

Water Conservation is the New Normal

Often taken for granted, most Americans benefit from the world's most reliable and clean water system. In many parts of the United States, our water use is still being driven from a mindset that it is plentiful, available, and inexpensive. But those days are changing.

Water conservation is usually thought of as temporary. When there's a short-term drought, everyone reduces their use for a period of time. And then we go back to normal. But, weekly reports on drought.gov now indicate that at least 20 percent of the United States is in a perpetual state of drought, affecting tens of millions of people. Furthermore, at least 30 percent of the United States experienced a moderate to severe drought in recent years. Drought conditions affect our habits and pocketbooks, but they also affect animals, plants, and so many other underlying systems.

Mandatory 25 percent cutbacks instituted in California during its recent drought had a drastic impact on residents and businesses, especially those who were already using water judiciously. Before residents returned to their normal water use habits, California passed regulations for sensible, long-term water conservation.

Other state and local governments are also changing the way they approach water conservation. It is no longer enough to conserve in times of drought, and release restrictions after it rains again.

Water conservation is now becoming standardized, productized, and regulated. It is our new normal.

Waiting is Over, It's Time for Action

The mindset that drought is temporary is worrisome to scientists and conservationists. The Colorado River Research Group uses the term aridification to describe a region that is becoming increasingly dry. It considers aridification its "new baseline around which future extreme events (droughts and floods) will occur."

Though lack of rain is the primary reason for aridification, another major factor is global warming. A recent paper published in Water Resources Research revealed that a long-term drought in the Colorado River basin accounted for only 2/3 of the reduction in the river's waterflow. They believed that other third resulted from rising global temperatures. About 40 million people, industry and agriculture in the southwestern United States rely on the Colorado River as their main source of water.¹

In an interview with Water Deeply, Brad Udall, senior water and climate research scientist at Colorado State University, said water cycles are directly linked to global temperature changes. "If you increase the energy that the Earth is receiving, and that's exactly what we're doing by emitting CO₂ and other greenhouse gases, you change the hydrologic cycle in fundamental ways. It means more evaporation globally, more precipitation globally, but regional winners and losers."

The group's recent studies compared the 1950s drought to current drought conditions. In the 1950s, there was even less precipitation, but the amount of streamflow was similar. This shows that as the Colorado River Basin is becoming hotter, there have a host of other factors between rainfall and run-off where water is creating new patterns, some of which are linked to global warming and lead to what the group describes as "hot drought."

The group says continued use of the words "drought" and "normal" are no longer helpful. "We are no longer in a waiting game," they write. "We are now in a period that demands continued, decisive action on many fronts."



Conservation Is Becoming Law

Conservation is a critical component of modern water usage. California recently passed two new laws, AB 1668 and SB 606, to legislate water efficiency, knowing its replenished reservoirs are just a temporary situation in need of a long-term strategy. The new laws set residential indoor water use standards, currently at 55 gallons per person per day, to 50 gallons per person per day in 2030. For outdoor use, they expanded the requirement for smart irrigation controllers to all landscapes over 10,000 square feet.

Texas is constantly in flux when it comes to drought, with parts of the state being considered in or out of drought levels on a weekly basis. The City of Killeen in central Texas has instituted a water conservation and drought contingency plan. It will only go into effect if its residents exceed 140 gallons per person. Once that limit is exceeded, water conservation measures will be enacted. The city can change its irrigation plans, enforce designated water days, install more efficient plumbing fixtures, monitor and reduce water loss, and establish a meter testing and replacement program, according to the code.

These are measures meant to avoid problems that are already seen around the globe. In Cape Town, South Africa, they were recently counting down to “Day Zero,” when the city’s four million residents would run out of water, at which point residents would have to queue up for daily water rations. Its recent rainfall pushed Day Zero from this summer to an unspecified date in 2019. As soon as the push back was announced, local water usage increased.

The Hidden Costs of Water

Beyond the obvious need for protecting water supplies, there are many factors that can add up to a great deal of money. The water infrastructure is old and in need of updating in many areas. Beyond that, it also has to be expanded to follow residential growth patterns that show more people moving to drier areas.

All of these issues are going to affect future water rates, since they all cost money, and water is a business. For example, 20 percent of the total energy in California is used to move water. Development costs for infrastructure such as dams, desalination plants, and aqueducts continue to rise.²

And the bottom line when it comes to water can also impact people who manage buildings. Even something as seemingly benign as updating to a low-flow toilet can reduce water and sewage costs by \$750 per toilet in a highly used facility. Cooling towers at a hospital can account for 15 to 40 percent of its total water usage.



But the takeaway seems to be that water is going to get more expensive, and the way for many people to reduce those costs is to use it more efficiently. Even places where water is still free need to get ahead of the rate increases that will likely happen in the future.

Landscape watering, cooling tower efficiency, and water reduction may seem like drops in a bucket when you look at the big picture of our global water crisis. But more drops become more buckets, more buckets become high water levels, and more overall water becomes a better future.

The Promise of Efficiency

Smart irrigation systems, which reduce water waste by up to 50 percent, are in the process of being mandated in both California and Texas. Today, roughly 90 percent of the nation’s irrigation controllers run on basic irrigation timers. A system that waters a landscape every day for two hours without regard for weather or soil moisture content is totally inefficient.

A smart irrigation controller only irrigates when it is necessary, which can mean not watering for five days after a heavy rainfall. It can include soil moisture sensors to tune for plant health beneath the surface, rain sensors to immediately shut off irrigation during rainfall, and cloud-based

systems that deliver daily evapotranspiration (ET) weather data tuned for that specific area. Factors like site topology, plant type, and soil type can be programmed into these systems to calculate the moisture levels those plants need to thrive. Smart water management solutions, such as leak detection and flow management systems can detect water waste happening behind walls and underground, as well as the ability to record, track, and analyze daily water usage data for abnormal usage patterns (which is impossible to do 30 to 60 days after the fact with a water bill).

Our New Normal

Things we used to consider normal, have been challenged by changes in the environment happening around all of us. Droughts, which used to be thought of as transient, are becoming more persistent in parts of the nation. If you've experienced them, you probably will be again soon. Water conservation is no longer something nice to do in times of scarcity.

Water waste can impact how you are perceived as a citizen, a community, or a company. If someone sees unnecessary watering on your property, with run-off streaming down the street, they can decide that is a reflection of your personal or business character. This is one reason that water and sustainability managers are becoming important new corporate roles to ensure actions mirror values.

Fortunately, new technology and regulations are providing a path toward more responsible water use. A lawn being automatically watered during a rainstorm should become a thing of the past.

We are past the point where we can watch our future go down the drain.

Water conservation is our new normal.

Sources:

1. Bradley Udall and Jonathan Overpeck, Water Resources Research, February 17, 2017
2. Keeping Pace with Water and Wastewater Rates, Energy Analysis and Environmental Impacts Division Lawrence Berkeley National Laboratory, April 2017

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