City of Scottsdale

Background

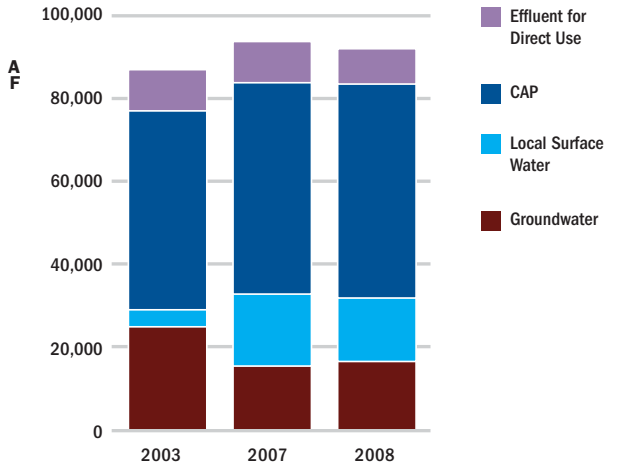
The city of Scottsdale is located within Maricopa County and covers almost 185 square miles. It has an estimated population of 243,501 residents.* The city lies in the Salt River Valley, with the McDowell Mountains on the northeast and east, and Phoenix to the west.

Scottsdale is located in the middle of the Gila River Watershed and in the Basin and Range physiographical province. The annual average precipitation in the city is 9.4 inches. Average high temperatures are about 100 degrees (ºF) in the summer, and the average low temperature is 39.5 degrees (ºF) in the winter.†

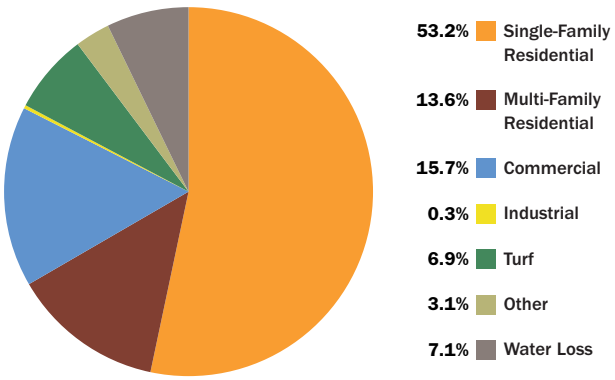
Water Supply and Deliveries

Consistent with the Phoenix Active Management Area's goal, Scottsdale has made significant progress in reducing groundwater withdrawals since 2003—curbing groundwater use from 30% of total water deliveries in 2003 to 19% of total water deliveries in 2008.‡ Colorado River water delivered via the Central Arizona Project (CAP) is Scottsdale's major source of water supply. Most water delivered by the city is used by single-family residential customers (53%), with commercial, multifamily residential, and turf consumption making up most of the remaining demand. The water used for turf irrigation is non-potable and a mix of effluent reuse and raw CAP water.

SOURCES OF WATER FOR SCOTTSDALE



2008 WATER USE IN SCOTTSDALE



* Arizona Department of Commerce. 2009. *Arizona population estimates, 2009. Available at:* http://www.azcommerce.com/econinfo/demographics/Population+Estimates.html (accessed May 5, 2010).

† IDcide Local Information Data Server. Scottsdale, AZ weather. http://www.idcide.com/weather/az/scottsdale.htm (accessed April 14, 2010).

‡ The Phoenix AMA's statutorily mandated goal under the Arizona Ground Management Code is to achieve safe yield (to withdraw no more groundwater than is being annually replaced) by 2025. See: Ariz. Rev. Stat. Ann. § 45-562(A) (2010). To achieve this, Scottsdale substantially relies on SRP and CAP water.

Per Capita

Between 2003 and 2008, the city of Scottsdale increased single-family residential and system-wide potable use — measured in gallons per capita per day (GPCD) — by 3.6% and 7.9%, respectively. Over the same time period, system-wide total use decreased by 1.5%. High water use rates in Scottsdale are generally attributed to larger lot sizes, an affluent customer base, and the high percentage of residences with pools.

Scottsdale GPCD

Per Capita Water Use	2003	2007	2008
Single-Family Residential [a]	240	260	249
System-Wide Potable [b]	280	308	302
System-Wide Total [c]	363	368	358

a Treated water deliveries to single-family accounts ÷ single-family residential population

b Total treated water delivered ÷ service area population

c Total raw water from all supply sources + direct effluent use ÷ service area population

Rate Structure

The city of Scottsdale uses a three-tier inclining block rate for residential water accounts with a 5/8" meter.

Usage Per Dwelling Unit	Cost
0 - 7,500 gallons	$1.80 per 1,000 gallons
7,501 - 39,000 gallons	$3.35 per 1,000 gallons
Over 39,000 gallons	$4.60 per 1,000 gallons

Single-family residential accounts have a base service fee of $11.25 and an environmental quality charge of 3.677% applied to the sum of the base fee and volume charges. The base fee comprises approximately 34% of the average customer's monthly bill for 10,000 gallons. The slope of Scottsdale's average price curve is 0.0075, indicating that the average price of water remains relatively constant as consumption increases.

Conservation Measures

The city of Scottsdale is regulated in the Phoenix Active Management Area as a large municipal provider under the Non-Per Capita Conservation Program. To meet the program's requirements, the city has implemented the following reasonable conservation measures:

- Public information and education
- Distribution plan for water conservation materials
- Submittal of a water use plan by new large facilities
- Low-flow plumbing rebate for existing customers and facilities
- Limitation on turf and other water-intensive landscaping in common areas of new single-family and multifamily developments
- Rebate program for low-water-use landscaping and irrigation system improvements for existing or new facilities
- Exterior audit program for existing residential customers
- Landscape watering advice program for existing and new residential customers
- System-related water audit program
- Ordinance for water-efficient plumbing fixtures in new nonresidential facilities
- Ordinance for model homes in new residential developments
- Landscape ordinance for new nonresidential facilities

Customer Rebates

The city of Scottsdale currently offers several financial rebates to incentivize wise water use and has adequate funds to meet demand for its rebate programs.*

- *Showerhead* – $5 for a 2.75-GPM (or less) fixture. Funding may increase for WaterSense-certified showerheads that use 2.0 GPM or less.
- *Toilet* – $75 for a 1.6-GPF toilet. Funding may increase for WaterSense-certified toilets that use 1.28 GPF or less.
- *Hot water recirculation system* – $150 for installation in an existing structure.
- *Single-family residential turf removal* – $0.25 per square foot for turf removal, $0.50 per square foot for turf removal and installation of low-water-use plants (maximum $1,500).
- *Common area turf removal* – 25% of total cost for removing turf and replacing with low-water-use landscaping (maximum $3,000).

* Scottsdale, Ariz., Code § 49-243 (2010).

- *Irrigation controller* – $250 for a new multiprogram, permanently hardwired, electronically activated controller.
- *Faucet aerators* – Free.

Ordinances/Rules

Water Features* – Large water features are prohibited to either spray water in a fine mist or spray or drop water in excess of six feet in vertical height. Water features must include catch basins, recirculating pumps, and wind shut-off valves, and shall only operate during normal business hours.

Limitation on Water-Intensive Landscapes†,‡ – No water-intensive landscape/turf shall be permitted in the public right-of-way. Turf areas are limited to the following percentages:

- *Schools* – 15% of total lot, with all of the remaining area consisting of plants listed on the ADWR low-water use plant list.
- *Churches* – 25% of total lot, with all remaining areas same as schools.
- *Resorts* – 10% of the first 9,000 square feet and 8.5% of the remainder of the total lot, with at least 95% of the remaining area consisting of plants listed on the ADWR list.
- *Cemeteries* – 75% of their total operating facility area, excluding parking lots.
- *New commercial and industrial users, and residential common areas* – 10% of total lot for lots less than 9,000 square feet, with decreasing allotments for increasing lot size.

Limitations on Model Home Landscaping§ – Water-intensive landscape/turf shall be located only in rear yards and play areas. All new single-family model homes are subject to landscape/turf restrictions similar in nature to commercial accounts.

Conservation Plans for New Nonresidential Customers¶ – All new nonresidential customers with an estimated or billed annual water demand of ≥ 10 AF shall submit a conservation plan identifying the anticipated types of water uses and demonstrating the use of the latest commercially available conservation technologies for both interior and exterior water uses consistent with reasonable economic return (emphasis added).

International Plumbing Code** – Scottsdale adopted the 2006 International Plumbing Code, which sets standards for high-efficiency plumbing fixtures and appliances to be used within a home.

Plumbing Code and Water Conservation†† – The maximum water flow rates and flush volume for plumbing fixtures and fixture fittings shall comply with Section 604.4 (maximum flow and water consumption) of the International Plumbing Code. This includes the addition or alteration or replacement of any regulated plumbing fixture in any occupancy type.

Water Application Systems‡‡ – No person shall irrigate any area of land with water received from the city through a water application system installed after February 1, 1991, unless the system is designed and installed to retain all water on the property.

Leakage, Escape of Water Prohibited§§ – No person shall permit the excess use, loss, or escape of water through breaks, leaks, or other malfunctions in the water user's plumbing or irrigation distribution system for any period of time after such escape of water should have reasonably been discovered and corrected.

Education

Landscape Assistance Program¶¶ – The Water Resources Department, together with the citizen and neighborhood resources department, shall establish a landscape assistance program to assist qualified residential homeowners within the city of Scottsdale in converting their high-water-usage and high-maintenance front yard landscaping into low-water-usage and low-maintenance landscaping.

* *Id. § 49-242.*
† *Id. § 49-245.*
‡ *Id. § 49-246.*
§ *Id. § 49-247.*
¶ *Id. § 49-248 (emphasis added).*
** *Id. § 31-166.*
†† *Id. § 31-167 (amending Chapter 4, "Fixtures, faucets and fixture fittings," of the 2006 edition of the International Plumbing Code, adopted by § 31-166).*
‡‡ *Id. § 49-244.*
§§ *Id. § 49-249.*
¶¶ *Id. § 49-265.*

Audits – Scottsdale provides a free, self-audit water guide and kit to homeowners. A companion irrigation water audit (exterior only) is also available to single-family residential homes. The city contracts with a consultant to provide exterior audits on multifamily properties.

Water Budgeting for Nonresidential Customers – Water conservation information is distributed to new and existing high-water-use customers. A customized water budget based on landscaped area and plant material is also available upon request.

High-Water-Use Complaints – Scottsdale provides on-site inspections to diagnose the cause of increased water bills.

Water Waste Investigations – Water conservation staff responds to reports of water wasting and provide educational assistance and information, when necessary.

Information Packets – Conservation program information is mailed to all new owners of existing homes. Water-efficient landscape information is mailed to all new owners of newly constructed homes.

Water Conservation Presentations – How-to information is presented to residential customers, with an emphasis on water-efficient outdoor landscaping. Presentations are also given, upon request, to civic groups, youth programs, and homeowner association boards.

EPA WaterSense Program – Scottsdale is a WaterSense promotional partner and promotes the WaterSense program through its website and via special campaigns, such as "Fix a Leak Week."

AMWUA Membership – As a member of Arizona Municipal Water Users Association, Scottsdale participates in the "Water—Use It Wisely" messaging campaign, SmartScape Training Program, outreach at tradeshows and conferences, and distribution of AMWUA brochures, such as "Landscape Plants for the Arizona Desert" and "Watering by the Numbers."

Distribution Plan – The city maintains a distribution plan for determining which educational materials are available at each of the different distribution outlets.

Xeriscape Garden – The city maintains a Xeriscape demonstration garden with outdoor classrooms and interpretive signage at Chaparral Park.

School Programs – The city offers free Project WET booklets and on-site educational, interactive water activities at elementary and middle schools, water conservation puppet shows and workbooks for elementary school classes, and resource materials for teachers.

Implementation of Conservation Measures

The city of Scottsdale tracks its rebate program and has recorded the following achievements since September 2005:

Rebate Program	No. of Rebates	Funds Distributed ($)	Notes
Residential irrigation controller	806	107,873	
Commercial irrigation controller	12	2,361	
Residential turf removal	430	220,855	586,817 sq. ft. of turf removed
Commercial turf removal	21	51,662	646,733 sq. ft. of turf removed
Aerators	2,341		free for customers
Showerheads	1,096	5,480	
Toilets	4,582	331,053	
Hot water recirculators	1,995	409,532	
Total Funds		**$ 1,128,816**	

Scottsdale has also performed more than 1,524 single-family residential landscape audits, and a five-year study suggests that audited accounts reduced use by over 30,000 gallons the year following the audit. In addition, the city reports 1,983 water waste complaint investigations and 3,872 landscape water conservation workshop attendees since January, 2005.

Funding for Conservation

In 2008, Scottsdale's conservation budget was $986,523, approximately 1.6% of the total water utility's budget. The city currently employs four people in its Water Conservation Department, and each year spends about $4.28 per customer on water conservation.

Goals for Conservation Savings

Scottsdale aims to achieve the goals set forth in its Recommended Conservation Measures.

Water Loss

In 2008, the city recorded 5,977 AF (1.9 billion gallons) of water loss, representing 7.0% of total water supplies. This represents a significant reduction from the city's 13.4% system loss reported during 2003.

Supply-Side Efficiency Measures

The city employs a meter accuracy program to improve maintenance of its distribution system. From 2005 through 2009, the city replaced 27,267 meters at a cost of $1.1 million, and estimates the program has saved nearly 2.6 billion gallons of water and recovered $5.6 million in potentially lost revenue. This program is one of the main causes behind the city's reduction in water loss between 2003 and 2008.

Effluent Use

In 2008, Scottsdale reused all of the 11,808 AF of effluent it produced, with 72% of the effluent delivered for direct use, and the remaining 28% delivered for recharge. Scottsdale is also a member of the Sub-Regional Operating Group (SROG), which operates the 91st Avenue wastewater treatment plant. A portion of the city's effluent is delivered to this facility (not included above), which is then reused for wildlife habitat mitigation, agricultural use, and use at the Palo Verde nuclear power plant.

Additional Information

From January 2002 to December 2009, the Scottsdale Parks Department has saved an estimated 1.3 billion gallons of water through setting aggressive water budgets and implementing water-savings techniques. Entitled "Parks are Green and Water Lean," implemented practices include:*

- Replacing 271,000 sq. ft. of grass (approximately five football fields) with Xeriscape
- Performing regular preventive maintenance on irrigation equipment
- Discontinuing overseeding for winter grass
- Performing detailed water audits when water usage issues occur

Scottsdale's Water Resources Department is striving to optimize its systems and reduce energy consumption. Existing systems, including aeration blowers and diffusers, are being installed with energy-efficient equipment to drastically reduce long-term energy requirements. Likewise, the department has enrolled in a power peak shaving program with the local electric utility to voluntarily shut down non-critical equipment, upon request.

* City of Scottsdale, Arizona. 2010. Parks are green and water lean. http://www.scottsdaleaz.gov/Water/Conservation/CityWide.asp (accessed June 21, 2010).