where water is plentiful, such as in the East, have higher-carbon sources of power.

“You have to think about how much of the western United States is water-stressed,” said Landon Marston, a professor of water resources engineering at Virginia Tech and one of the study’s authors. California, for example, has at least [239](#) data centers; desert Arizona has at least 49.

Ben Townsend, Google’s global head of infrastructure and water strategy, said there is a trade-off between using more water for cooling, thus saving precious drops, and using more energy for cooling through traditional air conditioning, which emits more greenhouse gases. The right combination depends on where the center is located.

Compared with agriculture and urban demands, data centers take up a small proportion of the West’s water. But in small towns and rural areas, the proportion can seem much larger, and spark conflict. In The Dalles, Google was embroiled in a [13-month legal fight](#) to keep the water usage of its local data centers private. Eventually, the company disclosed that its data centers now consume more than 25 percent of the town’s supply. Google then became the first company to publicize its data centers’ water usage [worldwide](#).

John DeVoe, adviser for the environmental group WaterWatch of Oregon, worries that data centers in The Dalles are taking away precious water that could be used to help support species in nearby wetlands and rivers. “It’s an already difficult situation where too much water is promised to too many interests,” DeVoe said. “And now you have a new use coming in and saying, ‘Hey, we want our share too.’”

In nearby Cascade Locks, Ore., residents are also [pushing back](#) against a proposed data center that they worry will raise electricity rates and suck up precious water.

The good news is that data centers’ efficiency has improved dramatically over the past decade or so. In the mid-2000s, Marston said, researchers projected that data center electricity use would expand to take up huge proportions of the world’s electricity demand. But while data centers’ workloads increased fivefold between 2010 and 2018, their electricity consumption only increased 6 percent.

Still, as the world lives more and more online, data storage requirements are climbing. Newsha Ajami, a researcher at Stanford University's Water in the West center and water expert at Lawrence Berkeley National Laboratory, said even if data centers' water use is relatively small, the region's long-term megadrought means every use is up for debate. "We have really limited amounts of water," she said. "Every drop counts."

What readers are saying

The comments on the article discuss the environmental impact of data centers, particularly their water usage and location choices. Many commenters suggest relocating data centers to areas with abundant water, like the Great Lakes region, or using alternative cooling methods such... [Show more](#)

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