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Arizona's Water: Uses and Sources

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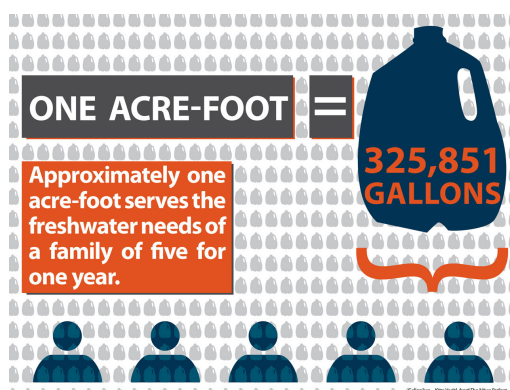
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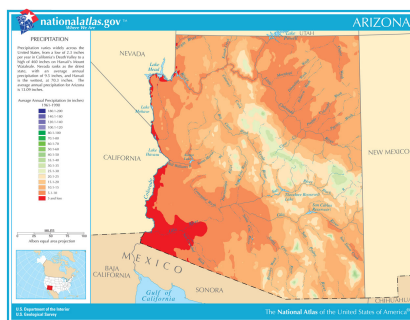
Approximately one acre-foot serves the freshwater needs of a family of five for one year.

the needs of a family of five for one year. Arizona is one of the driest states in the U.S., and one of the fastest-growing. Arizona's [current population is over 6 million](#) (2010 Census) and is projected to grow to as many as 9.5 million people by 2025. Encompassing four deserts, Arizona receives a statewide average of only [12.5 inches of rain per year](#). Our climate presents intense challenges in balancing our water needs between ourselves, our neighbors, and our [riparian ecosystems](#). [Water has defined our past](#) and will determine our future.

All economic activity, including mining, [agriculture](#), and urban growth, relies on a dependable water supply. But our historic overuse of water has destroyed ecosystems and is causing dangerous changes to the land. To meet these challenges, Arizona has developed one of the most advanced water management systems in the world. Networks of dams, canals, and replenishment ponds store water and move it when and where it is needed. Years of negotiations with our border states, Mexico, and users within the state have yielded a complex system of water allocation laws. Conservation initiatives strive to protect wetlands and restore endangered species. But to understand Arizona's water story, first we must consider where we get water and how we use it.

A land's carrying capacity has always been determined by its access to usable water. Humans use water primarily for irrigation, industry, drinking water, and sanitation. Millions of non-human species depend on water for life itself. Only 1% of the earth's water is freshwater, to be shared among more than 7 billion people and all freshwater aquatic ecosystems in the world. It is perhaps the most precious resource on the planet.

Large volumes of water are most commonly measured in acre-feet. One acre-foot is the amount of water required to cover one acre of area to the depth of one foot: 325,851 gallons. Approximately one acre-foot serves



Arizona receives a statewide average of only [12.5 inches of rain per year](#).

Water Budget: Usage and recharge

How much water do we use?

Based on [Arizona Department of Water Resources](#) (ADWR) data from 2001–2005, Arizona uses approximately 6.96 million acre-feet of water annually. A 2008 estimate by the [University of Arizona Water Resources Research Center](#) places that value as high as 8 million acre-feet. Collaborative

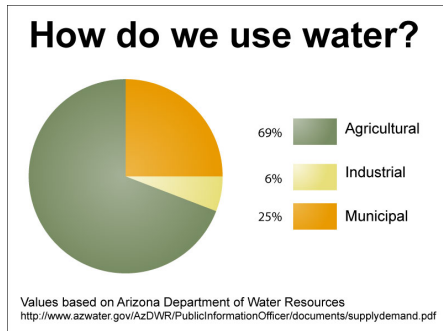


Watch a brief history of water by the Central Arizona Project.

estimates place the actual water used in Arizona at between 7.25 million and 7.75 million acre-feet annually. That's about **2.4–2.5 trillion gallons a year**.

How do we use water?

Water in Arizona is used for cultural purposes (for and by people) and for in-stream uses, such as for the support of fish and riparian ecosystems.



Arizona's cultural use of water. Values based on [Arizona Department of Water Resources](#).

Approximately 69% of the available water supply in Arizona is used for agriculture.

Agriculture

The largest cultural use is agriculture—using approximately 69% of the available water supply in Arizona. In the past, this percentage was as high as 90%. Reductions have been the result of urbanization of agricultural lands, and the result of heavy investment in conservation measures—by the irrigated agriculture industry—done both on the land and in the delivery systems.

Industry

Industry uses about 6% of Arizona's water supply, or 400,000 acre-feet. Arizona's major industrial uses come from [mining](#) and [power generation](#). Arizona supplies over 60% of the nation's copper and mines substantial [industrial minerals](#). Power, a growing industry in the southwest, uses water too. One kilowatt hour of electricity takes about 25 gallons to produce. Fortunately, power generation can use effluent, or recycled water. [Palo Verde Nuclear Generating Station](#) is the only nuclear plant in the world to use recycled water in its cooling ponds. About 70% of the water used to produce power in Arizona is effluent. Many golf courses in Arizona also take advantage of recycled water and use it for irrigation.

Municipal Use

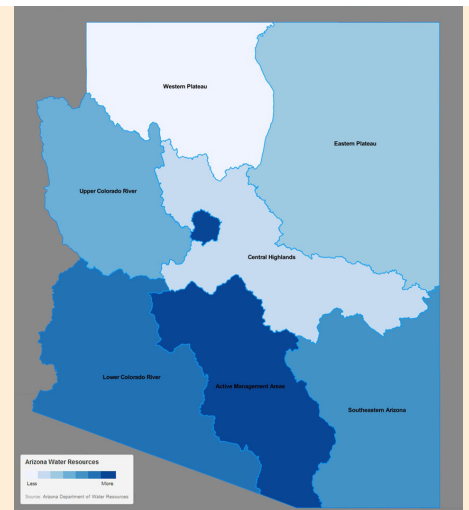
Municipal use is estimated at about 25% or 1.6 million acre-feet, and much of this is used to irrigate landscapes. While efforts are being made to transition from traditional landscaping to [xeriscape](#) (replacing high-water use plants with native specimens), a growing population still means an increased use of [municipal water](#).

Water Sources

Arizona gets water from three major sources: surface water (which includes [Colorado River](#) water and water from other major rivers and streams), groundwater, and effluent or reclaimed water.

Groundwater

About 43% of the state's water use comes from groundwater sources. Groundwater is found beneath the earth's surface in natural reservoirs called aquifers. In most cases the aquifers that store water have been in place for millions of years. Throughout the 20th and 21st centuries, groundwater has been pumped out more rapidly than it has been replenished, creating a condition called overdraft. Though a large amount of water remains stored in Arizona's aquifers, its availability is limited by location, depth and quality. By continuing to overdraft



Arizona is divided into seven Planning Areas. Water use and replenishment is managed within each [Management Area](#). The water use map provides a breakdown of each Planning Area.

Information provided by the Arizona Department of Water Resources. For detailed management information, please visit the [Arizona Water Atlas](#).

Water Management

Sound water management involves storing, moving, and recycling trillions of gallons of water. How well this is done will determine Arizona's future—and your future as an Arizonan.

- [Storing Water](#)
- [Dams in Arizona](#)
- [Colorado River Storage Project](#)
- [Central Arizona Project \(CAP\)](#)
- [Water Conservation](#)
- [Water Reclamation](#)
- [Water Laws: A History of Water in Arizona](#)



Be part of the solution by xeriscaping your yard. [Desert Landscaping: How to Start and Maintain a Healthy Landscape in the Southwest](#) is available at the Arizona Experience Store.

Values based on Arizona Department of Water Resources [ABC's of Water](#).

Verde River

the state's groundwater supplies, we challenge our ability to ensure a secure water supply for the future. In recognition of this threat, Arizona implemented the [Groundwater Management Code](#) in 1980. The Groundwater Code promotes water conservation and long-range planning of our water resources

Colorado River Water

A separate category of surface water in Arizona is the water supplied through the Colorado River. The federal government constructed a system of reservoirs on the river to harness its supplies for use in several states. Arizona, California, Nevada, New Mexico, Utah, Colorado, Wyoming, and Mexico share the river's resources. Rights to use Colorado River water are quantified by a string of legal authorities known as the "[Law of the River](#)." Based on this body of law, Arizona has the right to use 2.8 million acre-feet annually of Colorado River water. Mohave, La Paz, and Yuma county water users rely on Colorado River as their principal water supply. When fully utilized, the Central Arizona Project (CAP) will deliver an annual average of 1.5 million acre-feet of Colorado River water to Maricopa, Pinal and Pima Counties.

Other Surface Water

Surface water from lakes, rivers, and streams is Arizona's major renewable water resource. However, because of our desert climate, the amount of surface water available can vary dramatically from year to year, season to season, and place to place. In order to make the best use of the surface water when and where it is needed, storage reservoirs and delivery systems have been constructed throughout the state. Most notable are the major reservoir storage systems located on the Salt, Verde, Gila and Agua Fria rivers. [Almost all of the natural surface water in Arizona has been developed.](#)

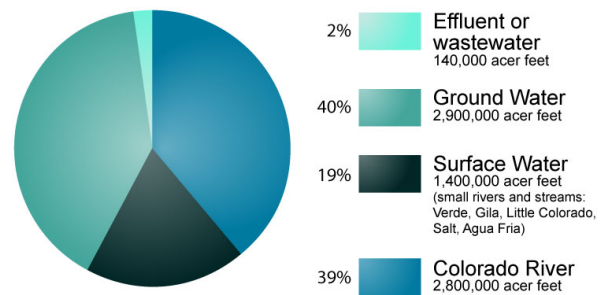
Effluent

[Reclaimed water](#), or effluent, is the one increasing water source in our state. As our population and water use grows, more treated wastewater will be available. Reclaimed water is treated to a quality that can be used for purposes such as [agriculture, golf courses, parks, industrial cooling, or maintenance of wildlife areas.](#)

Information made available by the [Arizona Department of Water Resources](#) and the University of Arizona [Water Resources Research Center](#).

Since it is impossible to measure the exact values of water used across a state, some variance of values must be tolerated.

Arizona Water Sources



Values based on Arizona Department of Water Resources ABC's of Water
<http://www.azwater.gov/AzDWR/PublicInformationOfficer/ABCofWater.htm>



THIS PROPERTY USES RECLAIMED WATER



RECYCLED WATER TREATED FOR IRRIGATION
DO NOT DRINK OR PLAY IN RECLAIMED WATER

TUCSON
WATER
791-2650

NO TOME DEL SISTEMA DE AGUA RECICLADA. EL AGUA RECICLADA ESTA TRATADA PARA IRRIGAR.