



CENTER  
FOR THE FUTURE OF  
ARIZONA

# Natural Resources Data Profile



Geography:  
All Arizona Counties

Produced By  
The Center for the Future of Arizona

**The Arizona We Want Progress Meters**

<https://www.arizonafuture.org/>

5/1/2020

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Arizona's natural beauty and resources are unique assets that contribute to our quality of life and economy.

**What success looks like:** Arizona's natural resources are sustainably managed for future generations to support our shared prosperity.



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## The Arizona We Want

The Arizona We Want is a shared vision of success around what matters most to Arizonans that expresses their highest aspirations and hopes for the future. It is derived from what the Center for the Future of Arizona (CFA) has learned through careful listening to what Arizonans say about what matters most to them and their highest priorities. CFA's findings and analyses can be found in the three The Arizona We Want reports which you can access here (<https://www.arizonafuture.org/reports/>).

## The Arizona We Want Progress Meters

The Arizona We Want Progress Meters are an evolving, dynamic set of tools to measure the priorities that Arizonans identified of critical importance to the future of the state. The metrics were carefully considered and included with the criteria of being: easily understood; supported by publicly available, trusted, and regularly updated data; and, useful as a guidepost for assessing policy and practice. The Progress Meters may evolve over time with the input from Arizona's leaders, communities and technical experts. Learn more on our website at: <https://www.arizonafuture.org/az-progress-meters/overview/>

The Arizona We Want Progress Meters are defined by categories but in the real world none of these areas exist in isolation. Explore our data and feel free to connect with us at any time if you would like CFA to support you in identifying the best measures for advancing the priorities of your community.

# Natural Resources

## How Progress Meters were selected

The Arizona We Want Progress Meters were developed through the following milestones:

- CFA partnered with leading education organizations, with Expect More Arizona as lead partner, to develop and launch the Education Progress Meter, which engaged over 40 partners in its launch and has now been formally adopted by 60 cities and towns.
- CFA partnered with the National Conference on Citizenship (NCoC) to use the nationally developed and recognized Civic Health Index to provide an array of metrics and data to track progress on two additional Progress Meters: Connected Communities and Civic Participation.
- CFA led an extensive process for developing metrics for the following Progress Meters: Jobs, Health & Well-being, Natural Resources, and Infrastructure. It engaged a Task Force, involved content experts, and held focus groups in using consensus-building around which metrics are most critical to track for each of the four meters. It followed this process with what has become a consistent practice in using critical readers statewide to provide feedback. Over 100 of 300+ critical readers rated metrics and provided feedback that culminated in the chosen measurements of each category.
- The Young Talent Progress Meter is still under development as it is being defined by Arizona's Young People. Learn more here! (<https://www.arizonafuture.org/az-progress-meters/young-talent/overview/>)

Throughout this process, careful consideration was given to the following criteria which must be met for metrics to be included in the Arizona We Want Progress Meters:

- They must be supported by publicly available, trusted, and regularly updated data;
- They must be understandable by most Arizonans;
- And they must be useful as a guidepost for assessing policy initiatives.

Many of our data sources do not provide data disaggregated to cities and counties, though some do. Because of this, in the event that data is not available, it will be provided at the most local level possible. Please reference the notes on each metric for details on how often data is updated, and at what geographic level the data is available.

## Using this Report

This local report is intended to provide timely and trusted data that can be used by communities to better inform them on how they are doing on what matters most to them. The Arizona We Want Local Progress Meter Profiles are intended to support the following objectives:

- Allow communities to compare themselves with their peers, and the state as a whole (where data is available)
- Track progress over time by reporting the value of indicators in previous years
- Support in the identification of priorities that can be the subject of targeted actions to improve conditions
- Explore the interconnections between the categories of The Arizona We Want priorities in pursuit of holistic and well-designed solutions

The Center for the Future of Arizona is engaging with a select group of communities in Community Conversations that are intended to support in advancing the objectives above. Please connect with us if you would like us to bring this process to you!

We appreciate hearing feedback and responding to inquiries about Progress Meters data, website and/or reports. Feel free to reach out to Ian Dowdy, Director of Progress Meters at [ian.dowdy@arizonafuture.org](mailto:ian.dowdy@arizonafuture.org).

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# Natural Resources

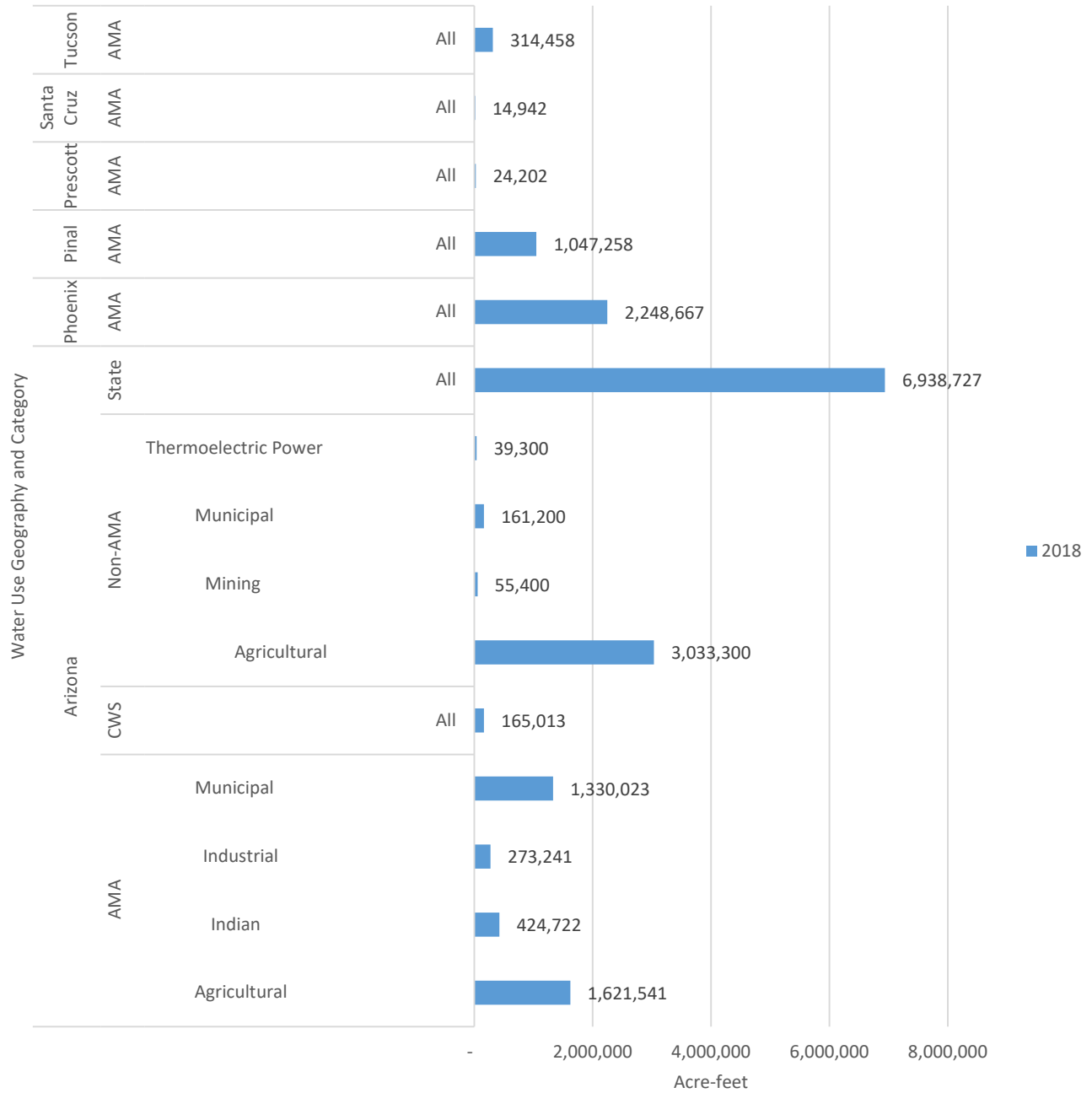


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# Natural Resources

Total Water Demand for 2018 in Arizona  
(Source: Arizona Department of Water Resources)



AMA: Active Management Area. CWS: Community Water System



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# Natural Resources

## Likelihood of Water Shortage from the Colorado River

The likelihood of a Water Shortage from the Colorado River is measured by the Bureau of Reclamation.

Arizona uses around 7 million acre-feet (maf) of water each year<sup>1</sup> from all sources, about 2.8 maf of which comes from the Colorado River. Of our Colorado River water, about 1.5 maf moves through a canal of the Central Arizona Project (CAP) into the metro areas of Phoenix and Tucson. The rest is used along the river, primarily for agriculture in Yuma. This regular delivery of water is dependent upon the water levels in the reservoirs that store the water on the Colorado River. For Arizona, the most important of these is Lake Mead, a lake that has seen a significant decline in water levels over the past two decades. The region has suffered from a long-term drought. The rules that govern how water is distributed from the Colorado River focus on Lake Mead water levels. If the projected level falls below 1,075 feet of elevation above sea level, a shortage is declared, and Arizona has to cut back its use of water.

Updated every January and August, data is only available for Lake Mead, the reservoir from which Arizona's supplies are received. The August projection of the following January 1 water elevation determines whether a shortage is to be declared on the system.

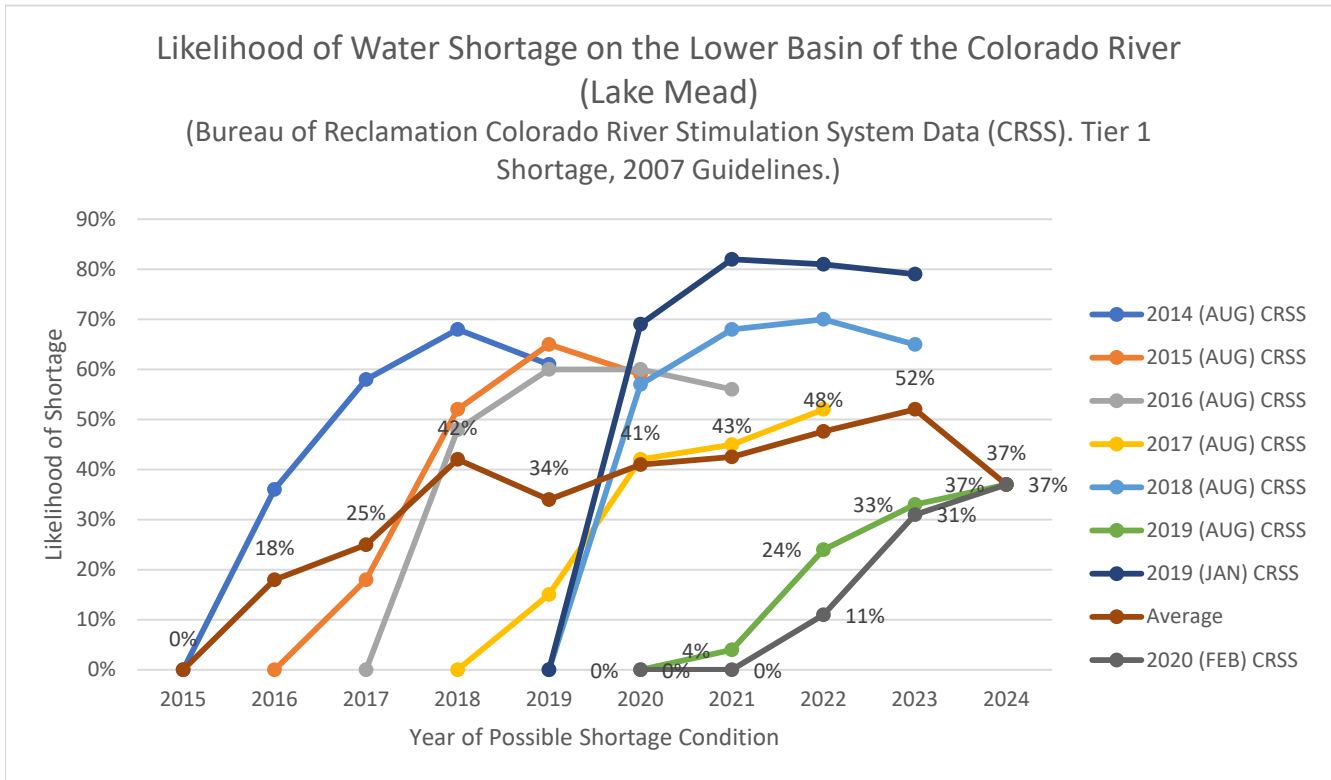
Source: Bureau of Reclamation Colorado River System 5-Year Projected Future Conditions.

<sup>1</sup><http://www.azwater.gov/AzDWR/PublicInformationOfficer/documents/supplydemand.pdf>



# Natural Resources

## Likelihood of Water Shortage from the Colorado River



## Per Capita Water Use

Per Capita Water Use is measured as gallons per person used per day (GPCD). This measure is simply the amount of water used every day for a given geography, divided by the number of people.

For Arizona, our GPCD for residential uses has fallen dramatically over the past two decades, especially in Phoenix, which demonstrates the success of water conservation efforts including alternatives to more locally adapted landscaping. This measure allows us to manage our own water use and it also allows water planners and policy makers to compare our water use to other places across the country.

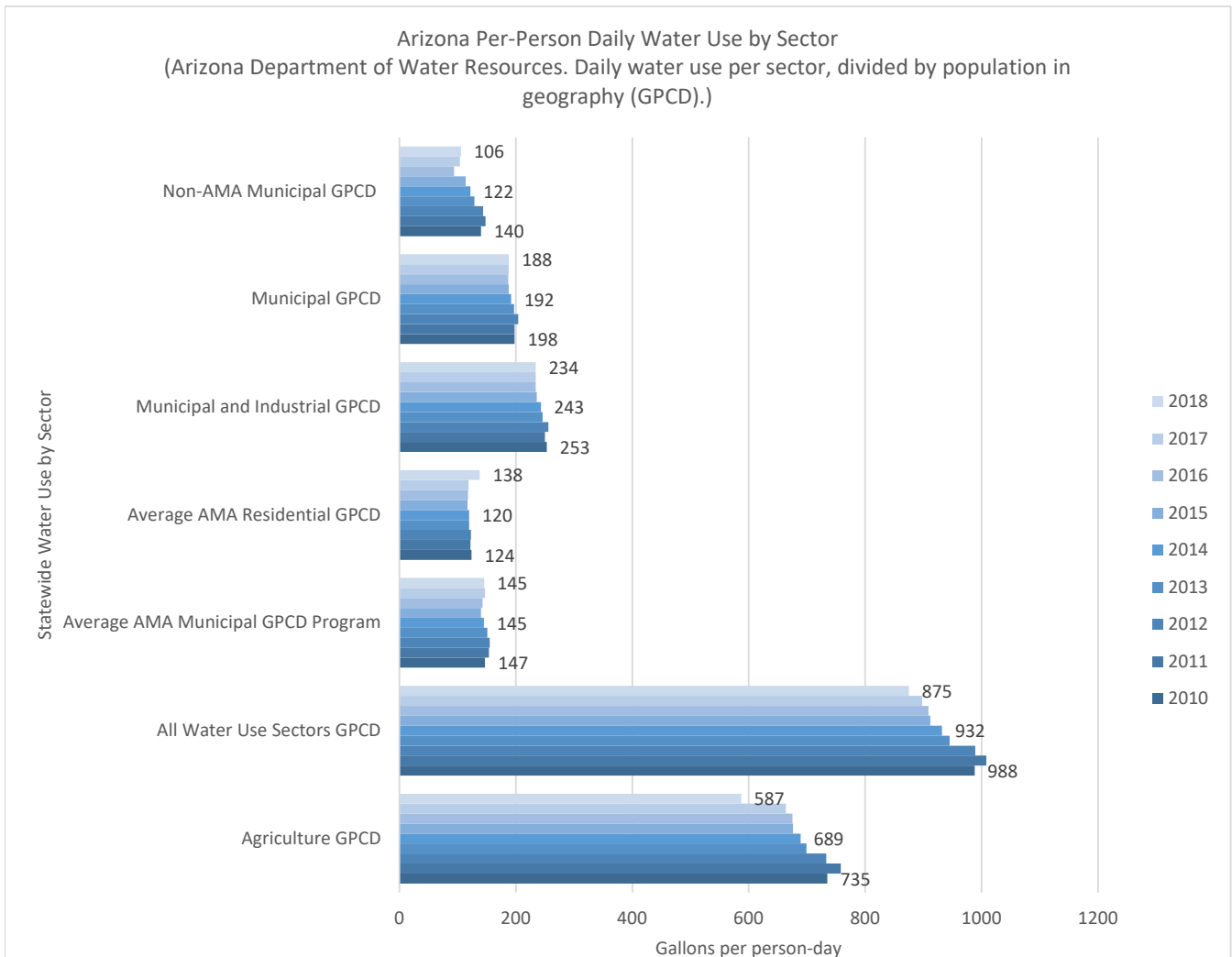
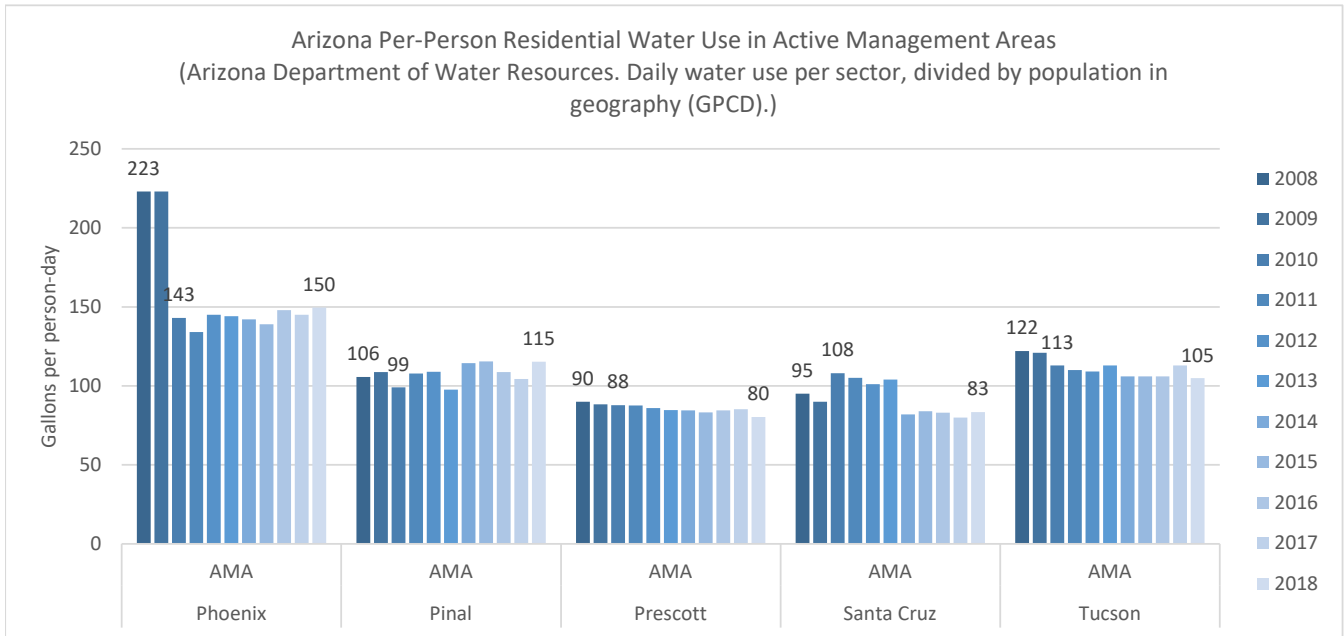
Updated annually and available for:

- The state
- Water providers that are either within an Active Management Area (AMA) or who report their data to the Department of Water Resources.

Source: Arizona Department of Water Resources.

# Natural Resources

## Per Capita Water Use



## Efficiency of Water Infrastructure

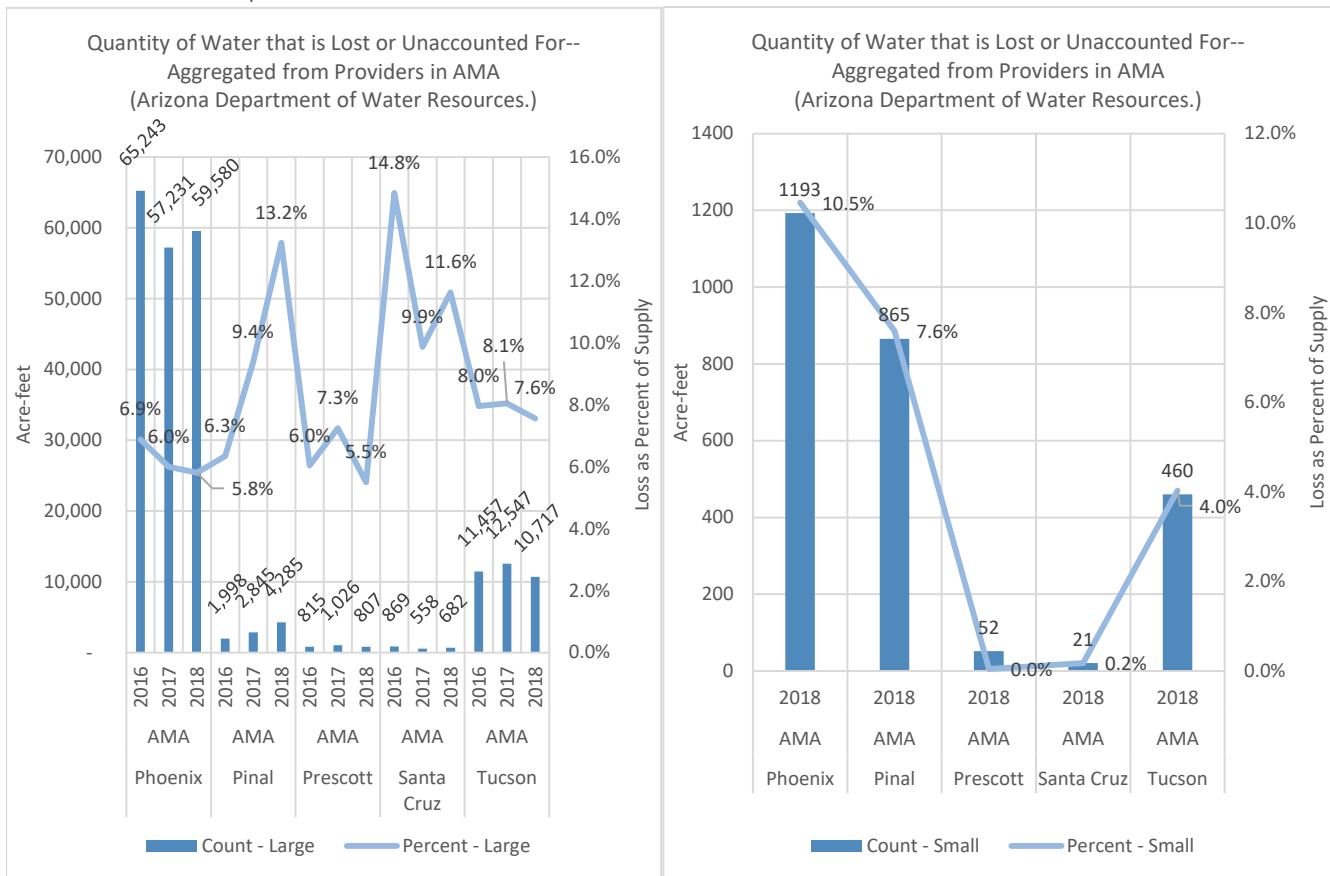
Efficiency of Water Infrastructure is measured by the amount and percent of water withdrawn from water sources (e.g., wells, lakes) by a water provider that is lost or unaccounted for before reaching the end user.

One area of water waste is the loss of water to inefficiencies in the water delivery system. Reported losses are due to leaky pipes, non-metered use like fire hydrants, and administrative errors. Some potential solutions to water inefficiency include metering every connection, repairing water leaks more quickly, and investing in updated infrastructure.

Updated annually and available for total amount and percentage lost for:

- The state's Active Management Areas (AMAs)
- Water providers within the AMAs
- Water Providers within Community Water Systems that report their data

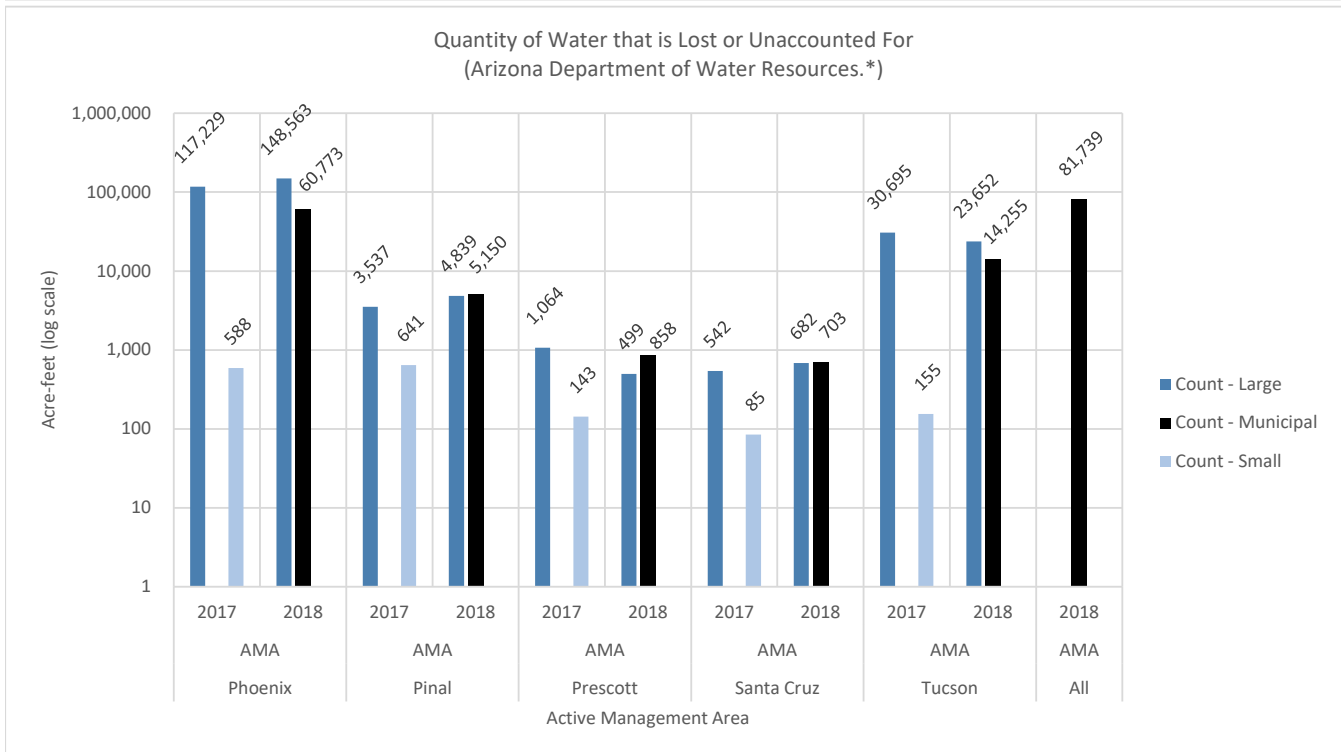
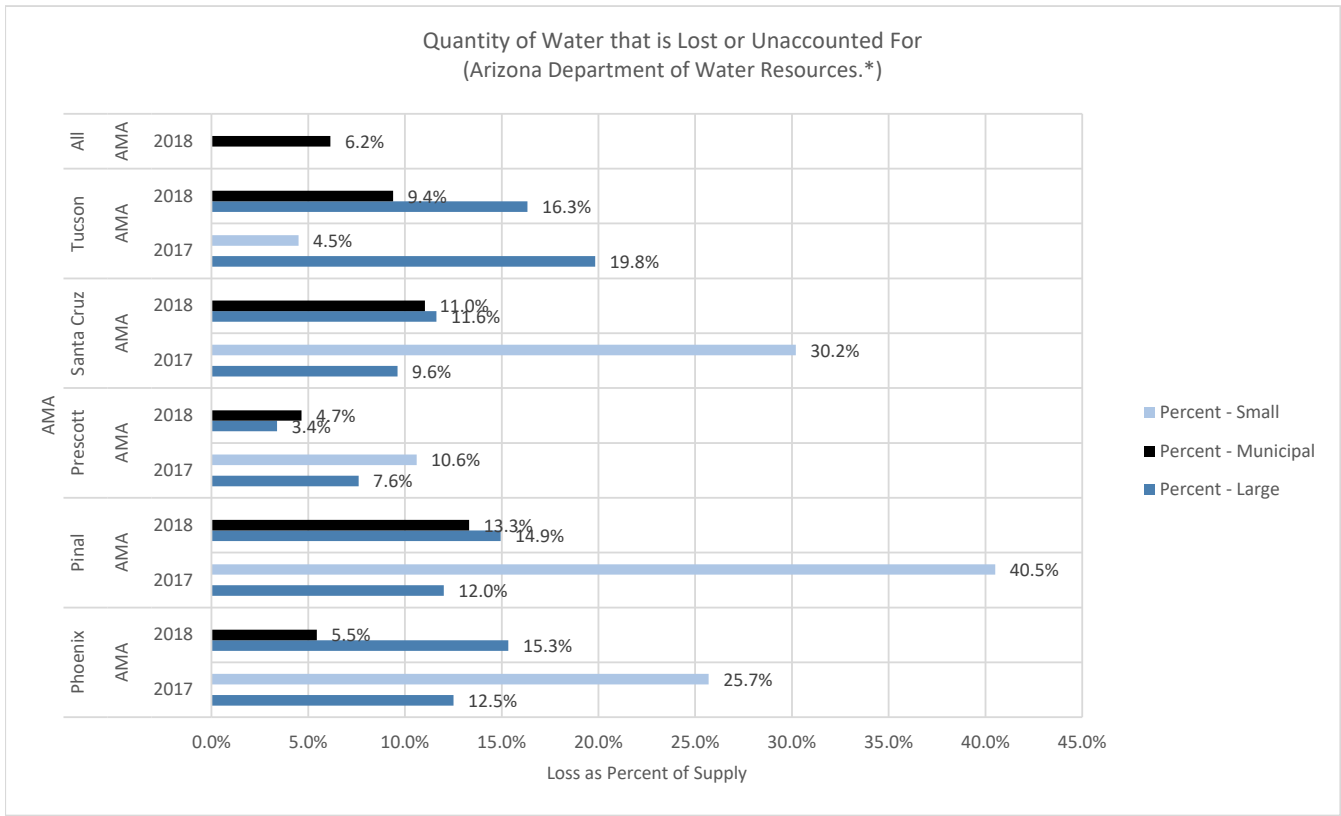
Source: Arizona Department of Water Resources.



Regulatory standard is 10% for large and 15% loss for small systems (<250 acre-feet). This is the regulatory L&U calculation aggregated from the provider level and is available from 2016 on.

# Natural Resources

## Efficiency of Water Infrastructure



\*Regulatory standard is 10% for large and 15% loss for small systems (<250 acre-feet). This L&U is aggregated on an AMA scale and is calculated to balance variation between supply and demand. It includes some metered connections and is calculated differently than the regulatory L&U for each provider.)

## Relative Amount of Population and Land Within Protected or Somewhat Protected Areas of Arizona

This metric is the percentage of the population within a Water Protected or Somewhat Protected Area of Arizona. Relative amount of population and land area within Protected or Somewhat Protected Areas of Arizona is measured by calculating the percentage of people and land within AMA's, Mandatory Adequacy Jurisdictions, and Irrigation Non-expansion Areas across Arizona.

Protection laws for Arizona's water supplies are important as they allow residents to be confident that they will have water in the future while also assuring investors in the region including developers and business owners that they can make long-term commitments to our community without risk of being without water.

Arizona took an important step toward safeguarding its water supply in 1980 in instituting laws that protected its groundwater supplies. The first of these laws was known as the Groundwater Protection Act and along with other more recent legislation, there is now a network of laws that help prevent Arizona's valuable and irreplaceable groundwater from being overused. Some of the protections in these laws include:<sup>1</sup>

- Active Management Areas (AMAs) have water sustainability rules that help ensure the wise use of water. These include safe yield groundwater goals which vary by AMA:
  - o Phoenix, Tucson and Prescott Active Management Areas (AMA's) must achieve safe yield (use no more groundwater than is replaced) by 2025;
  - o Pinal AMA's goal is to maintain agricultural use as long as possible while retaining enough groundwater to transition to different uses in the future;
  - o Santa Cruz AMA's goal is a safe yield and protection of groundwater levels from long-term decline and a requirement that all new homes have at least 100 years of assured water supply before a subdivision can be approved;
  
- Irrigation Non-expansion Areas (INAs) are designed to preserve the viability of existing agriculture in an area where groundwater is the principal source of water and rates of withdrawal exceed sustainable limits;<sup>2</sup> and
  
- Mandatory Adequacy Jurisdictions are municipalities and counties within Arizona that have elected to require a 100-year assured water adequacy determination from the Arizona Department of Water Resources, even though it is not otherwise required.<sup>3</sup>

Updated annually and available only for Arizona in a comparison with the previous year.

Source: Arizona Department of Water Resources. <https://new.azwater.gov/ama/ama-data>

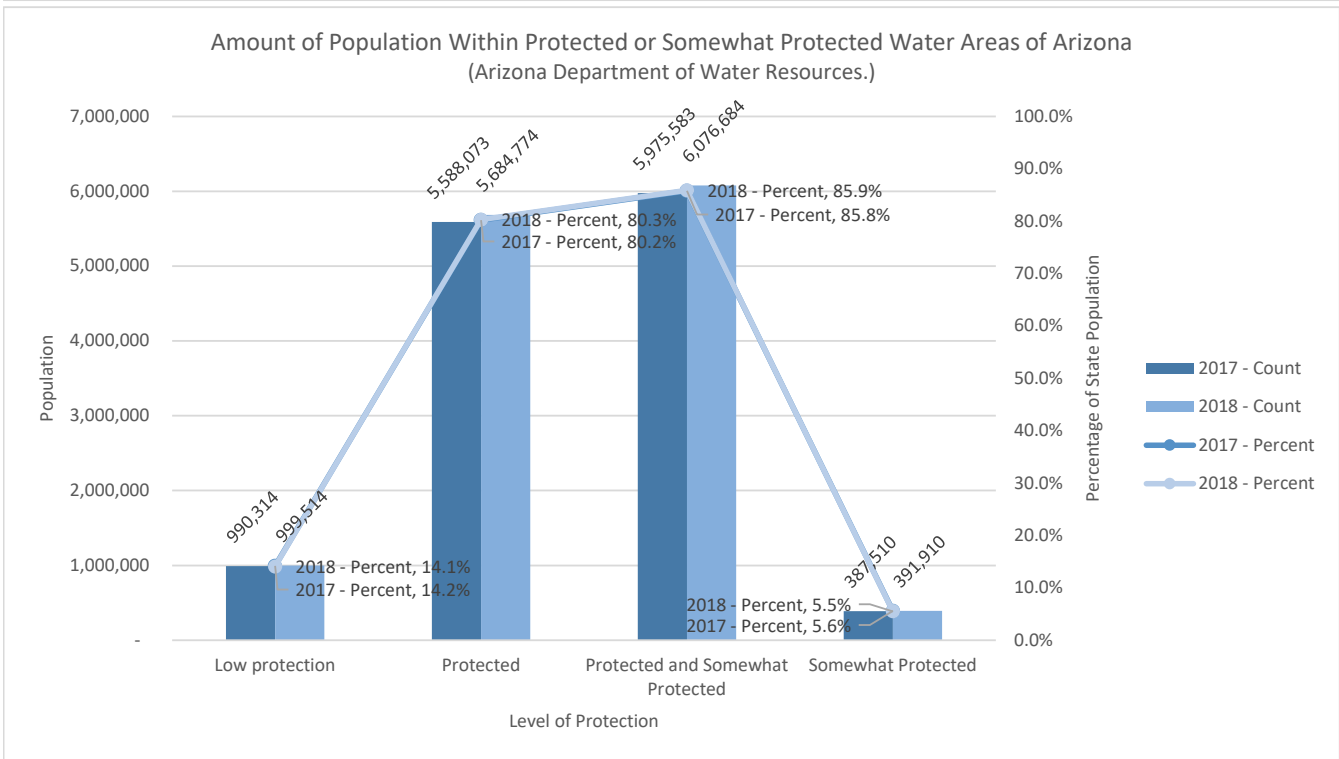
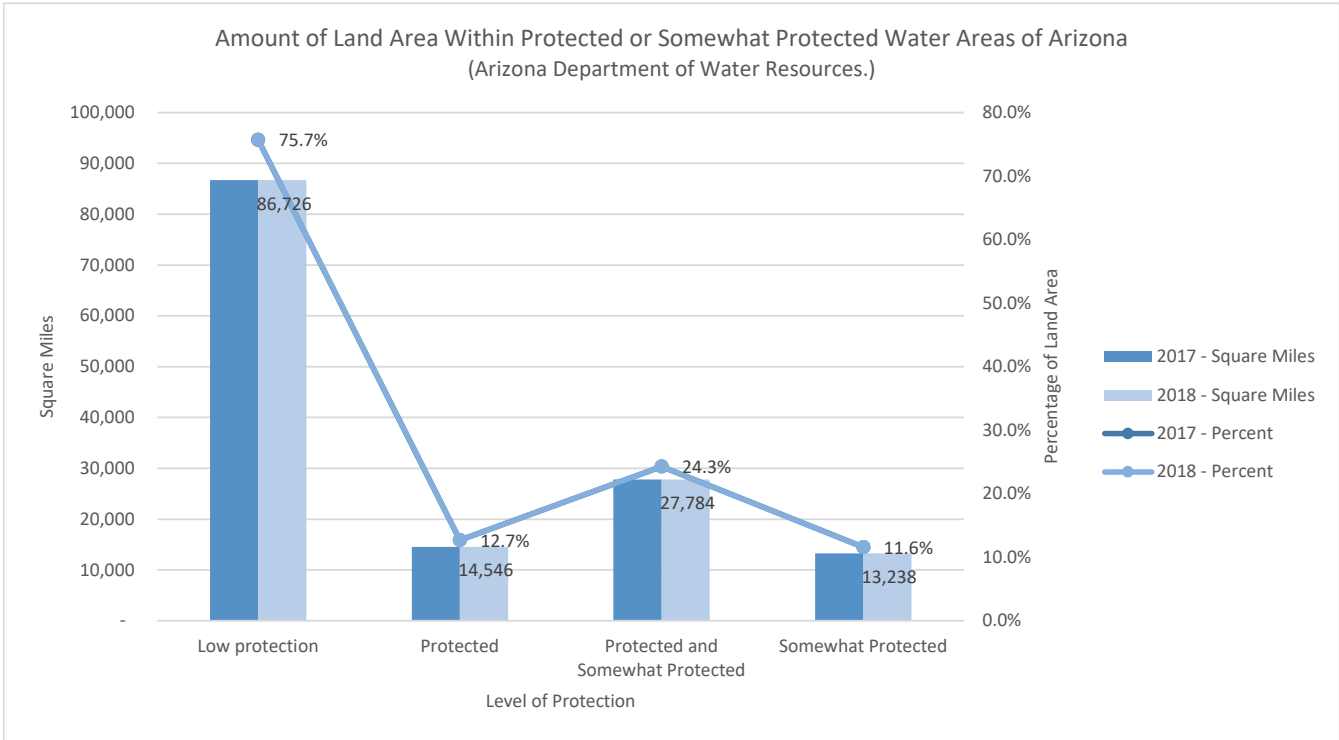
<sup>1</sup>[http://www.azwater.gov/AzDWR/PublicInformationOfficer/documents/ADWR\\_Annual\\_Report\\_2011\\_Final.pdf](http://www.azwater.gov/AzDWR/PublicInformationOfficer/documents/ADWR_Annual_Report_2011_Final.pdf)

<sup>2</sup>[http://www.azwater.gov/azdwr/documents/INAFaqforweb\\_000.pdf](http://www.azwater.gov/azdwr/documents/INAFaqforweb_000.pdf)

<sup>3</sup><https://new.azwater.gov/aaws>

# Natural Resources

## Relative Amount of Population and Land Within Protected or Somewhat Protected Areas of Arizona



# Natural Resources

## Extent of Resolution of Arizona's Disputed Water Rights

Extent of Resolution of Arizona's Disputed Water Rights is measured by the number of Hydrographic Survey Reports (HSR) completed by Arizona Department of Water Resources for the ten basins within the adjudications.

Disputed or unresolved water rights present challenges to insuring a long-term water supply. Western water law is based upon the concept of "prior appropriation" which generally means that whomever was first to use surface water gets to keep it.

Across the state, water in many streams and rivers is overallocated, meaning that there are more claims to the water than is available. To resolve this, a "general stream adjudication" (litigation to determine rights) is necessary, which is a complex process involving all claimants who feel they have a right to the water. They then rely upon the court to determine who will ultimately have what rights. Within Arizona, the Little Colorado and Gila Rivers are proceeding through the process which started in the 1970's.

One important step in this process is the publication of a Hydrographic Survey Report (HSR) which generally provides information about the condition of the watershed, the claims that are made on the water, and a recommendation from the Arizona Department of Water Resources regarding the rights of individual claimants.<sup>1</sup> With this report, the "Special Master" can recommend to the assigned judge a resolution through a final decree that settles the water claims.<sup>2</sup> Completion of the adjudications is important in that rivers and streams flow within the limits of their annual yield, and water users have increased confidence in the amount of water that they are allowed to use. Water markets can then allow more efficient use of water.

Updated annually and available for Arizona's 10 basins within the Little Colorado and Gila Rivers adjudications with an annual comparison to the previous year.

Sources:

<sup>1</sup><https://new.azwater.gov/adjudications>

<sup>2</sup><http://www.azwater.gov/AzDWR/SurfaceWater/Adjudications/GilaRiverandLittleColoradoRiverGeneralStreamAdjudications.htm>

### Number of Completed Hydrographic Survey Reports as of 2020:

Total basins: 10

Number of completed HSRs: 3



# Natural Resources

## Acres of Park Land and Acres of Park Land/Capita

Acres of Park Land is measured by (1) the number of acres of open space including parks, preserves, and federal public lands and (2) the Acres of Park Land/capita is the number of acres divided by the latest population estimates of subject geographies. These metrics do not include State Trust Lands which are not available for public use without a permit.

As of 2018, Arizona's population had almost doubled since 1990. Over this period of time, cities and counties have expanded the acreage of parks and open spaces that are available for outdoor recreation. Though urban parks have been expanded, natural open spaces including federal lands managed by the Forest Service and Bureau of Land Management are finite and are required by law to adequately balance human use with maintaining viable natural habitat for wild plants and animals.

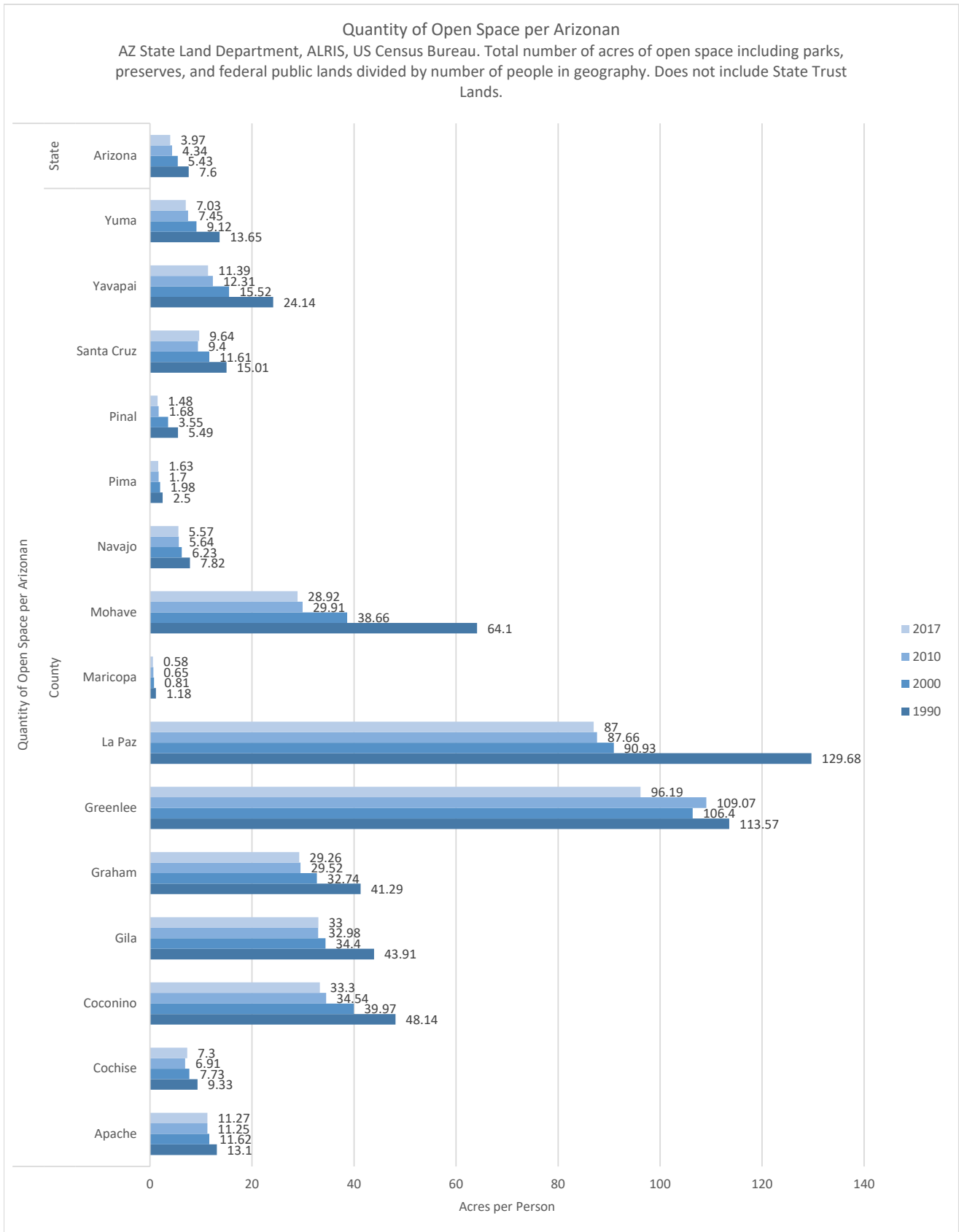
Updated when data is available and available for the following localities:

- Arizona
- Certain counties
- Certain cities

Sources: Arizona State Land Department ALRIS Data File and US Census Bureau Current Population Survey.

# Natural Resources

## Acres of Park Land and Acres of Park Land/Capita



## Adoption of Regional/Municipal Resource Plans

Adoption of Regional/Municipal Resource Plans is measured by the number of adopted, qualifying plans. Qualifying Natural Resource Plans must meet the following conditions: (a) Developed with transparency and input from a broad set of constituents, (b) Establishment of goals for ecological resources, may include cultural resources, (c) Evaluation of all lands and waters within its jurisdiction to measure benefits to resources, (d) Establishment of an implementation plan for acquisition or protection of resources as required by goals, and (e) Adoption by an agency with land use jurisdiction.

As growth has occurred across Arizona, habitat for wildlife and landscapes, valued for scenic views, sustainable habitat and human recreation has been increasingly developed, interrupted by new linear infrastructure like highways and transmission lines, and lost through diversion of waterways and unsustainable groundwater pumping. Many of these losses resulted from rapid growth, but others occurred due to a lack of natural resource planning, which balances and manages urban growth and natural resources.

Some communities have engaged in state-of-the-art planning activities that result in the development of a jurisdiction-wide Natural Resource Plan. Qualifying plans seek to understand the context of natural resources like habitat, water, and infrastructure to facilitate urban growth without the unnecessary loss of important ecological assets like wildlife corridors, riparian areas, and blocks of intact habitat. Such plans can take on different titles, but they have a common goal: to map and evaluate the natural resources in the jurisdiction and reduce the unnecessary negative impacts of development on important assets.

Updated continuously when plans are adopted and available for counties and cities within Arizona.

Source: Survey of municipalities and counties within the state and evaluation of their plans for qualifying characteristics.

**Number of Qualifying Natural Resource Plans: 3**

## Extent of Forest Treatment to Reduce Damage from Catastrophic Fires

Extent of Forest Treatment is measured by the number of acres treated each year by authorized projects within Arizona's forests.

Forest fires have always been with us. What has changed is the proximity of humans and development to forests and the drought that has made forests more vulnerable to insect damage and catastrophic fire. The 2002 Rodeo-Chediski fire, which at the time was the largest in Arizona history at over 730 square miles, was one of several contributors to a statewide discussion of how to restore the state's forests to a healthy condition. In a naturally fire-adapted ecosystem, pine forests in the West can be managed to minimize large, uncontrollable fires. The Four Forests Restoration Initiative (4FRI) is a large-scale collaborative process designed to chart out and implement a plan to bring health back to Arizona's pine forests managed by the Forest Service. Among the strategies is forest treatment - a combination of managed fire and mechanical thinning that will allow a natural fire regime to return to the area.<sup>1</sup>

Updated annually and available only for the state of Arizona.

Source: The Nature Conservancy of Arizona.

<sup>1</sup><https://www.fs.usda.gov/4fri>

# Natural Resources

## Extent of Forest Treatment to Reduce Damage from Catastrophic Fires

