

Valley golf courses implement different solutions to Colorado River water crisis

State tightens water regulations on golf courses

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Arizona golf courses are whittling away at their water use.

Part of that is because of state mandates. For Arizona, the quest to curb golf course water use started in 1984 and has continued to require courses to do more with less water.

The other part is planned cuts to one of the watersheds that serves the Valley: The Colorado River. As Arizona and the Southwest face increased water challenges and regulation, some Valley golf courses are implementing new strategies to reduce water usage and meet the 21% cut to water from the Colorado River.

“Because water is expensive, especially in Arizona, courses are spending more than a million dollars per year on water,” said Janeen Driscoll with U.S. Golf Association. “It’s not only a call for sustainability, but it’s very much an economic imperative.”

There are various solutions Paradise Valley Country Club, Greenfield Lakes Golf Course and Papago Golf Club are implementing to reduce water usage, such as a subsurface drip system from the USGA, elimination of overseeding, reduction of irrigated areas and installation of desert xeriscaping, driving range mats and smart technology.

Paradise Valley Country Club

Matteo Serena, senior manager of irrigation research and services for USGA Green Section, is part of the organization’s water conservation initiative to develop demonstration projects at golf courses — specifically in the Southwest. The goal is to reduce water use by 45% during the next 15 years.

Paradise Valley Country Club is the most recent initiative addition. It will soon install a subsurface drip system that has shown during the past six years of test use to save 50% to 80% of water compared with a sprinkler system, according to Serena.

"We understand the ground is hard to irrigate with a sprinkler system because you have a lot of overspray and water lost by wind drift and evaporation," Serena said. "Placing the water directly into the root zone, that's where you eliminate all of that."

USGA started testing the system in 2016 on a Santa Fe, New Mexico, golf course. Thus far, the system has been used primarily on teeing ground.



The subsurface drip system has been successful on the smaller area of teeing grounds, but a larger course area will be different and more challenging. Paradise Valley Country Club is in the preliminary stage for a larger area.

"The teeing grounds were easy, because it's flat, normally square or round," Serena said. "But when you do a larger area, then you're dealing with slope, bunker faces, golf traffic, etc."

Serena said they don't know yet if it will be as successful as on the teeing ground. The installation date is to be determined but will take two to four weeks to complete.

Subsurface drip irrigation is tubing buried 4 to 6 inches underground that's designed to deliver water directly to the root zone with pressure compensation, Serena explained.



Some challenges going forward with USGA's project are cost and communication with golfers. Serena does not yet know what the final cost of the system will be for Paradise Valley Country Club, but that it will be partially supported by USGA. However, he stated the cost of the system will ultimately be taken care of by the economical benefit of an efficient irrigation system that decreases the output of water and energy.

"And I think doing a better job of communicating with members, showing the advancement and getting a better public perception will be a significant improvement," Serena said.

The USGA Green Section was started through a relationship with the U.S. Department of Agriculture in the 1920s, Driscoll said.

The group develops and disseminates sustainable practices that produce better playing conditions for golf through research, course consulting services, education and championship agronomy.

"Paradise Valley Country Club will be the first key demonstration project to show the industry how these actions can lead to economic and environmental reduction of water while still maintaining a great quality playing surface," Driscoll said.

Greenfield Lakes

Last year, Greenfield Lakes water use was down 15% from the year before. General Manager Scott Anderson of Greenfield Lakes in Gilbert is tightening zones and reducing the amount of irrigated grass, gradually transitioning about 35 out of 100 acres of the golf course to xeriscaping.

"I don't see why we're not going to hit 21% (water reduction), we're actually going to try to get to 30% if we can," Anderson said.

To finish the xeriscaping will take time. Even though the golf industry is making more money compared to when Greenfield Lakes started the process five years ago, money is the main barrier as the golf course has added over \$1 million worth of renovations at the same time.

The cost of xeriscaping is about \$2 to \$20 per square foot. For 35 acres, that's between \$3 million and \$30.5 million.

Anderson said he's trying to add lights to the course to extend playing time to 10 p.m. to create more revenue dedicated to xeriscaping. However, he's run into resistance from the neighbors.

In addition to xeriscaping, Anderson has stopped overseeding, updated and moved sprinkler heads and replaced grass with mats on the driving range. Also notably, Greenfield Lakes uses reclaimed water instead of groundwater or surface water.





“What you see green now is all we need to have year-round, which is only about 3 acres versus 60. Everything else that’s around will transition back for the summer,” Anderson said.

He explained how overseeding the course is not worth it because of the water it takes as well as the cost of seed and fertilizer to get Bermuda grass to flourish for only six to eight weeks.

“In a lot of cases, people just want wall-to-wall grass. I think it’s going to be tough to ever change their minds, especially on the Scottsdale courses, the resort courses, things like that,” Anderson said.

His perspective on not watering grass is uncommon in the golf community. He once was partial to hitting off grass on the driving range, but now prefers mats, which he said have the same feel.

“I was anti-mat because of the perspective it’s like hitting off a board – horrible feeling,” Anderson said. “I had the golfer pride of grass until we got this turf. The type of turf we have is thick and heavy; you feel like you’re actually taking a divot.”

He said the problem with grass on the driving range is it gets chewed up faster than they can regrow and requires constant watering. With the mats, Greenfield Lakes hasn’t used water on the front of the driving range for a year and a half.

Papago Golf Club



Papago Golf Club General Manager Daryl Crawford responded in an email to the Daily Independent about how the course is conserving water and reducing its water footprint.

Last summer, Papago removed 10 acres of turf and replaced it with native vegetation that requires little water. The course plans to continue to reduce turf in out-of-play areas.

Papago also uses water moisture meters to determine when plants need to be watered, science-based formulas to determine evapotranspiration, and individual sprinkler heads adjusted according to slope and soil characteristics.

Evapotranspiration is the process by which water is transferred from the land to the atmosphere by evaporation from the soil and surfaces and by transpiration from plants.

“This technology means we can be incredibly precise and use only as much water as needed,” Crawford stated.

In addition, Papago uses weather stations, injects water-holding wetting agents into the mainline and airifies fairways in the summer to allow water to get into the soil with little runoff.

There is not currently infrastructure in place to allow Papago to use reclaimed water.

“Sustainable water management is a core practice because excess water negatively impacts playability and water is frequently the top cost at a golf course,” Crawford stated. “There are environmental, regulatory and economic reasons to use as little water as possible on our course.”

Crawford did not state exactly how much water has been saved, but that Papago has demonstrated a year-over-year reduction in water use.

The city of Phoenix which owns and operates five 18-hole courses and three nine-hole courses declined an interview for this article.

The issue

As of this month, the lower basin of the Colorado River is 32% full or 18,963 acre-feet water, according to a report by the United States Bureau of Reclamation River Operations.

Last year the lower basin was at 35% or 20,792 acre-feet.

Additional cuts to water from the Colorado River went into effect at the start of the year. Arizona must cut 21% of its water use from the river that provides water to seven states. That's 592,000 acre-feet a year, or the water of more than 2 million Arizona households.

In January, Arizona Gov. Katie Hobbs issued an executive order to modernize Arizona's groundwater management. Part of the executive order is the establishment of the Governor's Water Policy Council, tasked with modernizing the 1980 Arizona Groundwater Management Act.

The Groundwater Management Act requires active management areas with heavy reliance on groundwater, including Phoenix, to reach a safe-yield by 2025. Safe-yield is when no more groundwater is withdrawn than is replaced annually.

Beginning with the GMA's First Management Plan in 1984, ADWR regulated acreage of golf courses built after that time. The University of Arizona Water Resources Research Center explained in a newsletter that the plan limited new golf courses to an application rate of 4.6 acre-feet of water per year.

The 2020-25 Fifth Management Plan for Phoenix limits golf courses first 3.89 acres of turf per hole to the overseeded application rate of 6.035 acre-feet of water per year. The remaining turf acres within the facility are limited to the non-overseeded application rate of 4.36 acre-feet water.