THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE AND LIFE SCIENCES
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SAVING WATER AND MONEY AT HOME IN ARIZONA: STEP 1. UNDERSTANDING WATER RATES

Summer Waters, Ronald Klawitter, Haley Paul, Jillian Hamilton

Overview

With drought lingering for over a decade in the desert southwest, and continued population growth projected, water conservation is a concern for many Arizonans. Individuals, businesses, and municipalities have all implemented measures to encourage water conservation and ensure a more sustainable water future for all of Arizona. Many municipal water providers have implemented water rate structures that reward savvy consumers who use less water at home. Although these structures can be a little difficult to understand at first, knowing how water rates are implemented is the key to unlocking savings on residential water bills. Consumers need to know the amount of water used as well as the costs associated with that water in order to begin implementing water conservation measures in a practical manner at home. This guide describes the increasing block rate structure, which is commonly used by water providers that serve residential areas in Arizona. The types of fees and measurement units associated with a typical residential water bill are also described in detail. Pima County and Maricopa County are the most populated areas of the state, so some additional information is provided for the major cities in those counties at the end of this document. The costs for potable residential water in the major cities of Maricopa and Pima Counties are provided in a table along with a worksheet that can be used to create a personalized rate structure. Use this information to determine how to maximize savings at home and do your part to conserve this precious resource.

Deciphering your water bill

The first step in deciphering your water bill is to know your water provider. Some cities treat water to drinking water standards (potable water) and deliver it directly to residents. In other cities private water companies are responsible for delivering potable water to residential areas. Raw water is untreated so it is not delivered directly to residential areas except for irrigation purposes. In Maricopa County, raw water is delivered by the Salt River Project (SRP). Residents who receive raw water from SRP receive a separate water bill that does not include the cost of potable water delivered by municipalities and water providers. Sewer fees and garbage collection fees are usually listed on a municipal water bill as well, but are not discussed herein. Some useful definitions are listed below that will help you get started figuring out your water bill.

Public Utility (water)

A public agency or political subdivision of the state that provides water for municipal, industrial, irrigation, recreation and fish and wildlife purposes to the public.

Private Water Company

An entity that provides water to users and is not a political subdivision or an entity that is established as a special taxing district.

Monthly water fees are generally divided into two categories: a service charge and a usage fee.

The **service charge** (also called a base charge) is a flat rate and is paid regardless of the quantity of water you use. These charges are designed to cover costs associated with the water distribution system.

The **usage fee** is a volume charge that is based upon how much water you use. Customers are charged in the form of a unit price, usually per 1,000 gallons. In some cases the monthly service charge includes within it the use of a specified amount of water per month and the usage fee applies after that amount is exceeded. The following simple calculation is used to determine the usage fee:

Usage fee = unit charge x volume used

This is a fairly straightforward approach to water pricing. However, water rate structures in Arizona have become more complex in order to encourage conservation, especially during times of the year when water supplies are stressed. **Tiered water rate structures** apply different prices depending on the volume of water used, resulting in incremental changes in the cost of water. A few cities also charge a **seasonal rate charge**, which applies during the summer months when demands peak. This charge increases the unit price per volume of water during a given time period. So, understanding the volume of water used in and around your home is important. While gallons are the most familiar units of measure for the general public, water providers use various units of measure, which are defined below.

K-Gallons (kilo gallons) = 1,000 gallons. For reference, this is the amount of water used during fourteen showers that last 10-minutes using a standard 5 gallon per minute shower head.

CCF (hundred cubic feet) = 748 gallons, the number of gallons in 100 cubic feet. This represents the amount of water used to wash 25 loads of laundry with a 40 gallon per load top-loading washing machine.

Acre-foot= 325,851 gallons. One acre-foot can provide water to a family of five for one year.

What is an Increasing Block Rate Structure?

Many Arizona municipalities and private water providers that serve the municipalities, use increasing block rates. This type

of tiered rate structure employs higher per-unit charges as the amount of water consumed increases. Each block represents a volume of water that corresponds to a price tier. Well-designed increasing block rate structures encourage water conservation by allowing households to purchase water for essential uses at an affordable price per unit, and increase the cost of water as the volume increases to discourage non-essential uses. Essential uses include the amount of water that would be necessary to meet basic human needs such as washing, bathing, cooking, and drinking. Increasing block rate structures use financial incentives to curb excessive water use by associating higher rates with water use that is considered non-essential for basic human needs. For example, water used to support lush landscaping and swimming pools is typically considered non-essential and is subject to higher usage fees under an increasing block rate structure. Consumers who opt to continue water intensive practices will pay higher prices as the volume consumed triggers the next pricing tier. Most block rate structures have multiple price tiers that apply to essential, excessive, and wasteful consumption. Steeper increments between price tiers create stronger incentives to conserve water. Seasonal rate structures offer further incentives to conserve. Because a majority of the increased water consumption in summer months goes to nonessential uses, an effective seasonally adjusted rate structure targets higher blocks of water usage. The example in Figure 1 shows how a water usage fee can be calculated for a household in the city of Surprise.

Calculating water charges for 14,000 gallon use shown in Figure 1:

Water usage fee =$1.60 x (use in Block 1) + $3.15 x (use in Block 2) + $3.67 x (use in Block 3)

Water usage fee calculation= $1.60 x (10) + $3.15 x (4)
Total water usage fee = $28.60

Note: the price for each block is calculated per 1,000 gallons and there is no usage in Block 3.

Using the example rate structure above in Figure 1, a household using 14,000 gallons a month would be charged a water usage fee of $28.60. While reducing their use by 1,000 gallons would save the household $3.15 on their monthly water bill, making a reduction of 5,000 gallons would drop this user into block 1 rates for all use, reducing the bill by $14.20 per month. To determine

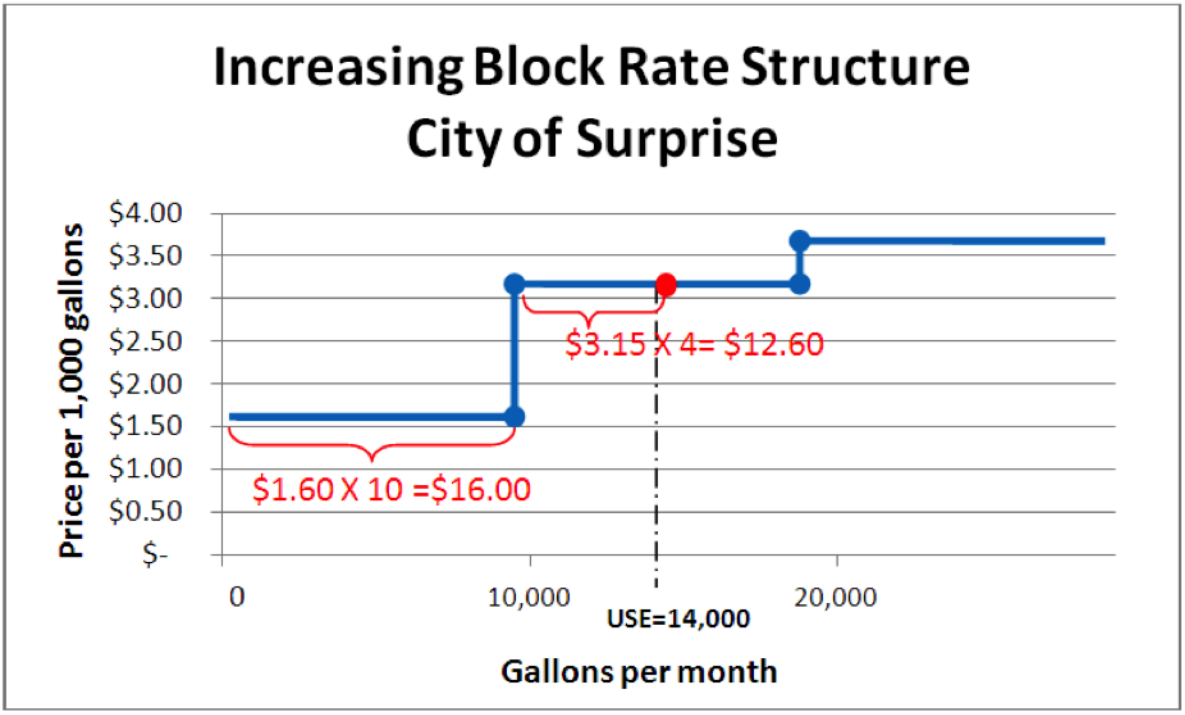


Figure 1: Example of an increasing block rate structure: City of Surprise rate 2013.

Service Fee = $19.39	Unit Price (Per 1,000 gallons)	Volume (Gallons)
Block 1	$1.60	0 to 10,000
Block 2	$3.15	10,001 to 20,000
Block 3	$3.67	over 20,000

In order to save money consumers need to know how much water they are using.

Wasteful outdoor watering practices can be costly.

how much water you need to conserve to build your rainy day fund, simply locate the amount of water you are using on your monthly bill and use the tools provided in Appendix A.

What block are you in?

If your water provider employs an increasing block rate structure, look at your most recent water bill to find out which block you consume in and which corresponding rate applies. There may be more than one rate applied depending on how much water you use and the type of rate structure in place. Your recent bill will tell you how much water you are using per month. Water usage can also be determined by looking at your water meter. Your water provider's rate structure can usually be found online if it is not listed in this guide. The worksheet at the end of this document will help you pull the information together. Keep in mind that water rates are subject to change.

How you can save

Because outdoor water use can account for up to 70% of household water consumption in the Phoenix area, examining your options for decreasing water use outdoors may lead to substantial monetary savings. Making small changes to the way you use dishwashers and clothing washers can help you reach a water reduction goal if you do not have an outdoor area to maintain. For example, running dishwashers and clothes washers only when they are full could save up to 1,000 gallons of water per month. Making changes to landscapes could result in more substantial savings and keep you from paying higher block rates. Adjusting irrigation schedules seasonally can reduce landscape watering by 30-50% while still maintaining healthy plants. Check for leaks indoors and out. A leaky toilet can waster 200 gallons a day and a single broken sprinkler can waste 25,000 gallons of water during the summer season!

Being aware of how your water provider charges for water and knowing which block you are in can help you determine which water-saving practices will achieve greater financial savings!

Why it all matters

Water rate structures have proven to be an effective tool for promoting water conservation. Understanding the water rate structure used by your local water utility is the first step to saving water and saving money. If your water provider employs an increasing block rate structure, reducing your consumption to a lower block may result in substantial savings on your monthly bill. National trends indicate that water rates have consistently increased over the last 12 years, and this is likely to continue as water resources become more valuable. Most outdoor water use is non-essential and subject to higher rates under an increasing block rate structure, which is common in Arizona. Fortunately, there are plenty of options for outdoor water conservation. Rainwater harvesting, removing turf, installing a low-water-use landscapes, adjusting your irrigation timer seasonally, or installing a smart controller can save 20-75% of outdoor water use and therefore can lead to substantial water savings over the course of a year. Contact your local municipality, water provider, or Cooperative Extension office to find out more about the many ways to save water and money at home in Arizona!

Appendix A

Table 1. Water Rates for Single Family Residential Homes with 3/4 inch Meters in the Major Municipalities in Maricopa County and Tucson*

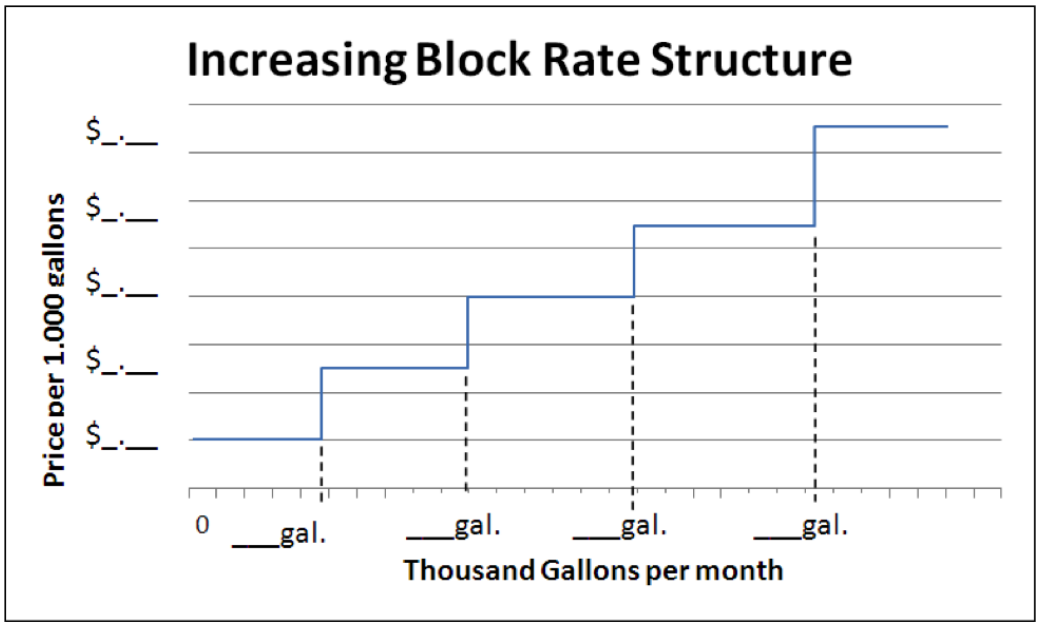
City	Rate Structure	Public/Private	Service Fee	Usage Fee (price per 1,000 gallons)
Apache Junction	Increasing block rate	Private Arizona Water Company	$17.52	$2.28 0 to 3,000 $2.85 3,001 to 10,000 $3.57 over 10,000
Avondale	Increasing block rate	Public	$10.50	$0.94 1,000 to 4,000 $1.44 5,000 to 8,000 $2.16 9,000 to 12,000 $3.30 over 13,000
Buckeye	Increasing block rate	Public	$13.97	$2.20 0 to 6,999 $3.19 7,000 to 10,999 $5.46 11,000 to 14,999 $8.19 15,000 to 30,000 $8.67 over 30,000
Cave Creek	Increasing block rate	Public	$38.40	$3.08 0 to 8,000 $4.13 8,001 to 20,000 $5.44 20,001 to 30,000 $7.02 30,001 to 50,000 $9.12 over 50,000
Chandler	Increasing block rate (summer and winter season)	Public	$10.11	$1.60 0 to 10,000 $1.98 10,001 to 20,000 $2.48 20,001 to 60,000 $3.09 over 60,000
El Mirage	Increasing block rate	Public	$17.97	$3.23 0 to 5,000 $3.55 5,001 to 15,000 $3.92 15,001 to 25,000 $4.30 over 25,000
Gilbert	Increasing block rate	Public	$14.63	$1.08 0 to 10,000 $1.14 10,001 to 20,000 $1.52 20,001 to 30,000 $1.80 over 30,000
Glendale**	Increasing block rate	Public	$12.30 Plus $0.41/day	$2.14 0 to 6,000 $2.68 7,000 to 15,000 $3.76 16,000 to 30,000 $5.27 over 31,000
Goodyear	Increasing block rate	Public	$10.23	$1.18 0 to 6,000 $2.36 6,001 to 12,000 $3.54 12,001 to 30,000 $5.69 over 30,000
Litchfield Park	Increasing block rate	Private Liberty Utilities	$10.20	$1.00 1,000 to 3,000 $1.91 3,001 to 9,000 $3.03 over 9,000
Mesa	Increasing block rate	Public	$21.14 (includes 3,000 gallons)	$2.65 0 to 12,000 $3.97 12,001 to 24,000 $4.44 over 24,000
Paradise Valley	Increasing block rate	Private EPCOR	$26.16	$1.05 0 to 15,000 $2.20 15,001 to 40,000 $2.75 40,001 to 80,000 $3.23 80,000 to 400,000 $3.23 over 400,000
Peoria	Increasing block rate	Public	$15.54	$1.00 1,000 to 4,999 $2.59 5,000 to 10,999 $3.66 11,000 to 20,000 $4.00 over 20,000

City	Rate Structure	Public/Private	Service Fee	Usage Fee (price per 1,000 gallons)
Phoenix	Seasonally Differentiated Increasing Block Rate	Public	$4.45	$0.51 0 to 4,488 (Oct-May) $4.33 over 4,488 (Dec-Mar) $5.01 over 4,488 (Apr, May, Oct, Nov) $0.51 0 to 7,480 (Jun-Sep) $5.55 over 7,480 (Jun-Sep)
Queen Creek	Increasing block rate	Public	$18.33 (includes 1,000 gallons)	$1.77 1,000 to 10,000 $2.37 10,001 to 20,000 $2.96 over 20,000
Scottsdale	Increasing block rate	Public	$14.00	$1.65 0 to 5,000 $2.85 5,001 to 12,000 $3.45 12,001 to 40,000 $4.50 40,001 to 70,000 $5.00 over 70,000
Sun City	Increasing block rate	Private EPCOR	$8.78	$0.73 0 to 1,000 $1.07 1,001 to 3,000 $1.36 3,001 to 9,000 $1.65 9,001 to 12,000 $2.02 over 12,000
Surprise	Increasing block rate	Public	$19.39	$1.60 0 to 10,000 $3.15 10,001 to 20,000 $3.67 over 20,000
Tempe (includes Town of Guadalupe)**	Increasing block rate	Public	$15.10	$1.90 0 to 8,000 $2.38 8,001 to 15,000 $2.98 15,001 to 25,000 $3.73 over 25,000
Tolleson	Increasing block rate (first tier is flat rate)	Public	$14.00	$12.85 for up to 3,000 $3.72 3,001 to 10,000 $3.93 10,001 to 30,000 $4.70 over 30,000
Tucson	Increasing block rate	Public	$9.97	$1.29 0 to 7,480 $2.68 7,481 to 11,220 $6.87 11,221 to 22,440 $11.04 over 22,440
Wickenburg	Increasing block rate	Public	$11.04 (includes 4,000 gallons)	$1.09 5 to 10,000 $1.49 11,000 to 20,000 $2.69 over 20,000

*Rates are current as of November, 2013 and subject to change.
**Inside city limits.

Worksheet 1: Increasing Block Rate Structure Worksheet

Using the information in Table 1, you can fill in the blanks of this worksheet using the rate structure for your water provider. The result will be a personalized rate structure for your reference.



Service Fee =$19.39	Unit Price (Per 1,000 gallons)	Volume (Gallons)
Block 1	$	to
Block 2	$	to
Block 3	$	to
Block 4*	$	to
Block 5*	$	to

*if your water provider does not include more than 3 blocks, you can ignore block 4 and block 5

Calculating water charges for your use:

Water usage fee=

_____	X	_____	+	_____	X	_____	+	_____	X	_____	+	_____	X	_____	+	_____	X	_____
Block 1 fee		Block 1 Use		Block 2 fee		Block 2 Use		Block 3 fee		Block 3 Use		Block 4 fee		Block 4 Use		Block 5 fee		Block 5 Use

Your water usage fee = _____

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College of Agriculture and Life Sciences
Cooperative Extension
The University of Arizona

The University of Arizona
College of Agriculture and Life Sciences
Tucson, Arizona 85721

Summer Waters
Assistant Agent, Water Resource

Ronald J. Klawitter
Graduate Assistant, Agric. & Resource Economics

Haley Paul
Water Conservation Specialist, Town of Gilbert

Jillian Hamilton
Green Fund Extern in 2012

Contact:
Summer Waters
swaters@cals.arizona.edu

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