



City of Phoenix Water Conservation Efforts

This report provides an update regarding Citywide water conservation programs and efforts, and seeks direction on any further efforts.

THIS ITEM IS FOR DISCUSSION AND POSSIBLE ACTION.

Summary

The City of Phoenix relies primarily on surface water supplies from the Salt, Verde, and Colorado Rivers, which are all within the Colorado River Basin. Scientists tell us that the Colorado River basin is becoming more arid. Water conservation has always played a critical role in water resource planning in Phoenix. As we prepare for a hotter, drier future in which surface water flows are diminished, water conservation will be even more important in the resiliency and sustainability of Phoenix.

Phoenix has been subject to state-mandated conservation requirements since the enactment of the 1980 Groundwater Management Act. The Arizona Department of Water Resources (ADWR) establishes increasingly rigorous conservation requirements as part of its management plans for the Phoenix Active Management Area. These conservation requirements mandate reductions in per capita water use for the City of Phoenix. Currently, Phoenix's gallons-per-capita-per-day water usage (combined residential and industrial) stands at approximately 170, which is 16 percent lower than the state-regulated limit of 203. In addition, Phoenix is required to limit water system losses to no more than 10 percent. Water system losses in 2018 were approximately nine percent. The national average for water system losses is closer to 16 percent.

Conservation is the bedrock of water resource planning in a desert city. The Phoenix Water Services Department has undertaken numerous conservation efforts over several decades. These efforts fall into the following categories: internal efforts, landscape incentives, enforcement, and education.

Internal Efforts-Phoenix's Role as a Leader in Conservation

In 2015, the City Manager established the Citywide Water Efficiency Task Force, which focuses on minimizing the City's own water use so that the City can lead by example

as a responsible steward of our most precious resource. Representatives from departments across the City participate in the task force. Its focus has been on finding and repairing leaks, training staff and contractors that perform plumbing and landscape maintenance, maintaining and adjusting irrigation systems, installing water efficient equipment, converting from grass to xeriscape where appropriate, and improving cooling tower efficiencies. Through the task force, nearly 6,400 plumbing fixture audits were conducted, smart irrigation controllers were deployed by the Parks and Recreation Department, and cooling towers at Phoenix Sky Harbor International Airport were upgraded. Since the task force began in 2015, the City has reduced its total water use by more than 46 million gallons.

Phoenix Water has also worked hard to reduce the amount of time it takes to fix water line leaks and breaks. Since 2016, Phoenix Water has reduced the time it takes to fix water line leaks and breaks by 80 percent. This is an important and meaningful reduction that demonstrates the City's commitment to water conservation.

The Street Transportation Department maintains irrigation in medians and the public right-of-way. All leaks brought to the City's attention are promptly repaired. If repairs cannot be made immediately, the water to that location is either turned off or the irrigation valve is capped to prevent water from leaking. Staff and contractors inspect for irrigation leaks so they can be repaired right away.

In 2018, Phoenix Water launched a Water Loss Committee consisting of representatives from different City departments, including the Fire Department and Planning and Development. The purpose of this Committee is to closely examine water losses within the Phoenix Water distribution system to reduce the "lost and unaccounted" water reported to ADWR. While Phoenix maintains a loss level below the state statutory maximum of 10 percent and well below the national average water loss of 16 percent for a utility, the Water Loss Committee continues to examine sources of water loss and improve processes for accurately calculating and reporting water losses attributable to leaks, unmetered uses such as firefighting and hydrant flushing, and unauthorized hydrant use. These efforts have yielded reductions in Phoenix Water water losses and raised awareness of conservation through City departments.

Landscape Incentives

We see water differently in Phoenix. We want our customers to use water wisely as a lifestyle choice in the desert, regardless of conditions on our watershed from year to year. The typical single-family home in Phoenix uses most of its water outside for landscaping purposes.

Phoenix Water developed an incentive for customers to convert from lush landscaping to more efficient and desert-adapted landscaping through water rate design. Beginning in 1992, Phoenix Water adopted a seasonal water rate and began charging customers more for water during the hotter months of the year. By making water use more expensive in the summer, residents have an incentive to choose landscapes that require less water in the summer. This rate design appears to have been very successful: summer water use peaks have fallen from a high of 750 million gallons per day in 1987 to approximately 450 million gallons per day in 2018. In addition, the proportion of single-family homes with a majority of turf has fallen from approximately 80 percent in the 1970s to around 14 percent today. Other western water utilities have employed financial payments to customers to remove grass, but Phoenix Water has largely succeeded in convincing customers to remove grass without the use of costly reimbursements.

Enforcement

Various sections of Phoenix City Code restrict water use and lush landscaping. These restrictions are found in the Plumbing and Building Codes as well as Zoning Ordinances. There are limitations on annual water use for turf-related facilities (including golf courses), limitations on water use for large artificial bodies of water, a requirement for low-water use plant irrigation in public rights-of-way, a prohibition on the flow of drainage water over any public right-of-way, and various zoning requirements for low-water use landscaping in Desert Character Overlay Districts. In addition, there are Citywide design guidelines that promote water conservation, native plant preservation, limit turf and high-water use plants, and limit water features to onsite amenities. Multiple commercial and multifamily landscaping standards require "drought-tolerant" trees and shrubs.

Phoenix Water maintains a Drought Management Plan (last updated in 2015), elements of which are included in City code for enforcement purposes. The Drought Management Plan functions in four stages: water alert, water warning, water emergency, and water crisis. At various stages, the Water Services Director is authorized to impose and enforce water use reduction regulations and drought surcharges for violations of the regulations.

Audits are a powerful tool that bridge the gap between enforcement and education. Phoenix Water offers free comprehensive reviews of water use through its Business Water Efficiency Audits and Homeowners Association Water Efficiency Program. In these programs, interested businesses and homeowner associations volunteer to work with Phoenix Water conservation staff to perform a thorough inspection and review of water use and provide a free report with suggestions for conservation opportunities. By concentrating on classes of users that represent the greatest opportunities for

conservation gains (large landscapes and industrial users), Phoenix Water maximizes its staff resources.

Education

Phoenix Water offers a wealth of educational opportunities for local students that is tailored for appropriate grade level. Phoenix Water staff members offer classroom presentations for K-12 classes on subjects including water conservation; stormwater; water and wastewater treatment; Arizona water history; and STEM water cycle. In addition, Phoenix Water provides free classroom activity books and posters to all teachers within the City, with more than 30 publications available, including Spanish language publications. For children in grades four or higher, Phoenix Water also offers tours of its water and wastewater facilities to learn about Phoenix water resources and the water cycle.

Phoenix financially supports Project WET, a program through the University of Arizona, that has special curriculum and materials used with fourth-grade science classes throughout Arizona. Each school year, Phoenix Water hosts three water festivals in the Roosevelt, Osborn and Madison School Districts. These festivals provide fourth-grade teachers with curriculum materials both before and after the festival that align with science standards, so students learn inside and outside the classroom. At the Project WET water festival, students interact with four STEM activities, including a watershed model, water conservation and technology, the water cycle and a groundwater model. In addition, this school year, Phoenix Water is offering a free teacher Project WET workshop for 25 Washington Elementary School District teachers. This workshop will teach the same fourth-grade science water festival curriculum, so teachers are equipped with the tools needed to teach their students about water. Last year, Phoenix Water educated approximately 4,000 children in Phoenix schools on water conservation with two full-time conservation staff and three additional employees that assist in conservation education.

In addition to educating youth, Phoenix Water conducts workshops for the public throughout the year. During the last year, Phoenix Water conducted workshops on Landscape Watering, Desert Lawn Care, Find and Fix Leaks, Water 101 and Rain Gardens. Each of these workshops provides specific, discrete information that helps residents conserve water, especially in an area that uses the most water - landscaping. Water Services staff also accepts invitations from HOAs, community groups, civic organizations and neighborhood associations to present its water conservation workshops. Phoenix Water also distributes more than 20 free educational publications for adults on water use, most of it focused on water conservation. These include popular publications on landscaping, finding and fixing leaks, xeriscaping, landscape watering guidelines and desert lawn care. Many of these materials are offered in

Spanish language. Phoenix Water works with other conservation organizations, such as the Arizona Municipal Water Users Association, Water Use It Wisely, the University of Arizona Cooperative Extension and the Salt River Project, to publish and distribute these important conservation education materials.

For more than 20 years, Phoenix Water has offered a plumbing retrofit program to install water-saving toilets, faucets and showerheads to limited-income residents who live in older homes. A portion of this program has been funded through federal water conservation grants. Through this program, more than 4,300 fixtures have been retrofitted and nearly 840 million gallons of water have been saved. That is equivalent to the volume of water needed to serve more than 950 Phoenix homes for a year.

Public outreach through conservation presentations, publications and retrofit programs are important parts of water conservation education at Phoenix Water Services, but one of the most essential forms of education in the digital age has been information provided through social media and content marketing. Phoenix Water has an independent social media presence on Facebook, Twitter, Instagram and YouTube, with water conservation information available 24 hours a day on demand. In addition, Phoenix was a founding partner in Water Use It Wisely, a water conservation campaign launched in 1999. Water Use It Wisely reaches over 2.1 million households with its media buys in television and radio; water conservation text alerts reaching over 700,000 people; a website that draws more than 400,000 visitors annually; Facebook, Twitter and YouTube pages with more than 40,000 followers; and a monthly newsletter with 27,000 subscribers. The award-winning water conservation message of Water Use It Wisely was created specifically for the Phoenix metropolitan area, and is one of the largest conservation campaigns in the world.

Results

The water conservation efforts of Phoenix Water have created a long-standing conservation ethic in the metropolitan area that has impressive statistics to demonstrate its efficacy. Specifically, Phoenix Water use rates have fallen approximately 30 percent in the last 20 years. We deliver roughly the same amount of water today as 20 years ago even with a population influx of approximately 400,000 new residents. Since the 1990s, the daily water use of the average Phoenix residential customer has dropped from nearly 180 gallons to just over 100 gallons. Phoenix residents have opted for a reduction in majority lush landscapes while maintaining a desert lifestyle that continues to draw economic development and population growth.

Summary

With shortage on the Colorado River looming, we must ask ourselves and our customers to conserve more. There are additional gains available in demand

management that can yield an even more sustainable future for Phoenix.

In October of 2018, the Council voted to support a new \$3 million water conservation outreach program that will include enhanced social media and enhanced print, billboard, bus, light rail wraps, and other outreach media. The campaign will emphasize providing residents with the tools they need to save money, conserve water, and play a role in positive solutions. Phoenix Water is also examining additional opportunities for effective water conservation programs to assist residents and businesses. In preparation for a hotter, drier future on the Colorado River watershed, it is important that Phoenix forges forward with enhanced water conservation efforts which promote a culture of wise water use and provide our customers with the tools they need to save our most precious resource.

Staff recommends a continued focused outreach effort with the community and business leaders regarding enhanced conservation efforts which respect the character of local communities and maintain our quality of life. Continual efforts in areas of landscaping, enforcement and education will continue to pay dividends. We will seek ideas and input from our diverse community to strengthen Phoenix's water conservation efforts.

Responsible Department

This item is submitted by Deputy City Manager Karen Peters and the Water Services Department.