



For more information about Tucson Water's Water Plan 2000-2050, call 791-4331 or visit their web site at [www.cityoftucson.org/water](http://www.cityoftucson.org/water). Para recibir esta información en español, sírvase llamar al 791-4331.



## Water for Tucson's Future

### *Long Range Water Plan 2000-2050*



# LONG RANGE WATER PLAN 2000-2050

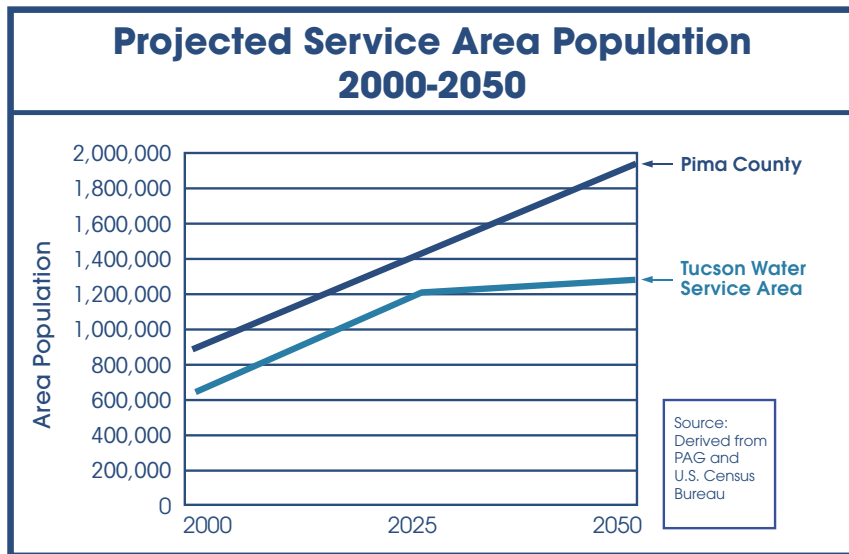
## Together We Must Choose the Pathways to Tucson's Water Future

We have some choices to make about water in our growing desert community. Tucson Water's Long-Range Water Plan lays out the challenges and opportunities we all face and the decisions we will have to make to ensure a secure water future for our families and ourselves.

Tucson Water wants you, our community, to help make these decisions. We believe this information will be valuable to you as you help us make those choices and determine the best pathway to a sustainable community.

### A Growing Demand for Water

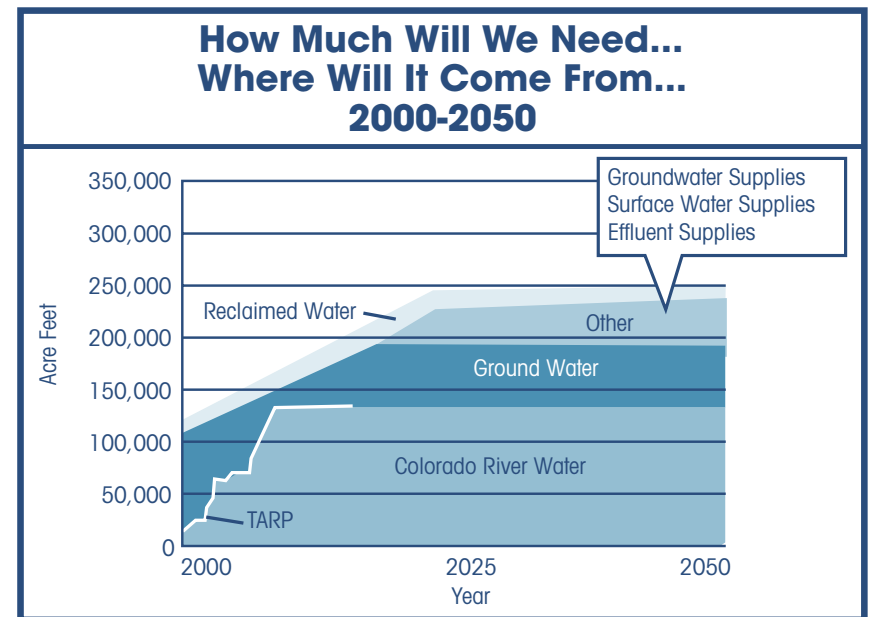
Over the years, Tucson has grown from a small University town to a major metropolitan city. Based on population projections developed by the U.S. Census and the Pima Association of Governments, our community will continue to grow in the decades to come.



Along with that growth in population comes an increasing demand for water. Tucson Water's total annual drinking and Reclaimed Water deliveries divided by the number of people the utility serves equals 177 gallons of water per person per day. By applying this average per person usage rate to the projected population figures, Tucson Water planners have determined how much water our community will need in the future.

### Our Water Resources

Do we have enough water to meet the needs of our growing community? Yes, but only if we use all of our available water resources and aggressively seek and obtain new ones.



In order to ensure that we meet the water demands of the future, Tucson Water based the Long Range Plan on the water resources we have available to our community today. That way, we know exactly what resources we can count on while we look to obtain additional water resources.



Nearly half of Tucson's Colorado River water is used at the Clearwater Facility in Avra Valley.

### 1. Groundwater

Our most important, and most fragile, resource is groundwater. But, for the decades when it was our only water resource, our over-pumping led to a falling water table, higher costs, loss of our riparian areas, and land subsidence (sinking). Clearly, we cannot rely on groundwater to the extent we did in the past. However, groundwater is replenished to some extent by rainfall, snowmelt and the slow migration of groundwater into our region. If we limit our pumping to no more than the rate of natural replenishment, we can still use this resource without causing environmental damage.

In May 2001, we began using blended water, a mix of recharged Colorado River water and groundwater from the Clearwater Facility in Avra Valley. This has allowed us to stop pumping most of the wells in areas where the water table has dropped significantly and where potential damage to our environment and the threat of land subsidence are greatest. As a result of shutting down these wells, or putting them on standby status, the water table in some areas beneath the City has begun to rise. Nearly half of all the drinking water delivered by Tucson Water annually now comes from the Clearwater Facility.

As part of Water Decision 2006, Tucson Water customers will make decisions related to Colorado River water that will impact our use of our groundwater in the future.

### 2. Colorado River Water

Tucson's portion of Colorado River water, about 44 billion gallons each year, comes to us through the Central Arizona Project canal. We currently use about 20 billion gallons of Colorado River water a year. Most of this supply is put into specially constructed basins in Avra Valley at the Clearwater Facility. Here the water sinks into the earth (recharges) and blends with the native groundwater beneath. This blend is then recovered by a number of wells and piped to the Tucson Water distribution system.

The use of this blended water has let us reduce our reliance on groundwater. Tucson Water has put a number of wells in central Tucson on standby, allowing our water table to begin recovering from decades of over-pumping.

As part of Water Decision 2006, Tucson Water customers will need to decide how we will use the remaining portion of our Colorado River water and of what quality we want that water to be when it is delivered to us.

### 3. Effluent

Effluent, treated wastewater, is the only water resource we have that increases as population increases. The City of Tucson owns much of the effluent that is produced at Pima County's wastewater treatment plants, so Tucson Water does not have to purchase this water like it does Colorado River water or other, at this point unidentified, water resources. Tucson Water has access to about 11 billion gallons of effluent a year. We reuse about 1/3 of that as Reclaimed Water to irrigate golf courses, parks and other grass areas in the community.

For years, the remainder of our wastewater has been discharged into the Santa Cruz River where, over time, it filters through the riverbed into the water table (recharge). For



the most part this happens to the north of our service area (where we can't recover water legally).

As part of Water Decision 2014, Tucson Water customers will make choices about whether and how to best use our effluent in the future.

## Water Conservation

Making more efficient use of our water sources through conservation has proven to be an economical and environmentally responsible way to help manage Tucson's growing demand for water. Over the years, we have all learned to be good stewards of our water and understand that we live in a desert where water is precious.



Tucson Water encourages water conservation in a number of ways – through providing education and water saving tips; through direct assistance like the Zanjeros water managers program; with water rate incentives; and by having mandatory ordinances that require xeriscape landscaping and low flow plumbing fixtures in new development. As part of the Long-Range Water Plan, Tucson Water will be strengthening its water conservation programs by –

- Increasing conservation education and training programs
- Enhancing water conservation assistance programs
- Augmenting enforcement of our “water waste” ordinance
- Investigating conservation incentive programs for customers
- Working with many segments of the community to find the best way to begin employing new water conservation technologies.
- Expanding programs that reduce water waste in our water delivery system
- Continuing to replace old water meters throughout the water system

Tucson Water admires and appreciates our customers' commitment to water conservation and will continue to encourage and assist them in their efforts to use our most important natural resource wisely.

## The Long-Range Water Plan

The goal of Tucson Water's Long-Range Water Plan is to look at the future and develop a strategy for ensuring that our community has enough quality water to meet our needs through the year 2050.

Tucson Water developed 10 recommendations to help us meet this goal. While the Plan provides the flexibility to meet the changing needs and challenges of the future, the recommendations listed below represent Tucson Water's best professional judgment about the most efficient and effective path to a stable water supply for the decades ahead.

## Tucson Water's Recommendations

1. Concentrate on physical water supplies, not “water credits”
2. Plan to limit groundwater pumping to the amount that nature replaces in our water table each year through rain and snowmelt
3. Allow the mineral levels of the Clearwater blend to gradually increase until they reach a natural balance (approximately 600 mg/l)
4. Develop projects to utilize our entire Colorado River water allotment—nearly 44 billion gallons per year
5. Fully utilize effluent as a water supply
6. Use effluent to augment our groundwater
7. Acquire additional water supplies
8. Encourage additional water conservation and reduce water waste
9. Develop a financial plan that ensures new growth pays a significant portion of the cost of additional water resources and water system expansions
10. Improve regional cooperation on water issues

## Customers Will Help Make the Final Decisions

The decision to accept these recommendations will be made by Tucson's Mayor and Council with significant input from Tucson Water's customers. Customers will be provided with information about each of these issues and the implications of the choices will be made clear to them. Tucson Water will answer any questions our customers have and make sure they are well informed before they are asked to help make these decisions. Some of these decisions must be made in the near future; others will take place over time.

## Following the Pathway to a Secure Water Future – Decisions On Tap

Tucson Water's Long-Range Water Plan was developed to address a wide range of potential future situations and determine a number of possible pathways that could lead to them. These different pathways each have a series of Decision points, where the community must determine which alternative pathway they want to follow. For each Decision, Tucson Water has developed a list of water programs and projects that will be implemented. These programs and projects have been selected to maintain as much flexibility as possible to meet currently unknown obstacles and take advantage of opportunities as they appear.



*Tucson Water will be talking with its customers about the decisions that need to be made about our water future.*

## WATER DECISIONS – 2006

The first set of Decisions must be made during 2006. These decisions will determine our community's use of Colorado River water. Tucson Water's Recommendation is shown in **underlined bold italic**.

### **Decision #1 - Mineral Control or Natural Blending**

*What is an acceptable long-term mineral level for the Clearwater blend?*

In 1999, Tucson Water's customers determined they preferred a level of not more than 450 milligrams per liter\* (mg/l) of natural minerals in their blended water supply. Tucson Water agreed to maintain this level for as long as possible by blending groundwater with recharged Colorado River water. As we expand our Clearwater program in Central and Southern Avra Valley to use more Colorado River water, the mineral level in the blend will exceed 450 mg/l in approximately 2010.

If customers choose to maintain the 450 mg/l mineral level, Tucson Water will design and construct an additional treatment facility to reduce mineral levels and maintain that lower level over time.

If customers decide that higher mineral levels are acceptable, the blend will eventually reach a naturally occurring balance of approximately 600 mg/l of minerals.



## Decision #2 - All Recharge or Treatment Plant Restoration

*Should Tucson Water recharge and recover all of our Colorado River water allotment, or restore the existing water treatment plant to treat and blend a portion of this supply on the surface?*

Whether or not customers choose to maintain the 450 mg/l level of minerals in the blend, a decision must be made about how to use the remainder of our Colorado River water allotment. Two options are available.

Tucson Water could expand the Clearwater Project to accept additional Colorado River water for recharge and recovery.



*Water conservation will remain important as we plan for the future.*

Alternatively, Tucson Water could bring the existing Hayden-Udall Water Treatment Facility back into service to treat Colorado River water and add it to our water delivery system. The Colorado River water would mix with the Clearwater blend prior to delivery to customers.

Tucson Water is in the process of developing the costs to customers of both these decisions. We will be sharing that information with you soon.

## Water Decisions - 2014

The second set of Decisions about our water must be made before or during 2014. These decisions will determine our community's use of our available effluent resources.

Effluent – treated wastewater – is the one water resource we have that is always increasing. The more water we use, the more effluent we create. Although Tucson Water will continue to use billions of gallons of effluent as Reclaimed Water to irrigate golf courses, parks, and school yards, some additional form of effluent reuse is an important consideration for the future.

Because Tucson Water's Long Range Water Plan was created using scenario planning, decisions made and projects completed in the next few years will move the plan forward while still allowing us to make choices in the future about how to best use our effluent.



*A number of water professionals, like these Tucson Water hydrologists, have been involved in the development of the Long Range Water Plan.*



*Tucson Water serves more than 680,000 customers throughout the Tucson region.*