



Tucson Water

Project at a Glance

Utility Overview

- Utility: Tucson Water
- Location: Tucson, Arizona
- Population served: 720,000
- Service area: 227 square miles

Challenges

- Declining water supply availability and reliability
- Prolonged drought
- Climate change
- State-mandated conservation for groundwater

Solution

- Comprehensive water efficiency rebate programs to prioritize conservation as a source of supply.

Costs and Funding Sources

- Annual program budget: \$3.5 million
 - Conservation rebates and incentives budget: \$1.4 million
 - Education programs: \$750,000
 - Neighborhood-scale Stormwater Harvesting Program: \$350,000
 - Public relations and advertising: \$30,000
- Funding sources: Dedicated fee on water use

Benefits



Significantly lowered water consumption notwithstanding population growth



Urban greening, shading, and native landscaping benefits to Tucson



Avoided costs of more than \$155 million



Improved climate change resilience



Conserved more than 2.1 billion gallons over 10 years



Improved drought resilience

BACKGROUND

Tucson is located in southern Arizona, about 100 miles southeast of Phoenix and 60 miles north of the Mexico border. The larger Tucson-metropolitan area, which includes Oro Valley and Marana, is home to one million residents. The region is part of a global desert zone, one of the warmest locations in the U.S. with precipitation averaging 12 inches per year. Tucson Water is a municipal water utility and a department of the City of Tucson that provides drinking water and reclaimed water services to about 720,000 people in the metropolitan area.

Historically, the Tucson metropolitan area developed by relying **solely on groundwater**, and, along with the rest of the state, was drawing from its aquifers at an **unsustainable rate.**



CHALLENGE

Historically, the Tucson metropolitan area developed by relying solely on groundwater, and, along with the rest of the state, was drawing from its aquifers at an unsustainable rate. In 1968, President Johnson approved a 336-mile canal to transport Colorado River water to the central and southern parts of the state. The Central Arizona Project (CAP), completed in 1993, is designed to carry a yearly average of 1.5 million acre-feet per year to central and southern Arizona. Tucson has rights to about 144,000 acre-feet annually, and recharges this allocation into an aquifer west of the City. The water remains underground until it is pumped and delivered for use in the service area. Tucson today is almost entirely dependent on Colorado River water transported by CAP and smaller amounts of local groundwater and recycled water. Further, as a groundwater user within the Tucson “active management area” (AMA), established pursuant to the 1980 Groundwater Management Act, Tucson Water is required to participate in a mandatory conservation program. As of 2019, the groundwater conservation requirement was set at 160 gallons per capita per day.

SOLUTION

Beginning in 1998, Tucson established its first water conservation program to meet the state-mandated conservation requirements. Codified by city ordinances, these policies included public education and rebates for various residential and commercial efficiency measures including but not limited to:

- High efficiency toilets (\$75 each for up to two)
- Rainwater harvesting systems (up to \$2,000)
- High efficiency clothes washers (\$200)
- Gray water systems (up to \$1,000)
- Free water audit and customized incentive package for commercial customers



The program has resulted in the installation of **53,000 high-efficiency toilet and urinals**, as well as **2,000 rainwater harvesting and gray water systems**.

To address equity and affordability issues, Tucson Water provides limited-income individuals and families with free high-efficiency toilets and grants (up to \$400) and zero-interest loans (up to \$2,000) for rainwater harvesting systems. The program has resulted in the installation of 53,000 high-efficiency toilet and urinals, as well as 2,000 rainwater harvesting and gray water systems, among many other achievements. The utility has also invested in water conservation education; its programs have reached more than 450,000 people in the last decade.

Tucson Water is also planning neighborhood-scale green infrastructure aimed at making full beneficial use of rainwater and greening the urban landscape, rounding out its integrated sustainable management approach. Between 2019 and 2020, Tucson Water will participate in “One Water 2100,” a utility-wide planning process to update and reframe the City’s long-range water plan with a focus on how the city will utilize all available water resources and expand use of alternative resources, primarily rain and stormwater.

RESULTS

Water resources benefits

Now in its tenth year, Tucson’s conservation program has conserved more than 2.1 billion gallons (6,446 acre-feet). The City is currently using water at the same level of use as in 1985, while population has increased by more than 226,000 people and service connections have increased by more than 75,000.

Regulatory benefits

Tucson Water customers are well below the state-mandated groundwater conservation standard of 160 GPCD. As of 2018, Tucson reported 122 GPCD.

Economic benefits

Tucson conducted a comprehensive avoided cost analysis in 2017 demonstrating that it saved ~\$155 million by deferring and possibly avoiding the need to expand capacity of the water system and develop new, centralized recycled water supplies. It also found that water rates were 15% lower than they otherwise would have been as a direct result of the public’s investments in conservation programs.



Social benefits

Tucson Water's programs have several social benefits. Its direct installation programs ensure its customers of all income levels have access to efficient appliances and fixtures. The utility has also made a special effort to reach its Spanish speaking community with 1:1 interactions and Spanish-language materials for outreach and training.

Sources

Tucson Water: [About](#)
Tucson Water: [Water Conservation Program FY 2017-18 Annual Report](#)
Tucson Water: [Avoided Costs Analysis \(How Water Conservation Keeps Rates Low in Tucson\)](#)
Tucson Water: [One Water 2100 Master Plan](#)
WaterNow Alliance December 13, 2018, Interview with Tucson Water Staff