



ARIZONA DEPARTMENT OF WATER RESOURCES

Phoenix Active Management Area

Water Demand and Supply Assessment: 1985 — 2025

The Arizona Department of Water Resources conducted a Water Demand and Supply Assessment for each Active Management Area (AMA) in preparation for the Fourth Management Plan. The Assessments consist of historical water demand and supply characteristics for 1985 through 2006 as well as projections to 2025. Once the assessment for each AMA is finalized, preparation of the Fourth Management Plan will begin by evaluating the data compiled and identifying potential solutions to water management issues. The Assessments will continue to be updated annually.

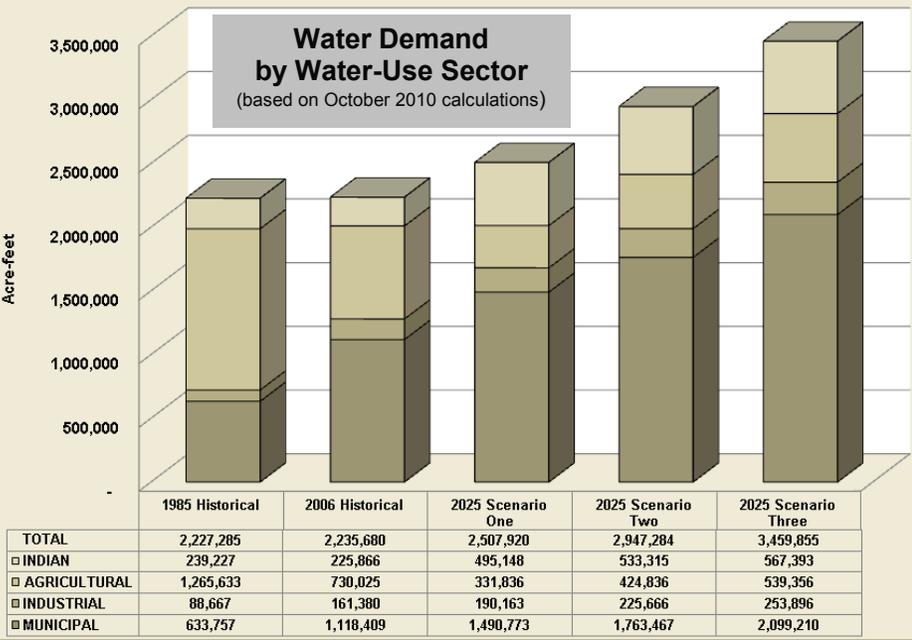
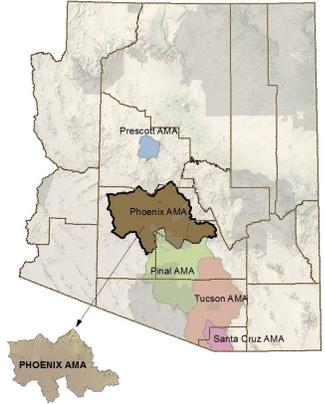
The water management goal of the Phoenix AMA is to attain safe-yield* by the year 2025.

Historically, water users in the Phoenix AMA have relied heavily on groundwater. Over the past 30 years, use of renewable supplies has increased, facilitated by the completion of the Central Arizona Project (CAP) and subsequent use of Colorado River water either directly or indirectly through artificial recharge and recovery projects. The use of reclaimed water has also increased over the past few decades, further reducing reliance on groundwater supplies.

A review of historical annual water demand, supply, and overdraft from 1985 to 2000 shows that overdraft fluctuated somewhat. In some years, the Phoenix AMA experienced surplus supplies primarily as a result of high streambed infiltration and lagged incidental recharge related to agricultural irrigation; but in most years, overdraft occurred.

After the year 2000, groundwater overdraft began a steady decline due to increased utilization of CAP water and increased conservation activities across all water using sectors. Artificial recharge activities have resulted in large volumes of water being stored for future use that would have otherwise gone unused.

*Safe-yield is a balance between the amount of groundwater pumped from the AMA annually, and the amount of water naturally or artificially recharged.



NOTE: The 2025 projections consist of three baseline scenarios with the following assumptions:

- **Scenario One:** lowest reasonable water demand.
- **Scenario Two:** demand in-between Scenario One and Scenario Three.
- **Scenario Three:** highest reasonable water demand.

Since 1985, the proportion of historical water demands among water use sectors in the Phoenix AMA have changed; however, the overall demand remained relatively constant.

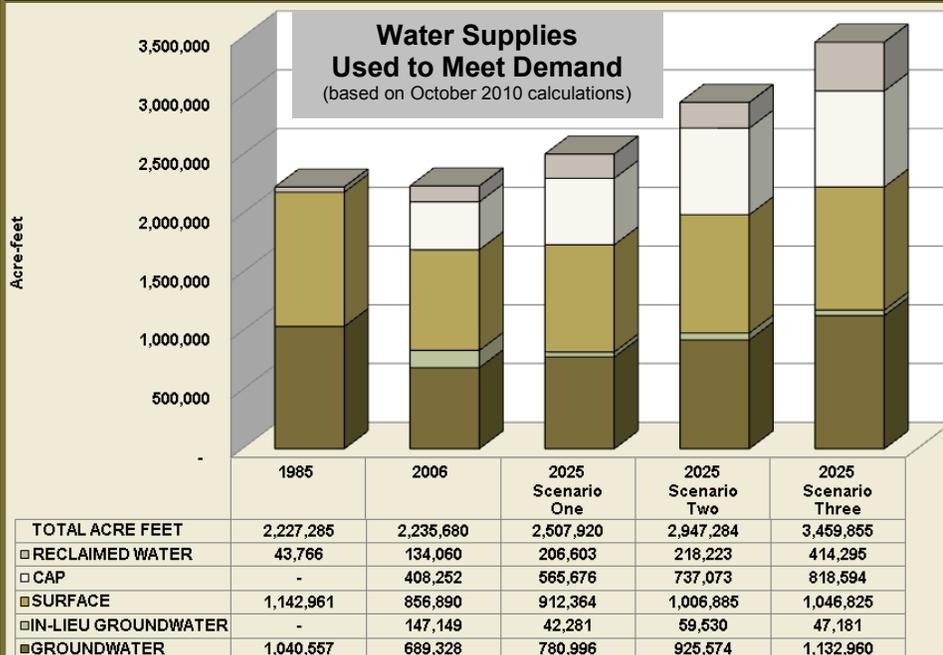
MUNICIPAL DEMAND: Between 1985 and 2006, municipal water demand nearly doubled from around 28% of the AMA's total water demand in 1985, to 50% by 2006. As the population increased, land that had been historically used for farming transitioned to housing developments. Municipal demand projections include assumptions on population growth and water use.

AGRICULTURAL DEMAND: Agricultural water demand decreased by approximately 42% between 1985 and 2006. Much of the decrease is attributed to urbanization of agricultural lands. Projected agricultural demand scenarios use different assumptions on the acreage of irrigated farmland and acreage of farmland no longer in production.

INDUSTRIAL DEMAND: Industrial sector demands increased by more than 80% between 1985 and 2006. In 1985, turf-related facilities accounted for nearly half of the industrial groundwater demand. By 2006, large-scale power plant use had increased to approximately 43% and turf water use decreased to 38% of total industrial sector demand. The projection scenarios include assumptions on population growth and electrical power generation.

INDIAN DEMAND: The Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, and a portion of the Gila River Indian Community are located within the boundaries of the Phoenix AMA. Despite being exempt from state water-use regulations, the demand characteristics of these communities are included to show their hydrologic impact on the AMA's safe-yield goal. The projection scenarios include increases in on-reservation agricultural irrigation using different assumptions on the rates of increase.

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- Scenario One: lowest reasonable water demand.
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- Scenario Three: highest reasonable water demand.

Historically, water users in the Phoenix AMA have relied heavily on groundwater. Over the past 30 years, this reliance has decreased due to the increasing utilization of renewable supplies.

GROUNDWATER: In 1985, approximately 47% of the total water supply (~1.04 million acre-feet) used to meet sector demands was from groundwater. By 2006, groundwater use decreased to 31% of the supply used to meet demand.

Projected groundwater use ranges significantly between scenarios. In each scenario, renewable supplies are maximized and groundwater is used to meet the *remainder* of the projected demand. This additional groundwater use directly contributes to overdraft.

CAP: The use of CAP water has increased from zero in 1985 to over 408,253 acre-feet in 2006 which is approximately 18% of the total water use for that year. In the projection scenarios, CAP use increases as a result of the increase in on-reservation Indian agriculture and the full utilization of municipal providers' CAP allocations.

SURFACE WATER: In 1985, ~51% of the total water supply (~1.14 million acre-feet) used to meet sector demands was from surface water. Surface water is projected to remain the predominant supply in Scenarios One and Two, but is edged out slightly by groundwater in Scenario Three, which has a total demand of 3.45 million acre-feet.

IN-LIEU GROUNDWATER: In-lieu groundwater is actually CAP or reclaimed water that is used instead of groundwater. In-lieu groundwater was not in existence in 1985, but accounted for nearly 7% of the total water use by 2006. In the projection scenarios, in-lieu groundwater use decreases.

RECLAIMED WATER: The use of reclaimed water has increased from almost 44,000 acre-feet in 1985 to over 134,000 acre-feet in 2006, or approximately 6% of the total water use. Reclaimed water use increases over the 2006 amount, and varies from about 206,000 acre-feet in Scenario One to more than twice that (414,295 acre-feet) in Scenario Three.

The historical data presented in the AMA Assessments were obtained from Annual Water Withdrawal and Use reports submitted to the Department from 1985 to 2006.

The projections for 2025 consist of three baseline scenarios:

- Scenario One assumes the lowest reasonable water demand
- Scenario Two assumes demand in between Scenario One and Scenario Three
- Scenario Three assumes the highest reasonable water demand

The Assessments also address two other scenarios:

- the effects of climate change on each baseline scenario, and
- a scenario that maximizes the use of reclaimed water due to population growth

The Templates and Budget Summaries for each AMA Assessment are available on the web at:

www.azwater.gov/AzDWR/WaterManagement/Assessments/default.htm