



Appendix B—Detailed Individual Utility Summaries

Town of Buckeye



Background

The town of Buckeye—called the biggest “small town” of Arizona—is located within the Hassayampa River Basin, 35 miles west of Phoenix. With an estimated population of 52,764* and 315,000 approved dwelling units,† Buckeye is one of the top high-growth areas in the U.S.

The average precipitation in the Buckeye Valley is 7.9 inches, with rainfall evenly distributed across the year. Average high temperatures in the summer are approximately 100 degrees (°F), and the lowest average temperature in winter is 35.8 degrees (°F).‡

Water Supply and Deliveries

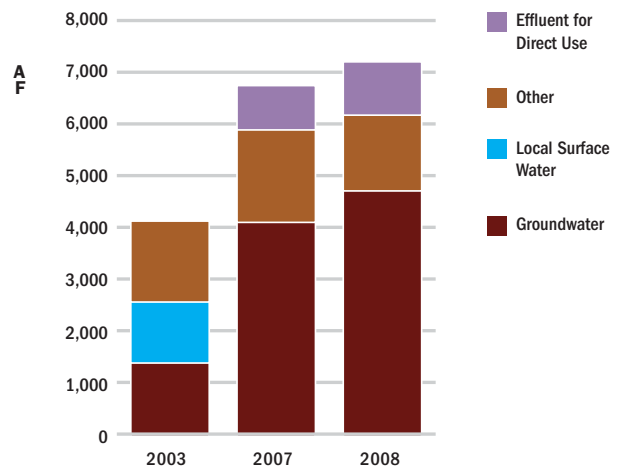
Over the period of 2003-2008, Buckeye increased supply sources by 74%, indicative of a rapidly growing population. Although the town has access to significant amounts of groundwater (very close to the surface), most of it is high in total dissolved solids and cannot be used for potable or landscape use. The majority of water deliveries in 2008 were supplied to single-family residential (39.6%) and turf (21.5%) customers. In both figures below, “Other” includes non-potable water delivered by the Buckeye Irrigation Company (BIC) and Roosevelt Irrigation District (RID) for flood irrigation of single-family residential lots, cemeteries, local parks, and other turf customers. BIC and RID water is a combination of groundwater, local surface water, and effluent from major upstream wastewater treatment plants (e.g., Phoenix’s 91st Avenue WWTP).

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

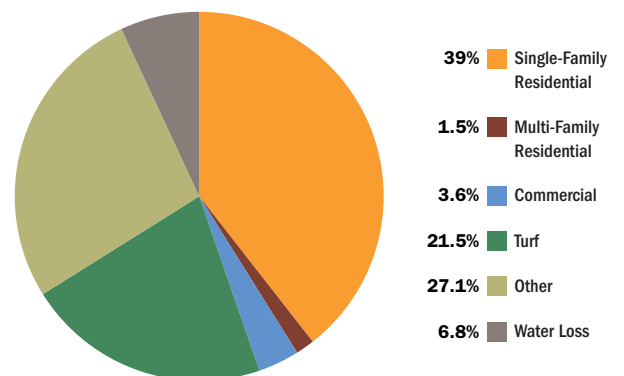
† Town of Buckeye, Arizona. Economic development: Buckeye at a glance. <http://az-buckeye2.civicplus.com/index.aspx?NID=87> (accessed April 12, 2010).

‡ IDcide Local Information Data Server. Buckeye, AZ weather. <http://www.idcide.com/weather/az/buckeye.htm> (accessed April 12, 2010).

SOURCES OF WATER FOR BUCKEYE



2008 WATER USE IN BUCKEYE





Per Capita

The town of Buckeye has dramatically curtailed its per capita water use since 2003. From 2003 to 2008, the town reduced single-family residential gallons per capita per day (GPCD) water use by 50%, its system-wide potable use by 78%, and total water use by 73%.

Buckeye GPCD

Per Capita Water Use	2003	2007	2008
Single-Family Residential ^a	123	73	61
System-Wide Potable ^b	609	176	136
System-Wide Total ^c	637	203	169

^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 town currently uses a five-tier inclining block rate for residential water accounts.

Usage Per Dwelling Unit	Cost
0–6,000 gallons	\$2.20 per 1,000 gallons
6,001–10,000 gallons	\$3.10 per 1,000 gallons
10,001–15,000 gallons	\$5.30 per 1,000 gallons
15,001–30,000 gallons	\$7.95 per 1,000 gallons
Over 30,000 gallons	\$8.18 per 1,000 gallons

The town will raise its top rate tier to \$8.42 on 07/01/2011, and subsequently to \$8.67 on July 1, 2012. Residential accounts have a base service fee of \$13.97, which represents 35% of an average customer’s monthly bill for 10,000 gallons. The slope of Buckeye’s average price curve is 0.0657, indicating that the average price of water increases slightly as consumption volume increases.

Conservation Measures

The town of Buckeye is regulated in the Phoenix Active Management Area as a large municipal provider under the Modified Non Per Capita Conservation Program. As a Tier II municipal provider, it is required to implement a public education program and has selected the following five additional, state-approved water conservation best

management practices. Buckeye started implementation of these measures in January, 2010:^{*}

- 5.2 – Water Tampering/Water Waste Ordinances
- 5.8 – Landscape Watering Restrictions
- 6.2 – Toilet Rebate Program
- 6.6 – Water-Efficient Appliance Rebate Program
- 7.5 – Implementation of Smart Irrigation Technology

Customer Rebates

The town of Buckeye offers several financial rebates to incentivize wise water use, including:[†]

- *High-efficiency toilets* – \$75 per toilet for replacing pre-1994 models, \$50 for replacing post-1994 models.
- *Clothes washers* – \$100 for an efficient front-load model.
- *Hot water recirculator* – \$75 and must include timer. An additional \$50 is available for insulating pipes, and the \$33 building permit fee is waived.
- *Smart irrigation controller* – \$100 and must use daily weather data to adjust run times.
- *Turf replacement* – \$50-\$100 per year for replacing high-water-use landscaping with Xeriscape or artificial turf.
- *Automatic water shut-off device* – \$75 and must stop flow from water main in case of major water leak.

Ordinances/Rules

On June 2, 2009, the mayor and town council of the town of Buckeye adopted a water conservation ordinance amending the town code with the following water conservation provisions (this list is not comprehensive):[‡]

Water-Efficient Landscaping[§] – Prohibitions of water-efficient landscaping are not allowed and are not

^{*} Arizona Department of Water Resources. July 29, 2009. Official notice of provider profile approval, 56-002006.0000, Town of Buckeye.

[†] Town of Buckeye, Arizona. Rebates for water-saving devices and turf replacement. <http://www.buckeyeaz.gov/index.aspx?NID=551> (accessed May 26, 2010). See also: Town of Buckeye, Arizona. 2010. Table 1: Town of Buckeye water bill credits, water conservation rebate table. <http://www.buckeyeaz.gov/DocumentView.aspx?DID=1090> (accessed May 26, 2010).

[‡] BUCKEYE, ARIZ., ORDINANCE I4-09 (JUNE 2, 2009).

[§] BUCKEYE, ARIZ., CODE § 17-17-18 (2009).



enforceable if included in private covenants, conditions, restrictions, deed clauses or other agreements between parties. This includes the use of artificial/synthetic turf.

Turf Placement* – No new natural turf is allowed in public right-of-ways or medians.

High-Efficiency Urinals† – High-efficiency urinals (< 0.5 gallons per flush) must be installed in all town owned buildings constructed after January 1, 2010.

Metered Faucets‡ – Self-closing faucets delivering no more than 0.25 gallons of water per use installed in lavatories intended to serve the transient public must be installed in lavatories of public and private facilities built after January 1, 2010.

Outdoor Irrigation Restrictions§ – Outdoor spray irrigation is not allowed from 9 a.m. to 6 p.m. from March 15 to November 14; and between 11 a.m. to 6 p.m. from November 15 to March 14.

Automatic Shutoff Nozzles for Hoses¶ – Required for all hoses used in hand-irrigation watering, car washing (including charity car washes), and other outdoor uses.

Voluntary Certification Program for Water-Efficient/ Recycling Carwash** – Car washes that receive town’s certification may advertise their certified status.

Charity Car Washes†† – Must use automatic shutoff nozzles in all hoses.

Washing of Sidewalks and Driveways‡‡ – The use of potable water to wash driveways and sidewalks is prohibited.

Construction Water Plan§§ – Developers and contractors must submit a detailed construction water plan when using groundwater for construction or dust control within the town’s service area.

Water Leaks and Waste¶¶ – Leaks or overwatering of private property that causes water to flow onto a public right-

of-way, sidewalk, driveway, or adjacent property shall be promptly repaired or corrected by the owner within seven days of notification from the town.

Education

Water Conservation Website – The town of Buckeye hosts a Water Conservation webpage with links to its Water Conservation Plan, rebate programs, desert-appropriate landscaping information, and several water saving tips.

Public Relations and Awareness – Buckeye promotes public awareness via water bills, water bill inserts, brochures, messages on the town’s webpage, newsletters, articles or messages in local newspapers, participation in EPA’s WaterSense program, and various public service announcements.

School Education – The town provides Project WET K-12 teacher education materials designed to help introduce water conservation education into the classroom. The activities and instructional materials are also appropriate for town-sponsored water conservation education events. Approximately 130 school children attend the town’s annual Public Works Week educational program.

Implementation of Conservation Measures

Buckeye just began offering rebate programs, but the town has seen good participation in its programs thus far. From January 1 through June 30, 2010, rebates were awarded for six clothes washers, three landscape conversions, and three toilet replacements. The town disbursed \$1,100 for these rebates, not including labor for pre- and post-inspections, and estimates these replacements will save 232,200 gallons in 2010.

The town participated in an EPA WaterSense-inspired “Fix a Leak Week” event where conservation staff distributed water conservation promotional material and drip gauges at the local Lowe’s and True Value Hardware stores—and True Value offered a 10% discount off leak repair supplies during the event. Staff also hosted a water conservation public event and distributed drip gauges, drip kits, dye tablets, toilet dams, and other informational materials; approximately 200 people attended the event.

* *Id.* § 17-17-17(A).
† *Id.* § 17-17-19.
‡ *Id.* § 17-17-20.
§ *Id.* § 17-17-10(A).
¶ *Id.* § 17-17-11(A).
** *Id.* § 17-17-12.
†† *Id.* § 17-17-13.
‡‡ *Id.* § 17-17-14.
§§ *Id.* § 17-17-21.
¶¶ *Id.* § 17-17-15.



Funding for Conservation

In 2008, the town of Buckeye had a conservation budget of \$39,800, approximately 1.4% of the total water utility's budget. The town utilizes two employees working part-time (25%) for its water conservation program. Each year the town spends about \$1.05 per customer on conservation programs.

Goals for Conservation Savings

The town of Buckeye has set a conservation savings goal to reduce GPCD to 125 gallons per person, including residential and nonresidential water use. (There is no specific date by which to achieve this goal).

Water Loss

In 2008, Buckeye recorded 423 AF (137.9 million gallons) of water loss, representing 6.8% of total supplies. This is the highest rate of water loss compared to 2003 and 2007. Buckeye attributes some of this water loss to construction water thefts through fire hydrants, and notes that these thefts have declined in 2009 and 2010 due to the housing market slump.

Supply-Side Efficiency Measures

Buckeye is beginning to formulate an active leak detection program, but currently just repairs leaks when they surface.

The town generally replaces meters on a five-year cycle, which was determined to be the optimum time based on previous experience of meter wear. Buckeye has replaced approximately 50 meters each year for the past several years, but anticipates gradually increasing that amount to about 500 per year in 2012, as the general age of the town's meters become older and approach 2 million gallons in usage.

Effluent Use

The town generated 2,496 AF of effluent in 2008, delivering 41% of this total for direct use. Buckeye's Tartesso recharge facility currently uses two recharge basins that percolate about 135 AF per year. This facility is permitted up to a 20,000-AF capacity and will expand as population and effluent generation increase. In some areas around Buckeye, recharge is not allowed due to high groundwater levels. In these areas, Buckeye is planning to increase direct reuse of effluent.

Buckeye is in the process of updating its Water Resource Master Plan, which will set a minimum recharge goal of 35%. For every 100 gallons of groundwater pumped by the town, a minimum of 35 gallons of effluent must be recharged.

Buckeye also is involved in a groundwater savings facility relationship with agricultural interests near by. In this partnership, the town delivers effluent to the farmers, and in exchange, pumps groundwater that would have been used by the farmers.

Additional Information

Several homeowner associations in Buckeye are involved in an irrigation efficiency pilot program sponsored by the Central Arizona Groundwater Replenishment District (CAGRDR). Twelve smart irrigation controllers have been installed for large landscapes at the HOAs, and data collection is proceeding.

The town will also be formulating a policy for solar power plants that encourages photovoltaic or dry-cooled solar compared to wet-cooled technologies because of the vastly different impacts these types of electricity generation have on water resources.