Colorado Springs Utilities
It's how we're all connected

Date: February 18, 2015

To: Kevin Reidy
Water Conservation Technical Specialist
Colorado Water Conservation Board
1313 Sherman Street, Room 718
Denver, CO 80203

From: Jerry Forte, P.E. Colorado Springs Utilities, Chief Executive Officer

Re: Colorado Springs Utilities 2015 Water Use Efficiency Plan

Colorado Springs Utilities respectfully submits our 2015 Draft Water Use Efficiency Plan in accordance with §37-60-126 C.R.S and the guidelines set forth by the Colorado Water Conservation Board, Office of Water Conservation and Drought Planning. The plan was prepared in its entirety by Colorado Springs Utilities' water conservation staff.

In accordance with the submittal cover letter checklist, retail water delivery for each of the past five years is provided as follows:

	Acre-feet	Population served
2010	81,808	445,684
2011	81,759	449,482
2012	87,961	453,375
2013	66,418	458,051
2014	70,259	464,452

Utilities delivers wholesale water to Fort Carson Army Base and the U.S. Air Force Academy. Utilities also provides water to Cascade Metropolitan District and supplemental water to Security Water District.

The water supply portfolio is made up of transmountain sources, local sources, water reuse and exchanges, and groundwater. The water supply portfolio is described in the *Water System Profile* section.

In accordance with the Code of the City of Colorado Springs, Utilities published the draft plan from October 20, 2014 through December 30, 2014. More than fifty stakeholder groups were directly notified about the Plan and public comment and review period. Stakeholder meetings were held October 31st and November 10th, 2014. Comments are addressed in *Appendix A - Public Comments*.

2855 Mesa Road
P.O. Box 1103, Mail Code 1300
Colorado Springs, CO 80947-1300

Phone 719/668-4555
Fax 719/668-4599
http://www.csu.org/xeri

The 2015 Draft Water Use Efficiency Plan reflects the unique characteristics and the core values of the Colorado Springs community. It further demonstrates Utilities' long-standing and deep-rooted commitment to water conservation and efficient water use.

Sincerely,

Jerry Forte, P.E. Chief Executive Officer
Colorado Springs Utilities
121 South Tejon Street, Mail Code 950
Colorado Springs, CO 80903

Contact information:

Ann Seymour
Colorado Springs Utilities
Manager, Water Conservation
2855 Mesa Road
Colorado Springs, CO 80904
719-668-4556 phone
719-668-4599 fax

Colorado Springs Utilities

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2015

WATER USE EFFICIENCY PLAN

Water Services Division
Planning, Engineering and Resource Management Department
Water Conservation Section

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ACKNOWLEDGEMENTS

Colorado Springs Utilities acknowledges the citizens of Colorado Springs for their long-standing commitment to water conservation. Utilities extends its appreciation to those citizens who took the time to respond to customer surveys and participate in advisory groups.

The Water Conservation Section wishes to acknowledge those within the Colorado Springs Utilities organization who contributed to the Plan. Specifically, we extend our appreciation to those subject matter experts and core team members who lent their time and expertise to this effort. Without their commitment, this Plan would not have been possible.

The 2015 Water Use Efficiency Plan will be reviewed annually, with a formal update every five to seven years. Ideas and suggestions for future revisions should be submitted to:

Colorado Springs Utilities
Attn: Water Use Efficiency Plan
2855 Mesa Road
Colorado Springs, CO 80904
wuep-comments@csu.org

TABLE OF CONTENTS

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EXECUTIVE SUMMARY

Colorado Springs Utilities (Utilities) is a community-owned utility that provides electricity, natural gas, water and wastewater services to the citizens of Colorado Springs and surrounding communities. The water service area covers 195 square miles and includes Colorado Springs, Green Mountain Falls and Chipita Park.

The community has a strong military presence and Utilities supplies water to Fort Carson Army Base, Peterson Air Force Base, the North American Air Defense Command and the United States Air Force Academy. Utilities also provides water to Cascade Metropolitan District and supplemental water to Security Water District.

In 2014, Springs Utilities delivered nearly 23 billion gallons of water to approximately 464,000 people through 139,000 meters. Ninety-one percent of the meters are single-family residential. Single-family residential use comprises almost half (48%) of annual use. The other half (52%) is comprised of commercial, military, multi-family, wholesale and other use.

From 2002 through 2014, system-wide water use averaged 164 gallons per capita per day. During the same period, single-family residential water use averaged 94 gallons per capita per day. From 2002 through 2005 and in 2013, water use declined due to mandatory water restrictions. Water use has remained relatively low since water restrictions were lifted in late 2005.

Utilities has 100,000 acre-feet per year of developed water supplies as of 2014, and 52,000 acre-feet per year of developing and undeveloped water supplies. The first phase of the Southern Delivery System (SDS) project will be operational in 2016. The estimated increase in firm yield from the SDS project (all phases) is about 28,000 AF.

Utilities manages programs that address both supply-side and demand-side water conservation measures. Supply-side measures optimize water resources through water reuse systems and distribution system efficiency. Demand-side measures promote water conservation and efficient water use through education, rates, rebates, audits and regulations.

The water conservation goals established for the 2015 Water Use Efficiency Plan include implementing cost-effective water use efficiency measures which will be utilized as source of supply for future generations in Colorado Springs and maintaining low residential use per capita, specifically working with large users who have not participated in programs. For the commercial sector, the primary goal is to address inefficient use using industry-specific benchmarking, performance-based incentives and comprehensive water use evaluations.

Utilities will continue to develop and maintain collaborative relationships that encourage water

conservation and efficient water use throughout the region. Utilities aims to maintain a reputation as a *national* leader in water conservation and efficient water use.

Utilities went through the rigorous process of identifying and selecting water conservation programs for implementation. Conservation staff evaluated conservation measures by category (i.e., education, rates, rebates, audits and regulations) and by market (i.e., indoor vs. outdoor, residential vs. commercial, new vs. existing construction).

Utilities' long-standing emphasis on education has contributed to low residential use per capita. As such, implementation strategies include maintaining a strong focus on education. In addition, Utilities will continue to encourage conservation through block rates for residential customers and seasonal rates for commercial customers.

In the residential sector, Utilities will introduce programs primarily focused on improving landscape water use efficiency and improving landscape health. Utilities will demonstrate an increased focus on water use efficiency in the commercial sector, introducing programs addressing both indoor and outdoor use.

Utilities will also propose a water waste ordinance and residential landscape establishment permits to improve the health and water use efficiency of new landscapes. Utilities will work with builders, developers and green industry professionals to develop the program specifications and procedures.

When added to "passive" savings acquired through the 1992 federal EPAct, water use efficiency savings are projected to be 6,000 million gallons, or 17.8% of the 2007 forecast, in 2017. The measures proposed in this Plan would elevate total conservation and efficiency savings, passive plus active, to 19.6% by 2021.

In summary, Utilities plans to develop and manage a portfolio of twenty-two water conservation programs. Implementation of new programs will begin as early as 2015. For each individual program, a detailed implementation plan will be developed. Utilities will continue to involve the public through customer surveys and working groups.

During the development of the 2015 Water Use Efficiency Plan, Utilities made a concentrated effort to involve citizens, customers and other interested parties. Meetings were held beginning in October, 2014. The draft plan was made available for public review and comment from October 20, 2014 through December 30, 2014.

The 2015 Water Use Efficiency Plan was authorized by the Chief Executive Officer on February 25, 2015 and approved by the Colorado Water Conservation Board (CWCB) Office of Water Conservation and Drought Planning on {to be determined}, 2015. Utilities will monitor the Plan on an annual basis, with a formal update every five to seven years.

INTRODUCTION

The Colorado Water Conservation Board (CWCB) through the Office of Water Conservation and Drought Planning requires that water providers with total demand of 2,000 acre-feet or more develop and implement plans that encourage customers to use water efficiently. This requirement was first established through the Water Conservation Act of 1991. In compliance with the Act of 1991, Utilities submitted a Water Conservation Plan to the State of Colorado that was reviewed and accepted on March 23, 1998.

During the 2004 legislative session, the State of Colorado revised the minimum requirements of the Water Conservation Act of 1991. In March 2006, Utilities was notified by the CWCB that Utilities' plan was in need of revision to ensure compliance with the Water Conservation Act of 2004 and to include the following new plan elements:

- The steps the covered entity used to develop, and will use to implement, monitor, review and revise its water conservation plan;
- The time period, not to exceed seven years, after which the covered entity will review and update its adopted plan;
- Either as a percentage or in acre-foot increments, an estimate of the amount of water that has been saved through a previously implemented conservation plan and an estimate of the amount of water that will be saved through conservation when the plan is implemented.

In compliance with the Act of 2004, Utilities submitted an updated Water Conservation Plan to the State of Colorado that was reviewed and accepted on January 30, 2008. This Water Conservation Plan expired January 29, 2015.

In addition to the CWCB requirements, other factors that drive the need for an updated Plan include:

- Increased public awareness of the need to conserve due to regional drought and five years of water restrictions since 2002
- Higher customer expectations regarding Utilities' role in promoting water conservation
- Changes in statewide water appliance standards and advancements in water-efficient technologies
- Continued population growth and increased competition for state and regional water resources
- An updated Integrated Water Resource Plan is being written concurrently

In July of 2012, the CWCB introduced a new *Water Conservation Plan Development Guidance Document* and *Model Plan* for water providers interested in developing what are now referred

to as water efficiency plans. The 2015 Water Use Efficiency Plan (Plan) generally follows the Guidance Document and meets or exceeds all statutory requirements.

The scope of the Plan provides an overview of water use, the current water demand forecast and the water system, including ongoing system improvements. The Plan further describes how Utilities will implement and monitor individual programs. The Plan addresses the process by which Utilities identified, screened and selected programs for implementation. Finally, includes a statement of water conservation goals and an analysis and description of selected programs.

This Plan is not an integrated resource plan. However, it is being prepared in close coordination with an Integrated Water Resources Plan (IWRP) being developed concurrently. The IWRP is a long-term strategic plan that incorporates water supply and demand, water quality, infrastructure reliability, environmental protection, water reuse, financial planning, energy use, regulatory and legal concerns, and public participation. When the IWRP is completed in mid-2015, Utilities will compare the cost and yield of supply-side improvements and additions to determine the role of water conservation and demand-side activities.

This Plan does not address long-range plans related to water supply, delivery or treatment. Instead, the Plan focuses on customer-side or demand-side activities, such as education, rates, rebates, audits, regulations and distribution system water loss. Water supply plans, including drought response plans, are available upon request from Utilities.

The 2015 Water Use Efficiency Plan is a high-level strategic plan, designed to satisfy the diverse interests of multiple stakeholders. The plan is also designed to provide a foundation for Utilities to make sound business decisions related to water conservation and efficiency. The Plan is not intended to provide detail for any one program. Individual programs will be refined during the implementation phase. Many programs will be introduced as pilot projects during the first year of implementation in order to work through program details.

In summary, the Plan reflects the unique characteristics and the core values of the Colorado Springs community. It further demonstrates Utilities' long-standing and deep-rooted commitment to water conservation and efficient water use.

WATER SYSTEM PROFILE

Water Supply Portfolio

Water has never come easy for Colorado Springs. Early settlers found that local water sources would not meet future water demands and they began to look elsewhere. Through long-range planning and development of water rights, Colorado Springs grew from a small mountain town to the thriving community it is today. The city has a diverse water supply portfolio that maximizes water rights from multiple basins and sources.

Colorado Springs is dependent on local systems along the Front Range, and transmountain systems bringing water across the Continental Divide. Snow that falls in the winter melts in the spring, providing fresh water to the citizens of Colorado Springs. The water supply portfolio is made up of local sources, transmountain sources, water reuse and exchanges, and groundwater.

The sum of all developed and undeveloped water supplies is approximately 152,000 acre-feet firm yield per year.[1] The term *firm yield* is the maximum amount of demand our water supply system can continuously meet without any shortage. *Developed water supplies* are those water rights that Utilities exercises with fully developed systems and infrastructure. *Undeveloped water supplies* are those water rights that Utilities will exercise in the future with planned infrastructure improvements. Utilities has 100,000 acre-feet per year of developed water supplies as of 2014, and 52,000 acre-feet per year of developing and undeveloped water supplies. The first phase of the Southern Delivery System (SDS) project will be operational in 2016. The estimated increase in firm yield from the SDS project (all phases) is about 28,000 AF.

Colorado Springs is in the process of updating its long-term water plan (Integrated Water Resource Plan or IWRP). This planning effort will be completed in 2015. Part of the IWRP analysis will include a new estimate of system yield, stated in terms of reliability and acceptable risk as opposed to the “firm yield” concepts of the past.

Local Sources

The collection systems on and around Pikes Peak are known as the Local Collection System. Development of the Local Collection System dates back to 1871 when the city bought rights to the El Paso Canal which delivered water from Fountain Creek to the newly incorporated city. Over the next decades, the city developed rights on Ruxton Creek and Monument Creek and in 1891, acquired the rights to the seven lakes on the south slope of Pikes Peak.

In the early 1900s, the city acquired private property rights on North and South Catamount, North and South Cascade and the Crystal creeks on the north slope of Pikes Peak. In the 1930s,

[1] Yield and supply data taken from the 2010 Official Colorado Springs Firm Yield Estimates and History document.

Crystal and South Catamount reservoirs were built. In 1948, the city obtained the rights to the original Northfield System, which is located west of the Air Force Academy.

Today, the local collection system includes diversions from Fountain Creek, Monument Creek and many of their tributaries. The local collection system also includes seventeen reservoirs.

Transmountain Sources

A *transmountain* system conveys water across the Continental Divide. Utilities' transmountain collection systems, shown in Figure 1 below, include diversions from the Blue River, Eagle River, Roaring Fork River and the Fryingpan River. Development of the first transmountain system dates back to the 1950s with the Blue River Project. The Blue River Collection System diverts water from the headwaters of the Blue River above Breckenridge, and from the headwaters of the Middle Fork of the South Platte Rivers above Fairplay.

In the 1960s, Colorado Springs and Aurora jointly developed the Homestake Project. The Homestake System collects water from the headwaters of Homestake Creek. Homestake creek is a tributary to the Eagle River which in turn flows into the Colorado River near the town of Dotsero. Utilities and Aurora each own fifty percent of this system.

The Twin Lakes Collection System diverts water from the headwaters of the Roaring Fork River just east of Aspen and from Lake Creek in the Upper Arkansas River Basin. The Twin Lakes Reservoir Company owns and operates the Twin Lakes Collection System. Utilities acquired shares in the company in the 1970's and currently owns fifty-five percent.

The Fryingpan-Arkansas (Fry-Ark) Project provides water through its West Slope collection system. This Collection System diverts water from the headwaters of the Fryingpan River and from Hunter Creek, a tributary of the Roaring Fork River. The Fry-Ark Project is owned and operated by the United States Bureau of Reclamation. The Southeastern Colorado Water Conservancy District holds the water rights. Utilities receives about seventeen percent of Fry-Ark Project water.

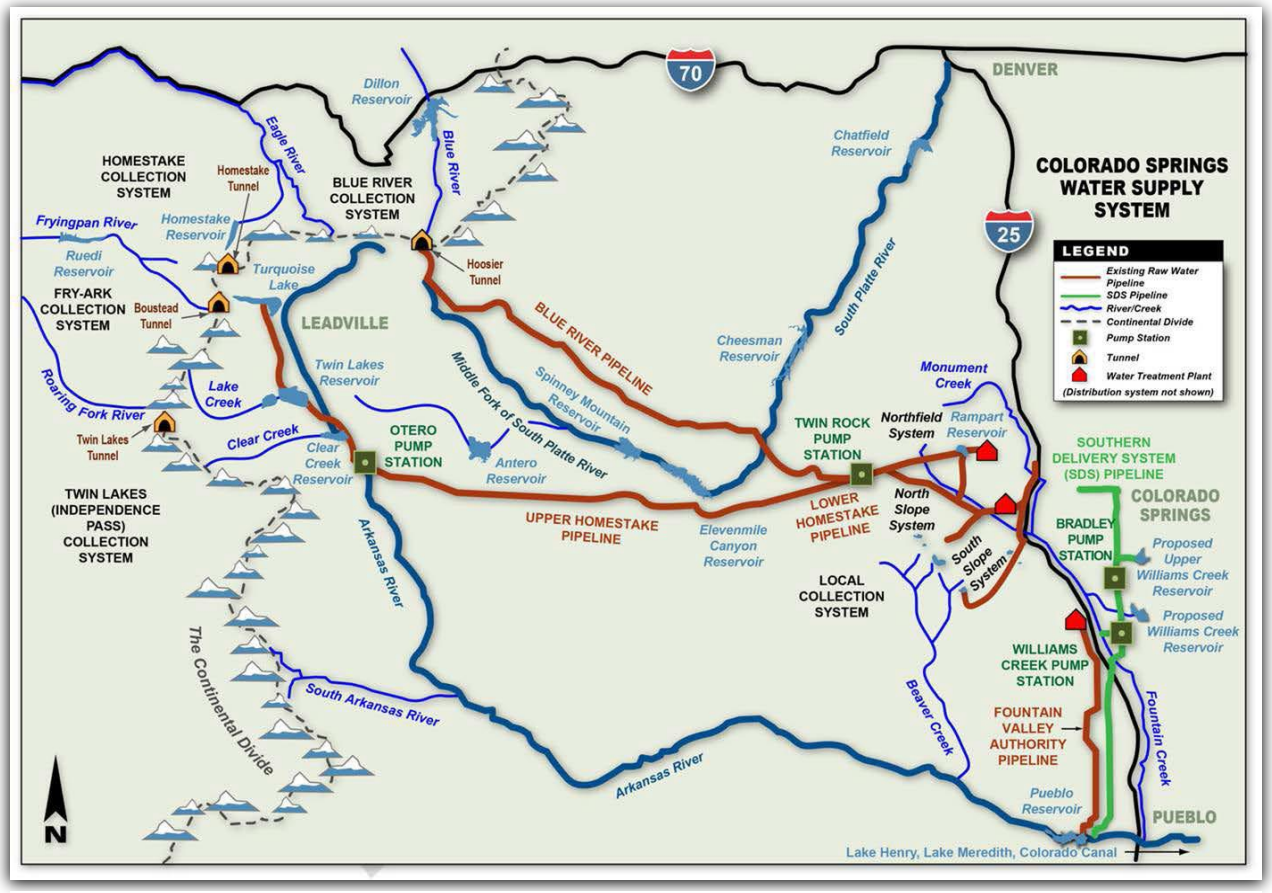

Figure 1: Our raw water collection systems span some 200 miles

Colorado Canal System

The Colorado Canal System is a canal and reservoir system on the Arkansas River in Crowley County historically used for agricultural irrigation. In the 1980s, Colorado Springs and other municipalities purchased shares in this system and converted the agricultural (consumptive) use to municipal use. Springs Utilities now owns about 54 percent of the Colorado Canal System.

Water Reuse and Exchanges

Under Colorado water law, certain water types can be "used and reused to extinction", or used, reused, and successively used until fully consumed. These include transmountain water imported, transferred agricultural consumptive use water, and certain types of groundwater. Utilities quantifies reusable return flows discharged from the wastewater treatment plants and return flows resulting from reusable water used for outside irrigation. These reusable return flows are used by Utilities in the non-potable system, via exchange or through augmentation of groundwater pumping. A *return flow* is the unused portion of water that returns to a stream after the initial, beneficial use.

Water exchanges are a common practice administered by the State Engineer's Office to move water to an upstream location by releasing an equal amount at a downstream location. This water exchange allows Utilities to move water to upstream locations, such as the Local Collection System, Pueblo Reservoir and Upper Arkansas River reservoirs, for delivery to Colorado Springs' Water System. Reuseable waters held in the Colorado Canal System are moved upstream using water exchanges.

Source	Acre-feet	Million gallons
Local exchanges	2,638	859
Pueblo Reservoir exchanges	13,679	4,457
Total	**16,317**	**5,316**

Table 1: Pueblo Reservoir Exchanges - 2013

Non-potable water is water used for municipal purposes that has not been treated to drinking water standards. Non-potable water can be in the form of reclaimed water, raw surface water or groundwater. Colorado Springs began delivering reclaimed water to parks, cemeteries, golf courses and commercial properties in 1961. Nonpotable water is also used to generate power at Drake Power Plant. In 2013, approximately 9,151 acre-feet per year came from non-potable sources.

Source	Acre-feet	Million gallons
Reclaimed water	3,682	1,199
Raw surface water	1,409	459
Groundwater	4,170	1,359
Total	**9,151**	**2,969**

Table 2: Non-potable Water by Source - 2013

Groundwater

Groundwater is beneath the earth's surface in the crevices of sand, gravel and rock formations or layers called aquifers. Groundwater sources include wells owned by Utilities in the Denver Basin aquifers, on Clear Spring Ranch, and wells in the shallow alluvial aquifers throughout the water service area. Colorado Springs also provides augmentation services for customer owned-and-operated wells within the water service area. In 2013, approximately 4,170 acre-feet of non-potable water came from groundwater sources. In addition, 744 acre-feet of groundwater was used in the potable system.

Water Delivery Systems

The Utilities water system spans nine counties and includes twenty-five raw water reservoirs and two hundred miles of raw water pipeline. Locally, Utilities operates and maintains five water treatment plants, thirty-eight treated water storage facilities, 2,300 miles of distribution

mains and twenty-seven pumping stations.

Water currently is delivered from various water sources to the community through four major systems – the Homestake Pipeline, the Blue River Pipeline, the Fountain Valley Pipeline, and the local systems. The maximum delivery capacity of each is listed in Table 3. The water delivered and used to meet customer demands is significantly less than the maximum delivery capacity of the water systems. This is due to:

- the limitations and complex interactions of water rights;
- hydrological conditions and physical availability of water in both amount and time;
- the use of storage facilities;
- limitations of demand in both amount and time; and
- competition among supplies for limited delivery infrastructure.

Delivery System	Maximum capacity	
	acre-feet/yr	mgd
Homestake Pipeline	76,000	68
Blue River Pipeline	22,500	20
Fountain Valley Pipeline	14,500	13
Local Systems[2]	47,000	42
SDS System (Phase 1 operational in 2016)[3]	56,000	50

Table 3: Water Delivery Capacity

Potable Water Treatment Facilities

Colorado Springs Utilities owns and operates several water treatment plants. The Mesa Water Treatment Plant was constructed in 1942 to treat water from the Pikes Peak collection system. The Pine Valley Treatment Plant was completed in 1967, and the McCullough Water Treatment Plant was completed in 1996. Utilities has added or acquired smaller water treatment plants and developed groundwater supplies over the past forty years to supplement system capacity and flexibility. The capacity for each of these water treatment plants is listed in Table 4.

The water treatment facilities have a sustained, rated capacity of 216.8 mgd and a peak capacity of 233.8 mgd. The *sustained rated capacity* is the maximum rate at which water can be treated continuously as approved by the State Health Department. The *peak capacity* is the maximum rate at which water can be moved through the plant for a short period of time.

[2] Due to the complex nature of the local system consisting of multiple pipelines with varying capacities, the maximum capacity listed is limited to the Mesa Plant treatment capacity.
[3] SDS Project delivery capacity at full build out (all phases) will be 78 MGD, or 87,500 acre-feet/yr.

Facility	Rated Capacity (mgd)	Peak Capacity (mgd)
Pine Valley	84.0	92.0
McCullough	75.0	75
Mesa	42.0	50.0
Fountain Valley	12.8	11.9
Groundwater	1.5	2.0
Ute Pass	1.5	2.0
Total	**216.8**	**233.8**

Table 4: Water Treatment Capacity

Water treatment facilities are built and managed according to peak day demand. The highest peak day on record occurred on July 7, 2001 at 182 mgd. Although the 2001 average day demand was 83 mgd, peak day demand was over two times that amount. This is due to the large fluxuations in seasonal water use patterns.

During the summer months, treatment facilities may be at or near full capacity while in winter months, some treatment facilities are taken offline for maintenance. Water conservation and efficiency programs that address peak use can help reduce the ratio between average day demand and peak day demand (demand factor). Table 5 shows annual demand factors are more than two in most years.

Year	Maximum Day (MD)	Average Day (AD)	Demand Factor (MD/AD)
1997	164.4	67.3	2.44
1998	176.2	76.0	2.32
1999	158.6	74.3	2.13
2000	163.5	83.8	1.95
2001	182.4	83.5	2.19
2002	140.5	75.0	1.87
2003	143.3	67.3	2.13
2004	140.9	64.6	2.18
2005	154.1	71.9	2.14
2006	151.2	72.2	2.09
2007	146.9	70.0	2.10
2008	154.2	75.7	2.04
2009	123.8	64.9	1.91
2010	148.5	73.0	2.03
2011	147.0	73.0	2.01
2012	159.8	78.5	2.03
2013	117.4	59.3	1.98

Table 5: Maximum Day/ Average Day Demand Factors (mgd)

One of the biggest challenges in water treatment is population growth and a community's need for additional treatment capacity to support peak day demand. Other challenges include increasingly stringent drinking water regulations and aging infrastructure.

Treated Water Distribution System

Colorado Springs Utilities' water distribution system consists of 36 treated water storage facilities, 2,042 miles of distribution mains and 26 pumping stations. The system is generally a gravity system that extends eleven miles from west to east and sixteen miles from north to south. Areas not served by gravity are served by pumped service.

Within the service area, ground elevations range from 7,800 feet on the west side to 5,750 feet on the south side. Because of the wide range in ground elevations, there are five major pressure zones across the city. Each zone has a different demand factor due to variations in land use, soil type and customer usage. Water conservation programs targeted at high-use areas can help reduce peak day demand, particularly in areas with high peaking factors. Table 6 shows the five pressure zones with varying demand factors.

Pressure zone	**Demand Factor (MD/AD)**
Briargate	2.65
Templeton	2.65
Northfield	2.50
Highline	2.20
Lowline	2.00
System Average	**2.35**

Table 6: Water Distribution Pressure Zones

Water distribution facilities must be built to meet peak day demand. For planning purposes, Utilities uses a demand factor of 2.35 since there is a ten percent probability of being exceeded in any given year (90% non-exceedance).

Colorado Springs, like many municipalities across the country, has an aging water distribution system. The water distribution system consists of over 2,000 miles of underground pipe that has been installed at different times over the past seventy years. Maintaining and operating this aging infrastructure is becoming more costly with each passing year.

In some situations, aging pipe can fail due to corrosion, material failure, ground movement and water pressure. In other situations, the pipe is undersized for current standards and does not meet fire flow requirements. Some of these mains are located in alleys and other areas with limited access which makes repair and maintenance difficult, if not impossible.

Proposed Facilities

Utilities develops and maintains long-range plans for all water system facilities. Specific to water supply, Utilities uses an integrated resource approach to plan for facility improvements and additions.

This Plan is not an integrated resource plan. As such, it does not consider eliminating, reducing or postponing future water and wastewater system capacity through conservation. Instead, conservation serves the important role of extending the capacity of existing and future facilities. In addition, conservation serves to educate customers about the value of water and helps protect and preserve environmental resources.

Although the Plan is not itself an integrated resource plan, it is being prepared in close coordination with an Integrated Water Resources Plan (IWRP) being developed concurrently by Utilities. The IWRP is a long-term strategic plan for providing a reliable, sustainable water supply to Utilities' customers in a cost-effective manner. It is a holistic approach to water resource planning that incorporates water supply and demand, water quality, infrastructure reliability, environmental protection, water reuse, financial planning, energy use, regulatory and legal concerns, and public participation.

The IWRP includes a detailed assessment of future demands, assumed long-term conservation effectiveness, and demand management as a short-term water shortage strategy. When the IWRP is completed in mid 2015, Utilities will compare the cost and yield of supply-side improvements and additions to determine the value of water conservation and demand-side activities. In the interim, Utilities has provided a qualitative description of major improvements planned for the next few years.

Southern Delivery System

Colorado Springs Utilities' 1996 Water Resource Plan identified four major components to help meet future water needs for Colorado Springs including conservation, non-potable water development, existing system improvements and a new major water delivery system. The Southern Delivery System -- named for the route in which water would be transported -- was identified as the major delivery system and identified as the "Preferred Alternative" in the National Environmental Policy Act Environmental Impact Statement concluded in December 2008.

Southern Delivery System (SDS) is a regional water project that transports stored water in Pueblo Reservoir to Colorado Springs and its project partners, Pueblo West, Security and Fountain. With all major approvals and permits secured, construction of Phase 1 of SDS began in 2010.

SDS Phase 1 will be completed in 2016 and will have the capacity to treat and deliver 50 million gallons per day (mgd) of water. SDS will deliver more water to Colorado Springs and provide

critical redundancy to the city's aging water system. SDS increases the reliability of the city's raw-water supply should existing systems go down for repairs or maintenance. Major SDS facilities are outlined in Table 7 below.

Facility Type	Description
Storage	42,000 ac-ft of storage capacity in Pueblo Reservoir for four partners—Colorado Springs, Pueblo West, Fountain, Security (28,000 ac-ft for Colorado Springs)
Pumping	Three raw-water pump stations
Transmission	50 miles of 66-inch diameter pipeline capable of conveying 50 mgd of raw water to Colorado Springs in Phase 1
Treatment	A water treatment plant and finished water pump station, with capacity to treat up to 50 mgd of water in Phase 1 and 109 mgd in Phase 2
Distribution	Distribution pipelines to convey treated water from the treatment plant into the distribution system

Table 7: Southern Delivery System by Facility Type

SDS Phase 2 will be constructed when additional capacity and water storage is needed most likely in the 2020s; it will add two reservoirs, expand raw water delivery capacity, and expand the water treatment plant and pump stations to meet a peak capacity delivery of more than 100 mgd of treated drinking water.

WATER DEMAND PROFILE

Water Service Area

Colorado Springs Utilities' water service area covers 195 square miles and includes Colorado Springs, Green Mountain Falls and Chipita Park. The community has a strong military presence and Utilities supplies water to some 40,000 military personnel and their families at Fort Carson Army Base, Peterson Air Force Base, the North American Air Defense Command and the United States Air Force Academy. Utilities also provides water to Cascade Metropolitan District and supplemental water to Security Water District.

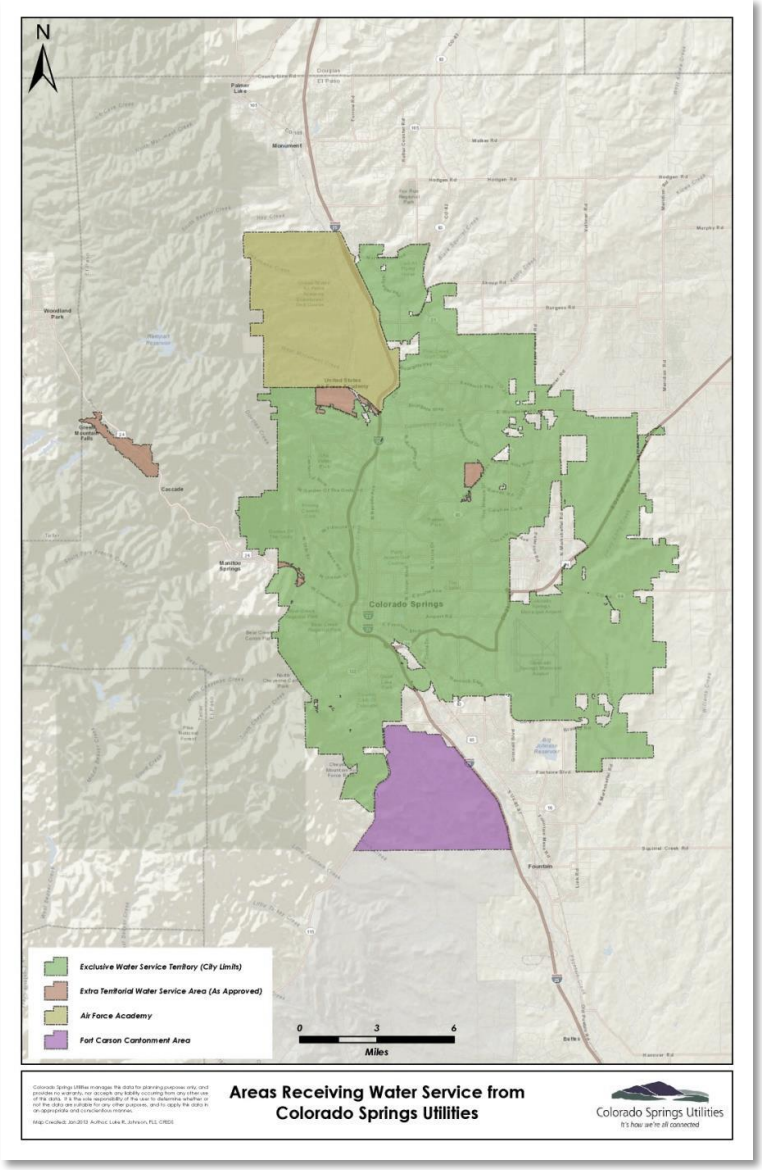

Figure 2: The Water Service Area includes 195 square miles

Colorado Springs is located in the shadow of Pikes Peak, at the cross-section of the eastern Great Plains and the Rocky Mountains. Ground elevations range from 7,800 feet on the west side to 5,750 feet on the southeast side. At 8,000 feet, the Monument Divide is just to the north of the city, and coupled with high mountains to the west, significantly impacts local climate. The climate is generally mild and semi-arid, but weather patterns can vary dramatically from one part of the city to another. The eastern and southern edges of the city sit firmly in the short grass prairie and are generally warmer and more dry and windy than the northern and western edge, which occupies foothills and prairie. Soil conditions vary just as dramatically and range from decomposed granite to clay and sand. The varied natural elements and semi-arid climate make for a uniquely challenging geography.

System Water Demand and Population

Colorado Springs' economy is driven primarily by the military and tourism and its population is expected to grow by 50% over the next few decades. Approximately half of this growth is expected from the children and grandchildren of those who live here now. Over the next ten years, residential customers are expected to grow at a rate of 1.6 percent per year and commercial customers at rate of 1.5 percent per year. Water demand in Colorado Springs is and will continue to be a function of several broad influences, including population, culture, climate/weather, demographics, policy, economics, and infrastructure. Water use efficiency is one strategy to meet the needs of a growing population.

The importance of water conservation and efficient water use cannot be overstated. Colorado Springs is "high and dry" with an average elevation of 6,035 feet and average precipitation of 16.5 inches per year. This semi-arid climate intensifies the need for water conservation, particularly given the uncertainties of short and long-term drought in Colorado and the Colorado River Basin; the pace and magnitude of population growth; the affects of climate change; aging infrastructure; increasing regulations; and increasing costs.

Utilities' annual water demands since 2000 are compared to population in Figure 3 below. Average annual water demands from 2008 through 2012 were 13% less than in 2000 despite serving an average of 58,000 more people over that period. There are a number of factors that have influenced this change. Following more than two decades of relatively wet conditions, Colorado Springs has experienced persistent drought since 2000. In response to water shortages, Utilities instituted mandatory outdoor watering restrictions in five of the past twelve years. To further promote efficient use, Utilities has implemented numerous water conservation policies including conservation-oriented rate structures, rebates for high efficiency water appliances and fixtures, and aggressive education and awareness programs.

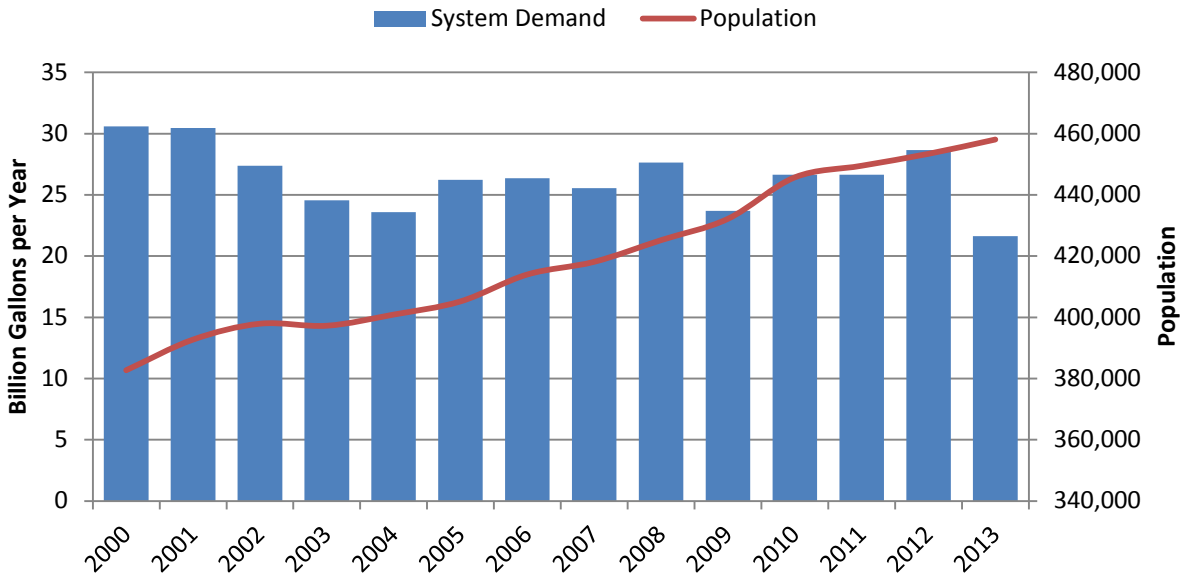

Figure 3: System water demands have not kept pace with population growth

Other factors that have influenced water use since 2000 are:

- Three relatively wet summers in 2004, 2009 and 2013;
- An economic downturn that began in 2007 and persists;
- Rate increases and conservation pricing resulting in a 141% increase in the typical residential water bill; and
- The growing influence of the federal Energy Policy Act of 1992, which increased energy and water efficiency standards for fixtures and appliances.

Potable Water Use by Customer Type

Utilities provides water service to residential, multi-family, commercial, industrial, institutional, military and wholesale customers. In 2013, single-family residential customers made up the vast majority (91%) of the connections to the water system, followed by commercial and industrial customers (5%) and multi-family residential customers (4%).

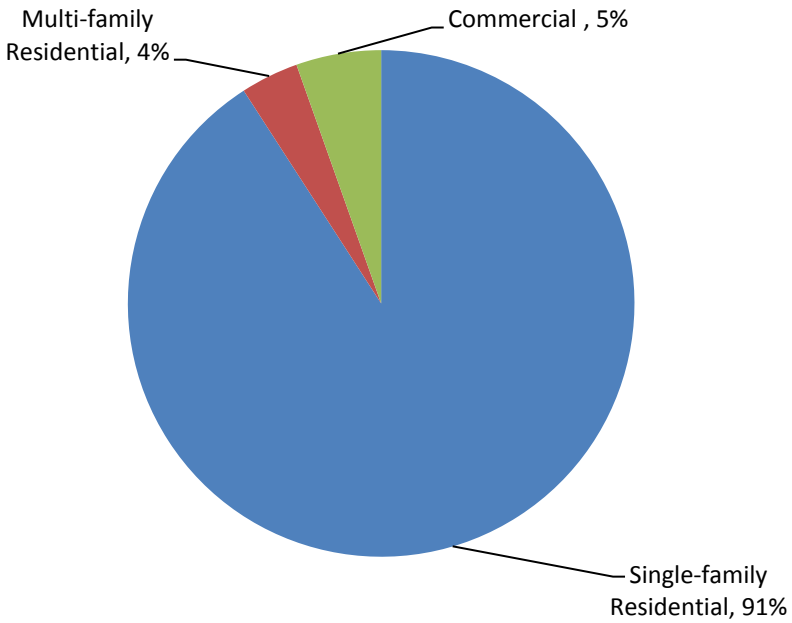

Figure 4: Percentage of service connections by major classification

From 2008 through 2013, residential use comprised almost half (48%) of annual use, on average. The other half was comprised of commercial (23%), military (6%), multi-family (17%), wholesale and other use.

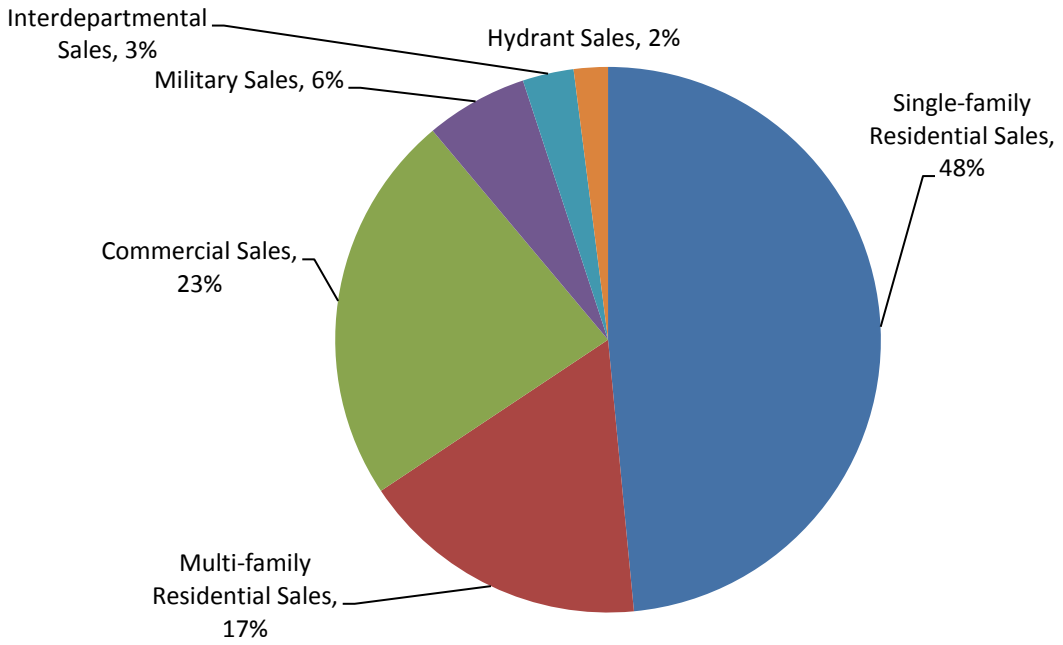

Figure 5: Percentage of sales by classification

Seasonal Potable Water Use

For all customer types, potable water use peaks in the summer due to outdoor irrigation and drops in the winter. Approximately 68 percent of total metered sales occur during the irrigation season, from May through October. Based on more than twenty years of historical data, the peak month occurs in June, July or August. The lowest month occurs in December, January, February or March. Figure 6 shows the average percentage of total sales by month for 2008 through 2013. Figure 7 shows sales by customer classification by month for 2013.

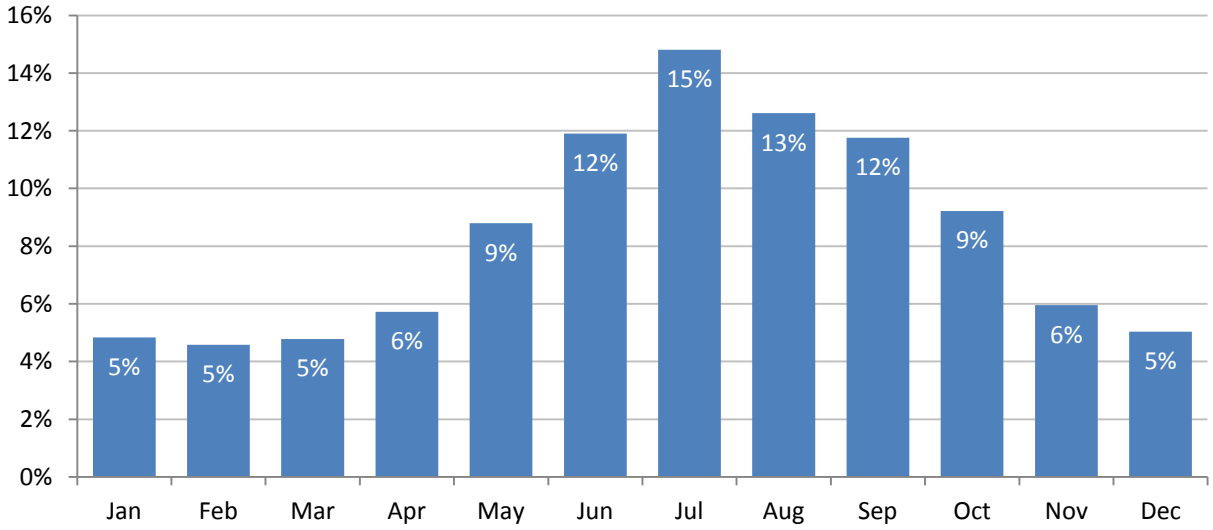

Figure 6: Percentage of sales by month

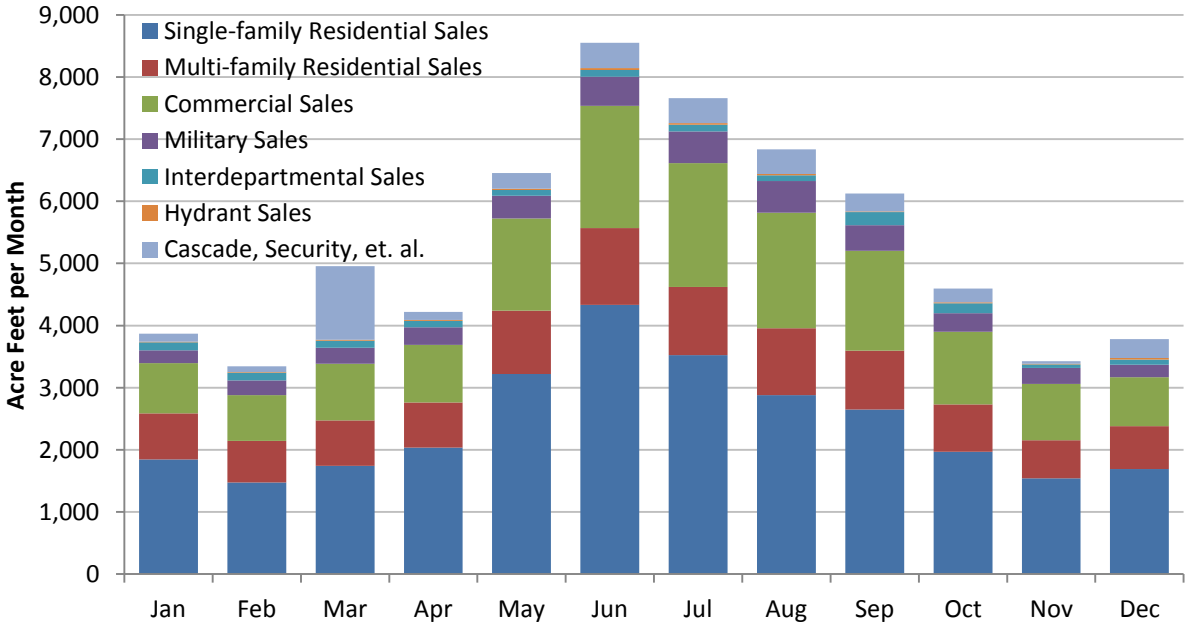

Figure 7: 2013 monthly potable water sales by class

Daily Water Use

While during the winter months daily water demands remain fairly consistent, in summer months, daily water demands can vary dramatically given weather uncertainty. Several days of hot and dry weather can bring about an increase in daily water use. Similarly, a few days of heavy downpours or frequent thunderstorms will cause daily water use to plummet. Ongoing research is being conducted to better understand trends in daily water use.

Hourly Water Use

Water demands fluctuate hourly throughout the day. During the winter months, water demands begin to increase around 6:00 am and peak around 10:00 am. During the summer months, water demands peak around 7:00 am and then again around 9:00 pm. This pattern is consistent regardless of mandatory water restrictions; customers understand the importance of watering early in the morning or late in the evening.

Per Capita Potable Water Use

Many communities calculate water usage rates in terms of use per person per day, typically on an annual basis. While per capita water use is a commonly used industry measure, the methodology used to calculate daily per capita water use, particularly residential, is fairly inconsistent. Utilities calculates daily per capita water use as follows:

System-wide Per Capita per Day Water Use =
Total Potable Water Production ÷ Service Area Population ÷ # of Days

Residential Per Capita per Day Water Use =
Residential Sales ÷ Total Residential Taps ÷ Household Size ÷ # of Days

System-wide Per Capita Water Use

System-wide per capita water use varies between communities due to vast differences in commercial and industrial use. Colorado Springs is home to a number of military installations, semiconductor facilities, college and university campuses and large resorts. Additionally, Utilities delivers wholesale water to the communities of Security and Cascade. As a result, Utilities' system-wide per capita water use is proportionally higher than a community with limited commercial and industrial use.

Figure 8 indicates that system-wide per capita use in Colorado Springs has declined since 2000, but is mostly flat since 2003. System-wide per capita water use averaged 166 gallons per capita per day from 2008 through 2012. When water restrictions were in place in 2013, system-wide per capita water use dropped to 129 gallons per capita per day.

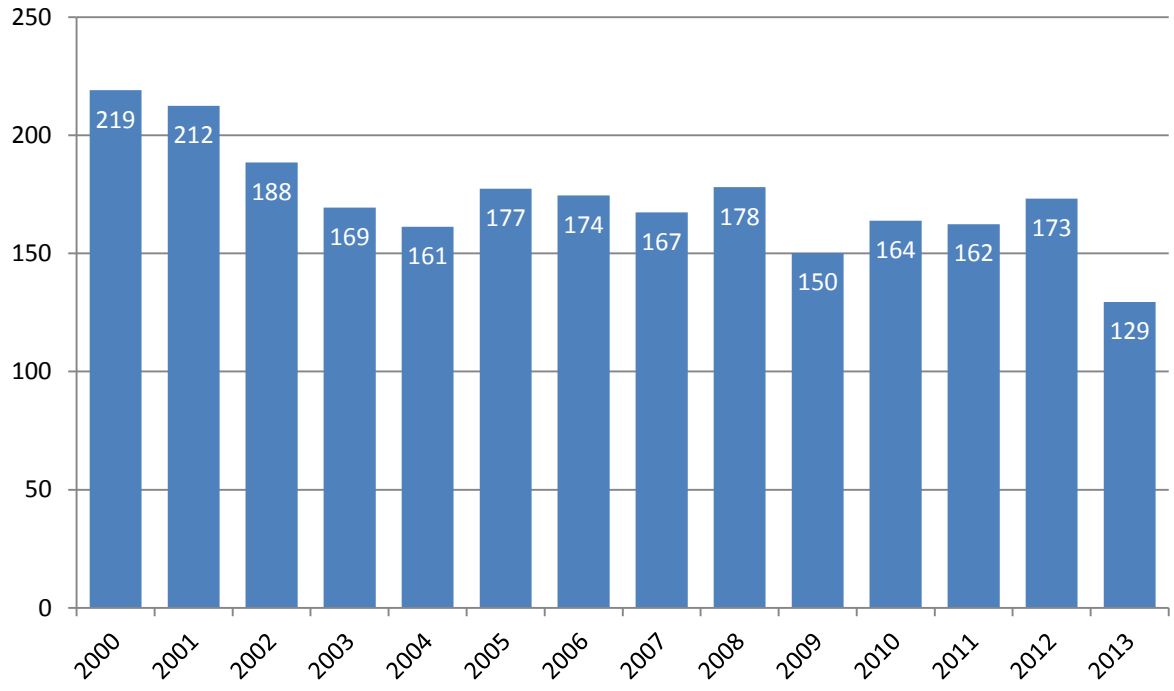

Figure 8: System-wide per capita use has declined significantly since 2000

Residential Per Capita Water Use

Residential per capita water use is more often used to compare usage between communities as it provides a better "apples to apples" comparison than system-wide per capita water use. However, residential per capita use calculations depend on an accurate estimate of household size. And understanding per capita use data depends on clear knowledge of what types of residential users are included in the calculation. Residential use discussed in this Plan, for example, does not include multifamily residential customers which are classified as commercial. Some cities include multifamily customers in calculations of residential gpcd. Residential gpcd values including multifamily customers should not be compared to those that do not.

Assuming a household size of 2.83 people, Utilities' residential use averaged 96 gallons per capita per day from 2008 through 2012. When water restrictions were in place in 2013, single-family residential use dropped to 74 gallons per capita per day. However, according to the 2010 U.S. Census household size is declining and may be as little as 2.5 people in Utilities' service area. This household size results in an average of 109 from 2008 through 2012. Regardless of household size, residential per capita use has been flat since 2005 regardless of household size as shown in Figure 9 below.

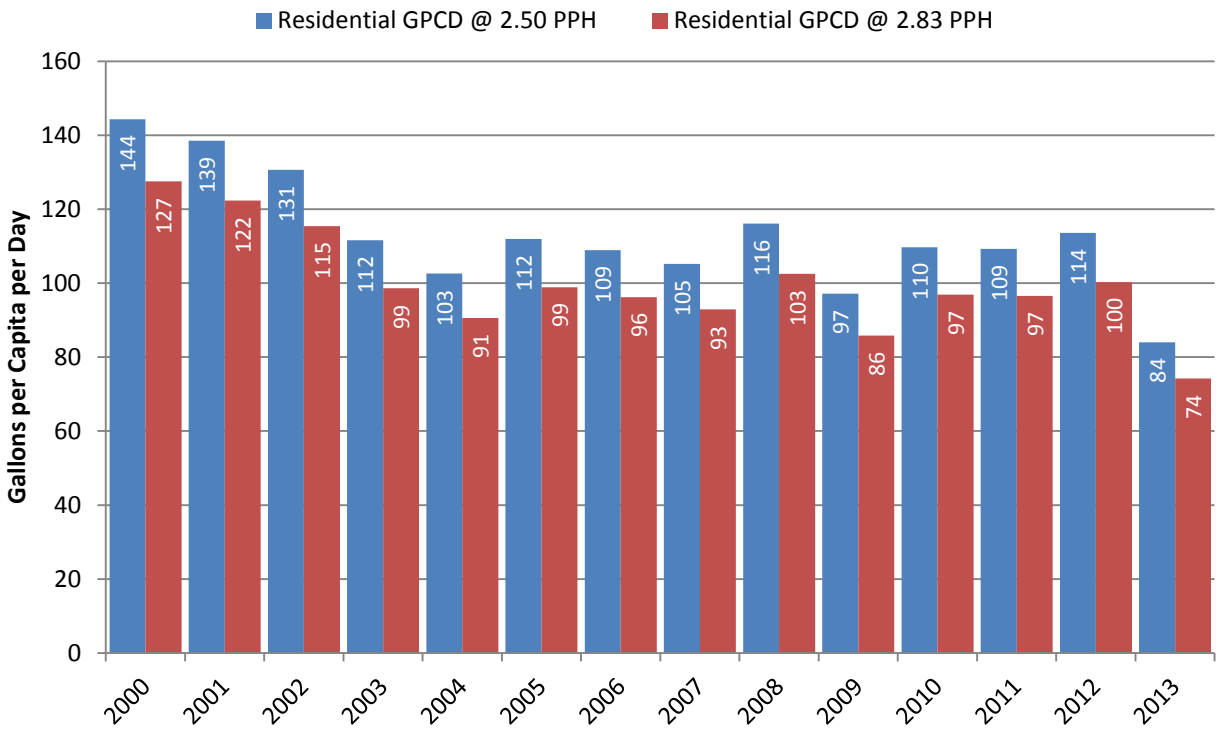

Figure 9: Regardless of household size, residential use has declines substantially since 2000

Non-Potable Water Use

In the early 1900's, Colorado Springs developed a municipal irrigation system that was supplied by raw surface water from Monument Creek. The system consisted of a series of reservoirs, pipelines and canals that irrigated medians, open spaces, parks and residential lawns in downtown Colorado Springs and the Old North End. This system, although modified over the years, is still a major part of Colorado Springs' nonpotable system.

In 1961, Colorado Springs built a wastewater reclamation facility along with a nonpotable distribution system and began delivering reclaimed water to parks, cemeteries, golf courses and commercial properties for landscape irrigation. *Reclaimed water* is domestic wastewater that has been through three levels of treatment, including filtration and disinfection. This system is one of the oldest in the western United States.

Other stand-alone systems have subsequently been developed that use raw water and groundwater supplies to irrigate several golf courses, including The Broadmoor and Kissing Camels, other large turf areas and industrial water for cooling at the Nixon Power Plant. Springs Utilities also provides the reusable water rights for stand-alone reclaimed water irrigation systems at the Air Force Academy and Fort Carson Army Base.

As shown in Figure 10, Colorado Springs' non-potable systems typically deliver more than 11,000 acre-feet of water per year, accounting for more than 12 percent of total water deliveries. Sources of nonpotable water include reclaimed water, raw surface water and groundwater. The system consists of pumping stations, storage reservoirs, holding ponds, transmission mains and two wastewater reclamation facilities.

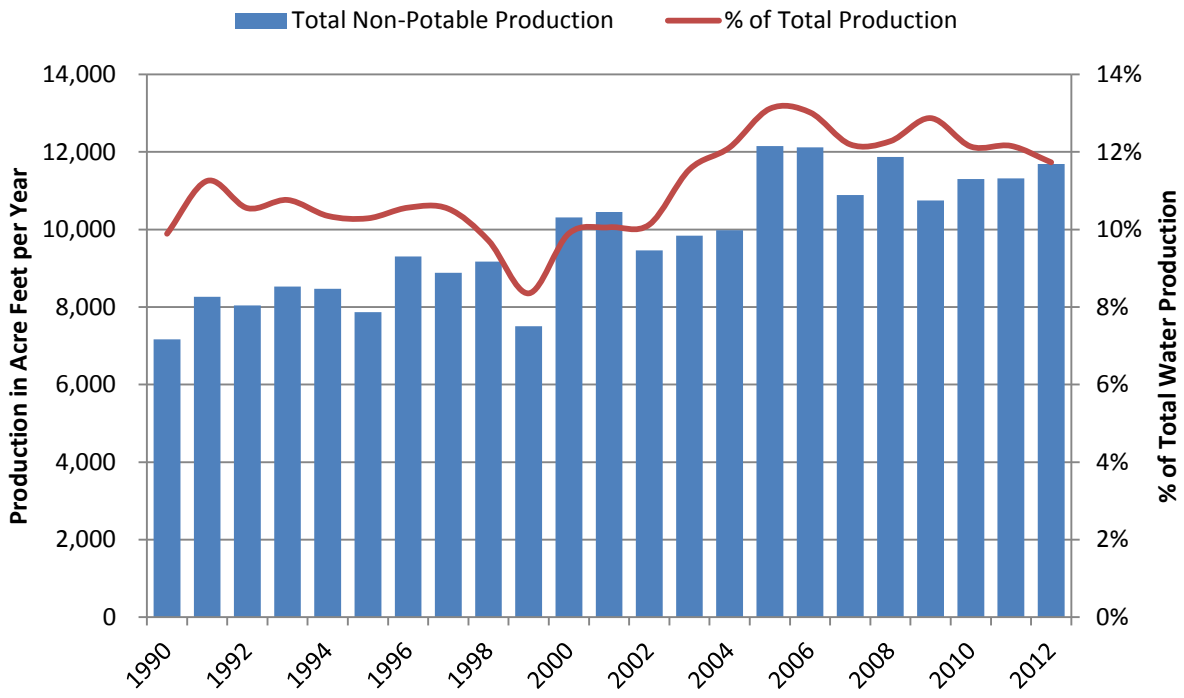

Figure 10: Non-potable water production makes up roughly 12% of Utilities' total water production

Non-potable water development is one of four components to ensure a safe and reliable water supply to the community. Nonpotable water development is also a critical source of supply being evaluated as part of the current IWRP. As such, non-potable water development will continue to play a critical role in water supply planning and management. Refer to the 2001 Non-potable Master Plan for more information on non-potable water development.

Climate and Weather

Seasonal water use is directly influenced by climate and weather, which can vary dramatically across the city given differences in exposure and elevation. Weather data recorded by the National Weather Service at the Colorado Springs Airport provides the basis for describing the general climate of the Colorado Springs area.

Temperature

July is the hottest month with an average high temperature of 85° F. January is the coldest month with an average low temperature of 16° F. An extreme high of 101° F and an extreme low of -27° F have been recorded.

Precipitation

Average annual precipitation is 16.54 inches, which classifies as semi-arid. Eighty percent of the precipitation occurs during the irrigation season, mostly as heavy downpours accompanying frequent summer thunderstorms. Annual precipitation is highly variable from year to year ranging from 8 inches to 21 inches in the last decade. Figure 11 shows average temperature and precipitation by month.

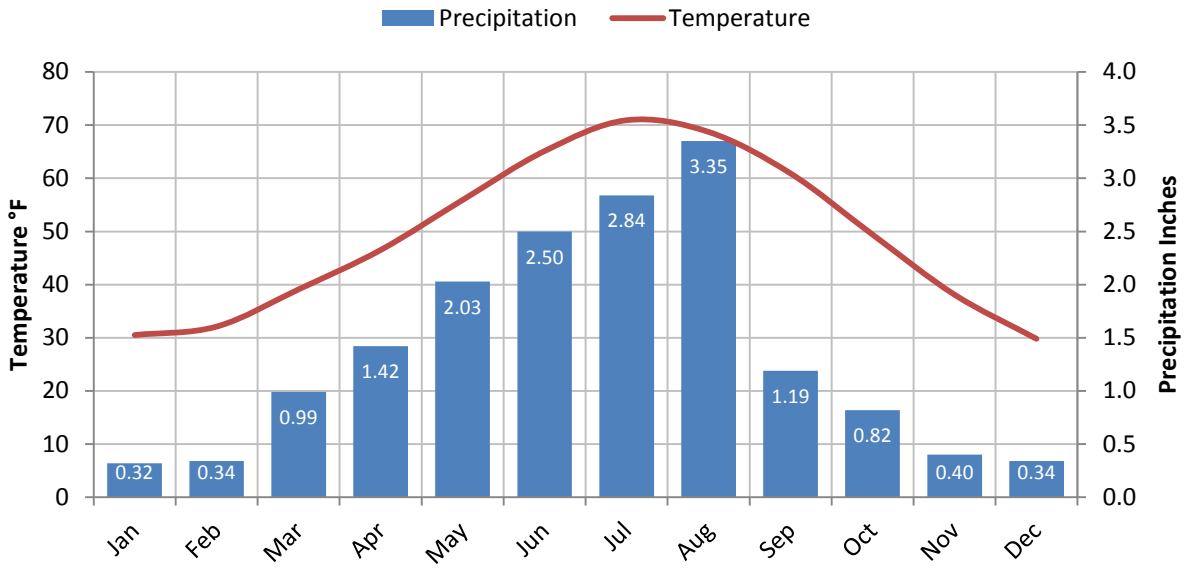

Figure 11: Average monthly temperature and precipitation

Growing Season

The growing season averages 150 days with the average last frost on May 4 and the average first frost on October 2. Season duration and frost dates are quite variable from one year to the next.

Snowfall

Seasonal snowfall ranges from 16 inches to nearly 90 inches, and averages 38 inches per season. Snowfall is extremely variable within the area depending on elevation and exposure.

COLORADO SPRINGS WATER USE EFFICIENCY

Water use efficiency plays a significant role in water supply planning. The 1996 Water Resource Plan identified water conservation as one of four components to ensure a safe and reliable water supply to the community. The other components of the plan include a major raw water delivery system, existing system improvements and non-potable water development.

Utilities' water use efficiency measures are designed to bring permanent reduction in water use while maintaining or enhancing the community's economic vitality and quality of life. A balance of customized strategies and measures include education, pricing, efficiency incentives, and regulation. These carefully planned measures help Utilities reach long-term savings targets.

Utilities recognizes the finite, constrained, and unpredictable nature of water supply, therefore educates and encourages customers to save water for resource, economic and community benefits, as well as regulatory compliance. Specific benefits are as follows:

Resource Benefits:

1. To reliably serve the needs of existing and future customers and mitigate the increasing uncertainty around water supply shortage;
2. Because our ability to secure new water supplies in the future depends on a consistent, ongoing and robust conservation, efficiency, and education programs; and
3. Because uncertain and declining conditions on the Colorado River have a substantial impact on our primarily water supply source.
4. Because water saved through permanent water use efficiency measures is a reliable source of water supply even in times of severe drought.

Economic Benefits:

1. To reduce the need for additional treatment plant capacity and pumping facilities;
2. To reduce operating costs associated with treatment and delivery and to help avoid or delay the costs of adding new water supplies and infrastructure;
3. Because extending water supplies through increased water use efficiency is a cost-effective means and alternative to water resource acquisitions; and
4. To mitigate costs associated with water shortage response and resulting shifts in demand, which increase uncertainty and are difficult to plan for.

Community Benefits:

1. To minimize excessive or inefficient use of our limited water supply in order to sustain economic vitality and a high quality of life in our community;
2. To provide a degree of protection from legislation which may be less effective than measures and programs we implement according to our community's needs and expectations;
3. Because lost revenues associated with planned changes in use are minimal in the short term, easily planned for in the mid and long-term, and generally more than offset by growth; and

4. Because the vast majority of our customers are willing partners on whom we depend to successfully meet our efficiency goals.

Regulatory Compliance:

1. Because, as beneficiary of the Frying-Arkansas Project, Utilities is periodically required to submit a Water Conservation Plan to the SCWCD which is ultimately reviewed by the U.S. Bureau of Reclamation.
2. With the prospect of the Clean Water Act's provisions concerning the "waters of the United States" being administratively redefined by the EPA, the potential for environmental review of any project or activity concerning the waters of the United States is real. Such a review, likely NEPA, includes the standard prerequisite of a substantive Water Conservation Plan being implemented; and
3. A substantive Water Conservation Plan is necessary to obtain State support or funding.
4. The presence of a scientifically based and market/customer specific water conservation program helps fend off calls for arbitrary water conservation legislation and targets.

2010 Statewide Water Supply Initiative Conservation Levels

The 2010 Statewide Water Supply Initiative (SWSI 2010) was the most recent in a series of efforts led by the Colorado Water Conservation Board to plan for future water needs in Colorado. SWSI 2010 provided a "conservation levels" framework to assess water conservation potential across the state. The water use efficiency measures discussed in this Plan are represented within the SWSI 2010 framework.

The SWSI 2010 framework includes measures and programs in four categories:

1. Foundational Measures and Programs
2. Ongoing Water Use Measures and Programs
3. Ordinances and Regulation
4. Education Measures and Programs

Foundational Measures and Programs

Foundational measures and programs are those that all water utilities and districts should have in place to support their operations. Utilities has fully implemented each of the *Foundational Measures and Programs* and can focus on incrementally improving these measures and implementing more strategic and sophisticated measures and programs encompassed in the remaining three categories.

Rates

- Full, accurate metering
- Differentiate between indoor and outdoor use
- Conservation pricing such as inclining block rates
- Monthly billing
- Real-time usage data

Leak Detection

- Meter testing and replacement
- Water system audits
- Proactive leak detection and repair

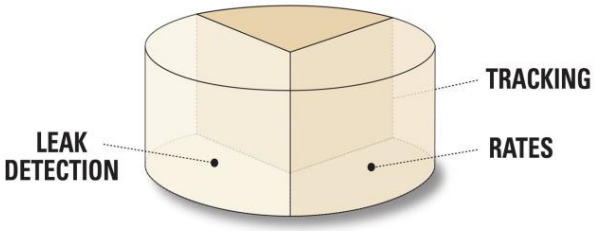

Figure 12: SWSI 2010 Foundational Measures

Tracking

- Total annual and monthly production
- Total annual and monthly sales
- Monthly number of connections
- Monthly and annual use by customer type
- Monthly and annual water loss by type

Ongoing Water Use Measures and Programs

Ongoing Water Use Measures and Programs make up the majority of measures Utilities has implemented since 2002. These are generally voluntary measures that customers demand. Utilities has implemented Level 3 measures for more than a decade.

- Level 1 – Water demand reductions by the water utility at its own facilities.
- Level 2 – Collect information characterizing customer water use – focusing on the utility's largest water users.
- Level 3 – Commit resources to assist customers in their water demand management.

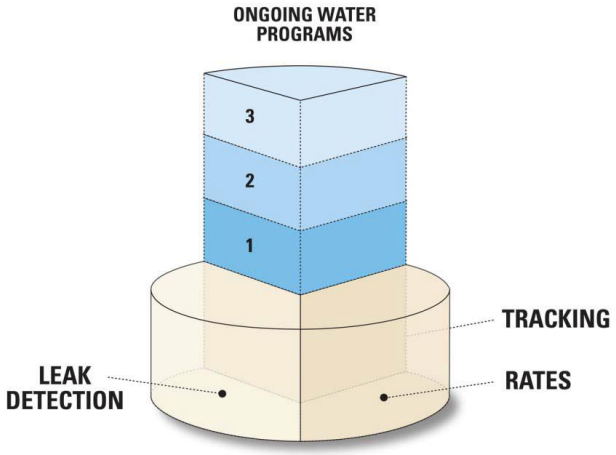

Figure 13: SWSI 2010 Ongoing Water Use Levels

Ordinances and Regulations

Ordinances and regulations have the advantage of potentially applying to a large percentage or all of a water provider's customers. For this reason, these programs tend to be very cost-effective. Utilities currently has one Level 2 measure, the Commercial Landscape Code and Policy, and has implemented no other measures in this category.

- Level 1 – Water waste ordinances, cooling tower single use prohibitions
- Level 2 – New construction controls related to obtaining water taps (e.g., landscaper certification requirements, soil amendment requirements, irrigated turf restrictions, indoor fixture and appliance requirements, etc.)
- Level 3 – Existing construction controls related to point of sales compliance

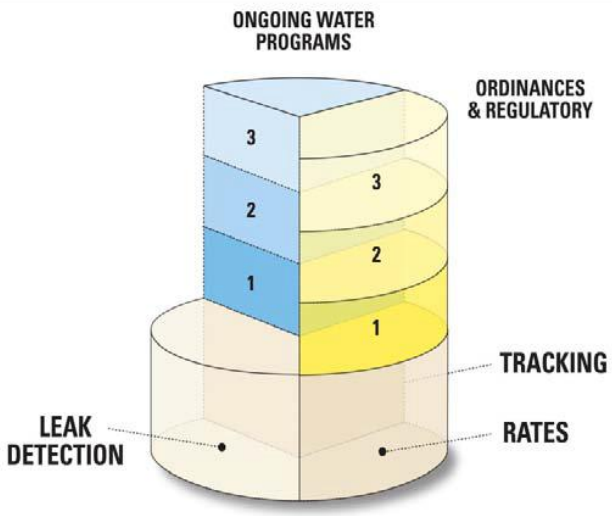

Figure 14: SWSI 2010 Ordinances and Regulation Levels

Educational Measures and Programs

How educational measures and programs support meaningful water conservation is dependent on the portfolio of measures and programs implemented. Conversely, the success of the measures and programs implemented is dependent on consistent and effective conservation and efficiency education and messaging. Consistent messaging that is genuine and guided by Utilities' principles signifies to the community that water conservation and water use efficiency is important. Utilities has been a leader in water conservation education for many years and implements programs at all three levels.

- Level 1 – Bill stuffers, mass mailings, web pages, Xeriscape demonstration gardens
- Level 2 – Water fairs, interactive websites, K-12 teacher and classroom education programs
- Level 3 – Focus groups, customer surveys, citizen advisory boards

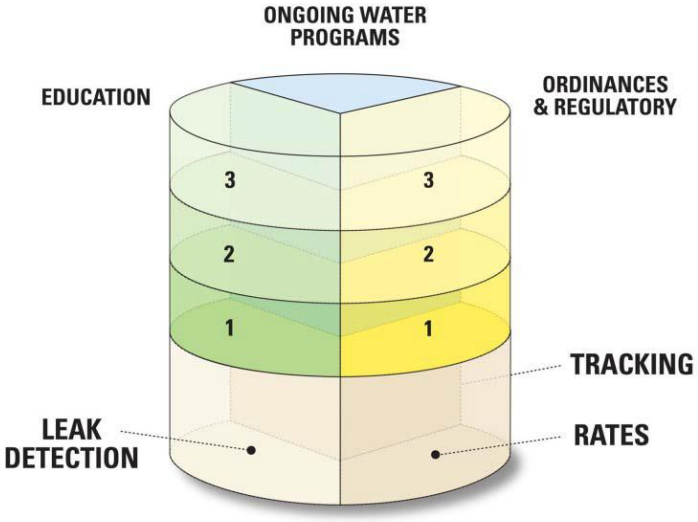

Figure 15: SWSI 2010 Education Levels

Historical Water Use Efficiency and Demand Management Practices

Colorado Springs has a long history of water conservation and efficient water use. In the 1940s, the city was fully metered, long before metering became a standard practice in the industry. In the 1960s, the city pioneered the use of treated wastewater for irrigation. In the 1990s, the award-winning Xeriscape™ Demonstration Garden opened on Mesa Road. Since the late 1990s, Utilities has implemented more than 20 water use efficiency programs, including rates, incentives, retrofits and ordinances. Water use efficiency has been an integral part of Utilities' water resource planning and management for seventy years.

In the early 2000s efficiency and demand management efforts began to significantly influence water demands. Due to the drought of 2002, water restrictions were implemented as a demand management tool and numerous water use efficiency measures were launched. Utilities' 2008-2012 Water Conservation Plan identified 20 new or ongoing conservation and efficiency programs to be implemented prior to 2012. Of those 20 programs, 17 were successfully implemented. Fourteen of these programs were still active in 2014. Utilities also plans to implement the remaining three programs as staffing, budget, and priorities allow.

As shown in Figure 16 below, these programs and others have contributed more than 2,700 million gallons in annual water savings as of 2014. These savings will continue to increase slightly over time as the influence of measures such as Residential Inclining Block Rates increases.

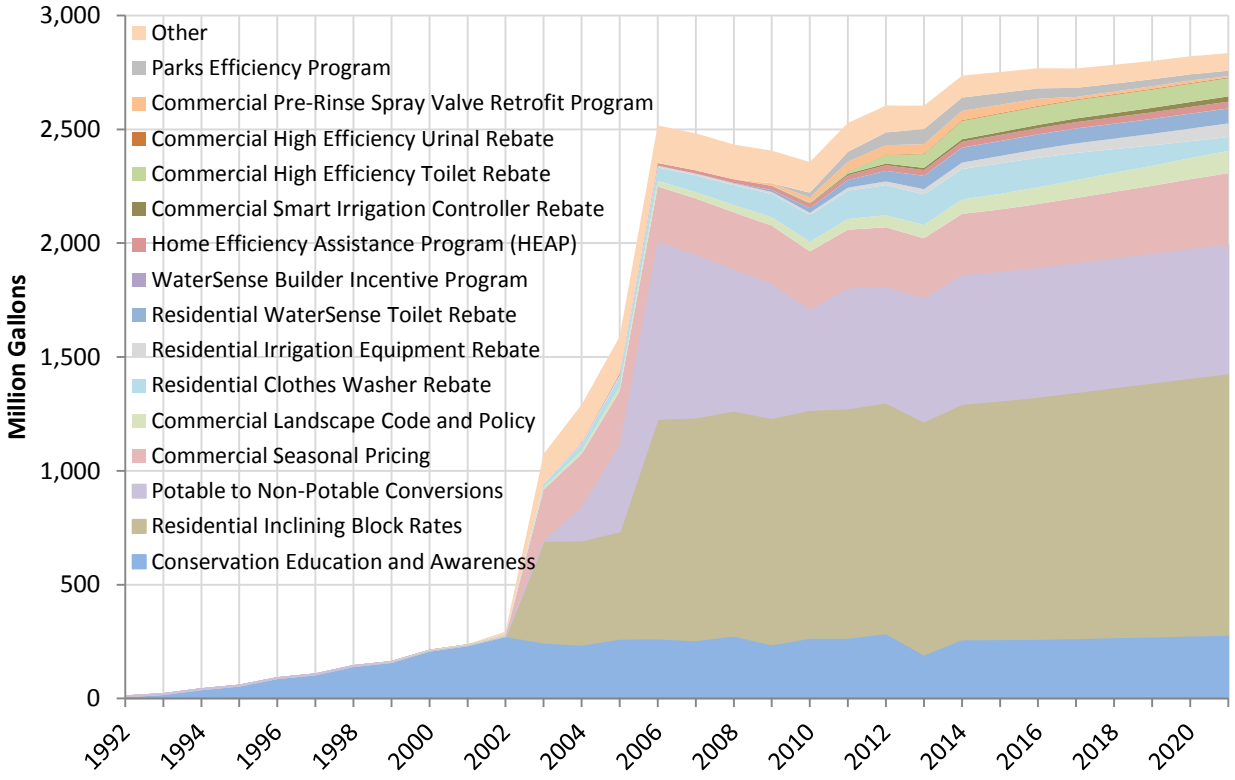

Figure 16: Annual water efficiency saving by measure/ program

The annual savings contributed by the efficiency measures and programs implemented in 2008-2013 is represented in Table 8 below. The measures are organized by SWSI 2010 Conservation Level category.

	2008	2009	2010	2011	2012	2013	Annual Average
Foundational Activities							
Residential Inclining Block Rates	3,033	3,053	3,073	3,093	3,110	3,140	3,084
Commercial Seasonal Pricing	771	783	789	793	802	811	792
Conversion of Potable to Non-Potable Supply In Utilities Operations	1,902	1,811	1,347	1,617	1,560	1,661	1,650
Ongoing Water Use Measures and Programs							
Residential Clothes Washer Rebate	266	313	360	381	407	411	356
Residential Irrigation Equipment Rebate	25	27	31	40	49	72	41
Residential WaterSense Toilet Rebate	6	26	62	104	143	179	87
Commercial Smart Irrigation Controller Rebate	0	1	5	20	22	29	13
Commercial High Efficiency Toilet Rebate	0	2	10	32	115	186	58
Commercial High Efficiency Urinal Rebate	0	0	3	3	5	8	3
Commercial Pre-Rinse Spray Valve Retrofit Program	0	31	64	127	127	127	79
Home Efficiency Assistance Program (HEAP)	49	56	62	65	76	78	64
Parks Efficiency Program	0	0	65	133	172	204	96
Other – Programs Prior to 2008	519	497	475	454	439	381	461
Ordinances and Regulations							
Commercial Landscape Code and Policy	99	114	129	145	162	179	138
Educational Measures and Programs							
Conservation Education and Awareness	848	727	818	818	880	593	781
Total	**7,518**	**7,441**	**7,293**	**7,825**	**8,069**	**8,059**	**7,701**

Table 8: Annual water savings in acre feet (AF) by measure/ program since 2008

	Year Initiated
Xeriscape/ Water-wise Landscape Rebate	2002
Commercial Irrigation Equipment Rebate	2003
Soil Amendment/ Mulch Rebate	2003
Landscape Consultation Rebate	2003
Showerhead Rebates, Promotions and Exchanges	2003
Faucet Aerator Giveaways	2003
Residential ULF Toilet Rebate	2003
Commercial Low Flow Urinal Rebate	2003
Commercial ULF Toilet Rebate	2003
Commercial Clothes Washer Rebate	2003
Hose-end Sprinkler Timer Giveaways	2005

Table 9: List of programs implemented prior to 2008 with year initiated

In addition to measures and programs listed above, Utilities has implemented a number of other Foundational Activities designed to reduce costs, improve the quality and resolution of customer use data, and reduce system water loss. These programs are ongoing and provide benefit to our rate payers; however water savings is not currently estimated for them.

One such program is water and energy management at Utilities' facilities. Starting in 2011, Utilities began measuring and benchmarking water use at 12 major facilities on 8 sites using historical meter data from as 2007 and later. The EPA's ENERGY STAR Portfolio Manager tool was used for convenience in tracking results in conjunction with energy savings, although the tool does not provide guidance on establishing a reasonable water consumption target for each facility. Based on historical consumption, the benchmark to total water use at these sites was established at 11,365,500 gallons per year. Figure 17 shows consumption since 2008 against the benchmark.

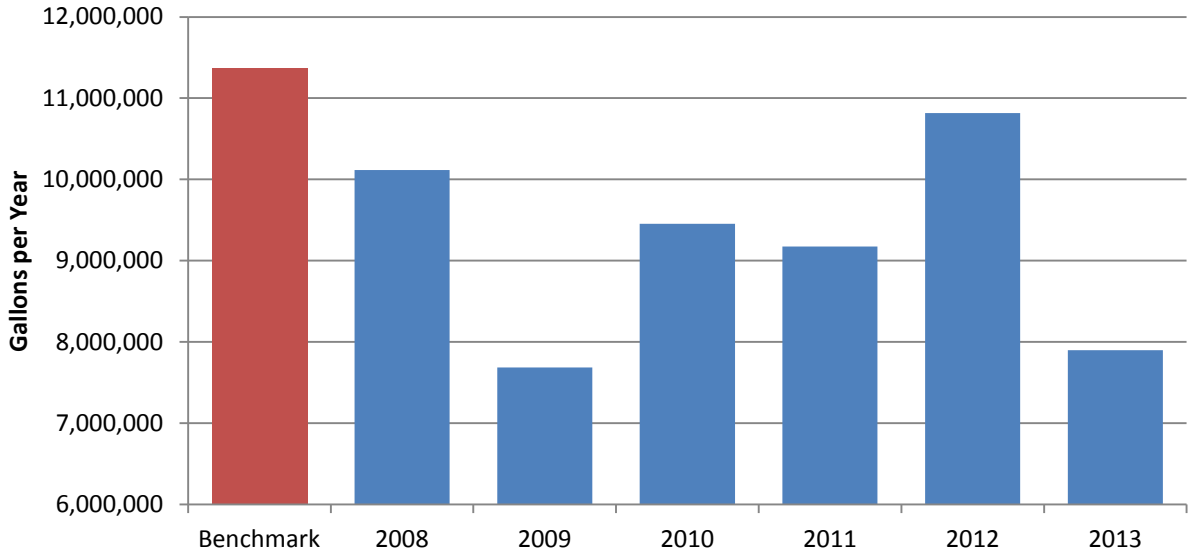

Figure 17: With the help of the EPA's ENERGY STAR Portfolio Manager, water use at Utilities sites has decreased significantly from the historical benchmark

Other foundational activities include:

- Automated Metering
- Water Mains Replacement Program
- Leak Survey and Detection Program
- Corrosion Protection/Prevention Program
- Meter Testing Program

To date, the largest volume of water savings has come from measures and programs within Foundational Activities. Ongoing Water Use Measures and Programs and Conservation

Education are the most popular with our customers and also provide significant savings. Despite being quite cost-effective, Ordinances and Regulations have not been widely employed by Utilities and therefore, provide relatively little water savings. Savings from Education Activities are difficult to quantify and the quantities shown are likely conservative. Education provides the foundation of Utilities conservation and efficiency efforts. Other conservation measures and programs implemented by Utilities would not be as successful without a concerted and consistent education program. The breakdown of savings by category is provided in Figure 18 below.

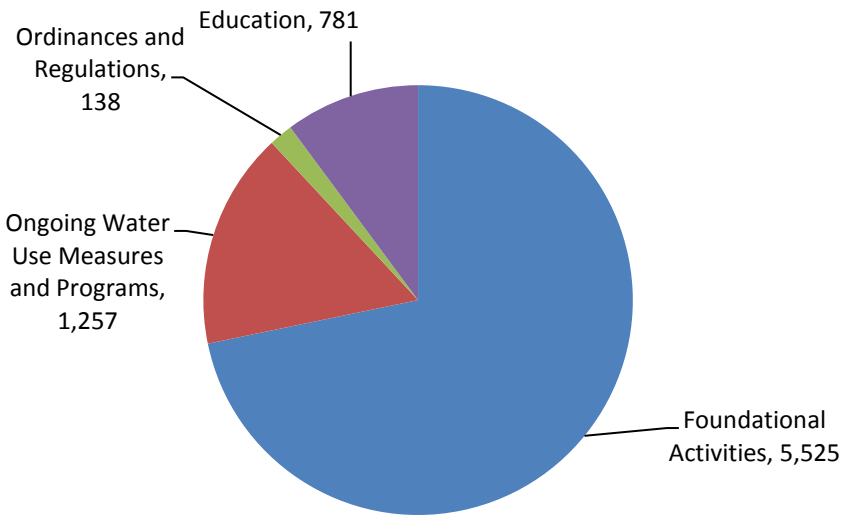

Figure 18: Breakdown of annual water savings by SWSI 2010 category (acre feet)

The majority of water savings were achieved in the residential sector, as shown in Figure 19 below, and substantially more time and budget have been spent on residential programs than commercial. Most of the commercial savings are from potable to non-potable use conversions made by Utilities at Drake Power Plant. Much of the water used for cooling at the plant is now non-potable water. While this is not an efficiency measure, it has saved more than 5 billion gallons of potable water since 2004.

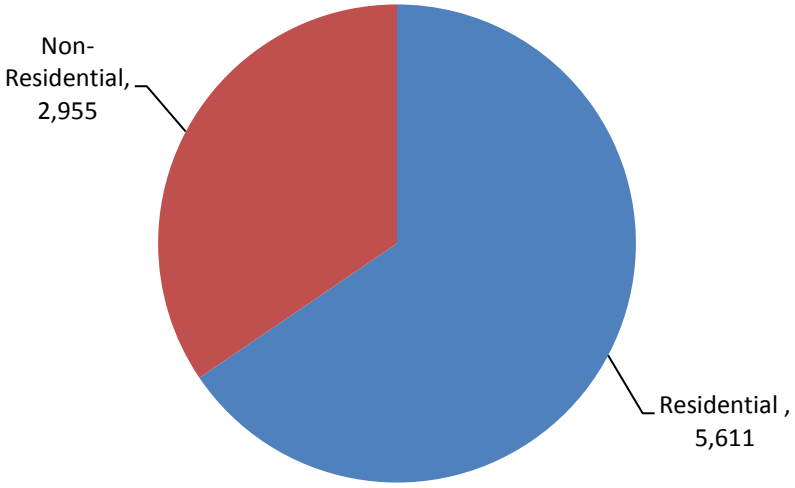

Figure 19: Breakdown of efficiency savings by sector (acre feet)

Utilities' Residential Inclining Block Rates are the most effective efficiency measure implemented, while Commercial Seasonal Pricing is the second most successful. Conservation-oriented rates and pricing, if properly designed to send a strong price signal, work very well, in part, because they apply to all customers within a classification. A comparison of residential block rate structures in major Front Range cities, Figure 20, demonstrates a variety of approaches to block rate design. Utilities' residential water rate is designed to set a reasonable rate for typical, non-discretionary indoor use (Block 1), a higher but still reasonable rate for typical discretionary outdoor use (Block 2), and the highest rate for unusually high, discretionary outdoor use (Block 3) that sends a strong conservation price signal.

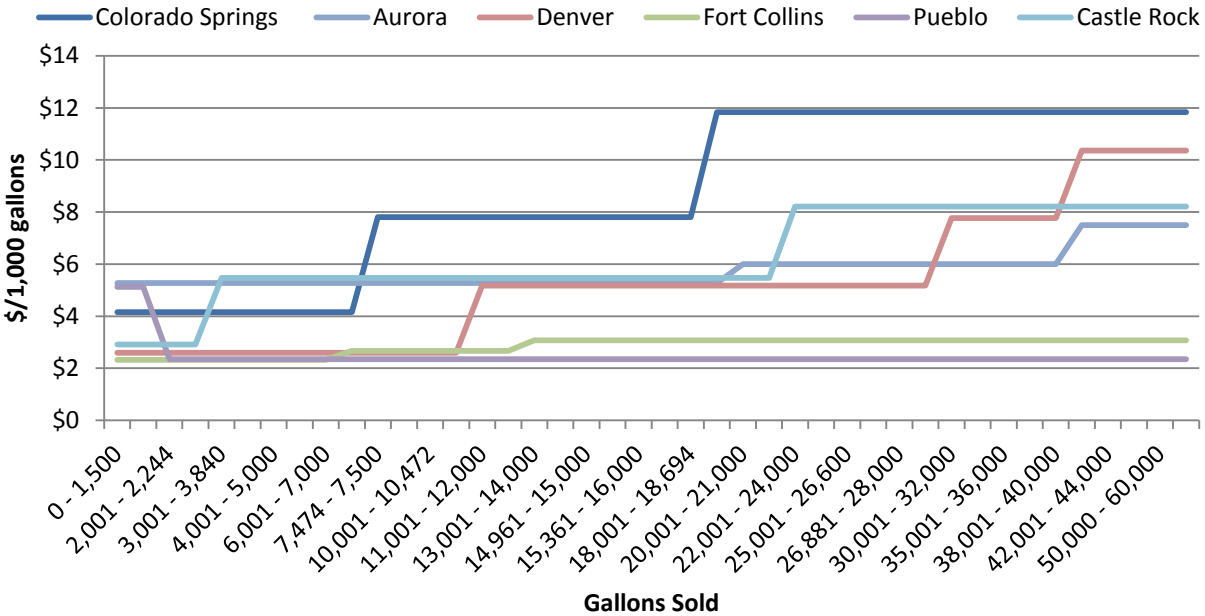

Figure 20: 2013 Comparative Residential Inclining Block Rates across cities along the Front Range

The Commercial Seasonal Rates were implemented in 2000. These rates set a higher price in the summer encouraging more efficient irrigation use as shown in Figure 21. In 2013, non-residential customers paid roughly 85% more for use from May through October than from November through April.

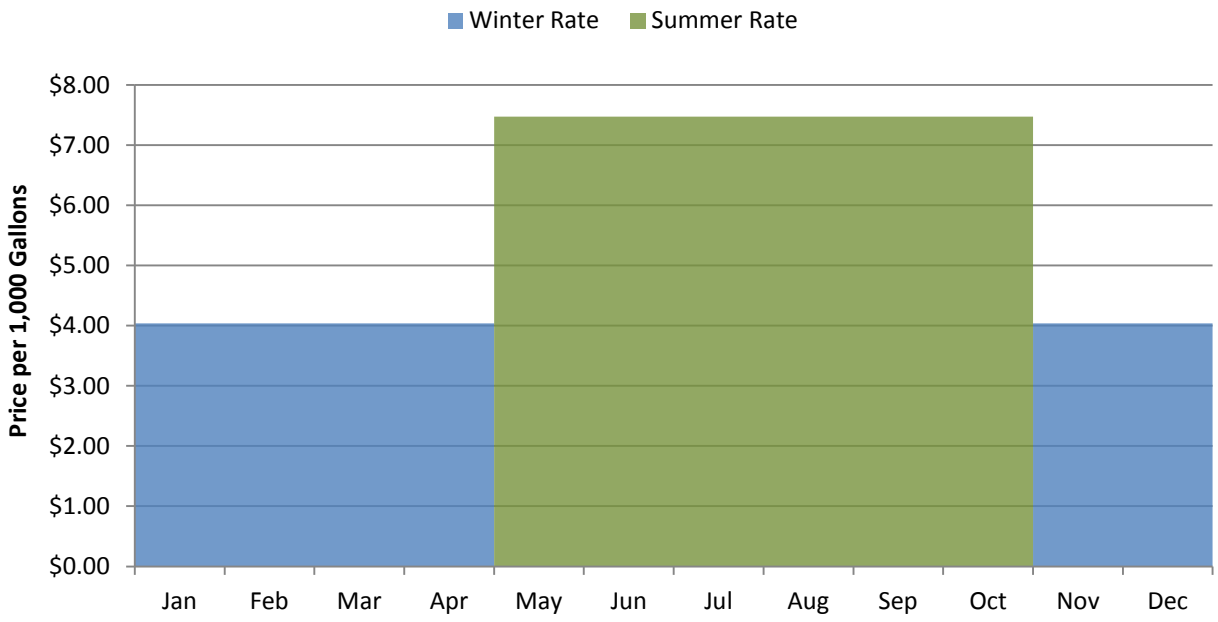

Figure 21: Utilities' 2013 non-residential seasonal rates

Related to SWSI Foundational Activities, Utilities has implemented measures and programs in all categories. Related to SWSI Ongoing Water Use Measures and Programs, Utilities has implemented levels one through three. And, related to SWSI Education Activities, Utilities maintains one of the most comprehensive water conservation education programs in the state of Colorado. Utilities has opportunities to provide or improve water efficiency programs by better identifying, benchmarking and targeting the largest and least efficient users in the system, and by proposing legislation which saves water at very little cost to customers.

WATER USE TRENDS

Water usage rates have declined substantially over the past 15 years. This is attributable to a variety of factors, including conservation and efficiency measures implemented. It also is due to changes in the price of water, economic conditions, local industry changes, a cultural shift in water use behaviors, and the 1992 Federal Energy Policy Act (EPAct). EPAct savings, referred to in SWSI 2010 as passive savings, are considered permanent as are those from efficiency measures implemented by Utilities. Behavioral, economic and industry changes, including lingering effects of drought (drought shadow), can erode quickly if water emergencies abate or economic conditions improve. Water saved through efficiency must be permanent to successfully allocate that saved water to serve future water needs. Estimates of the impact of these factors on water use are shown in Figure 22.

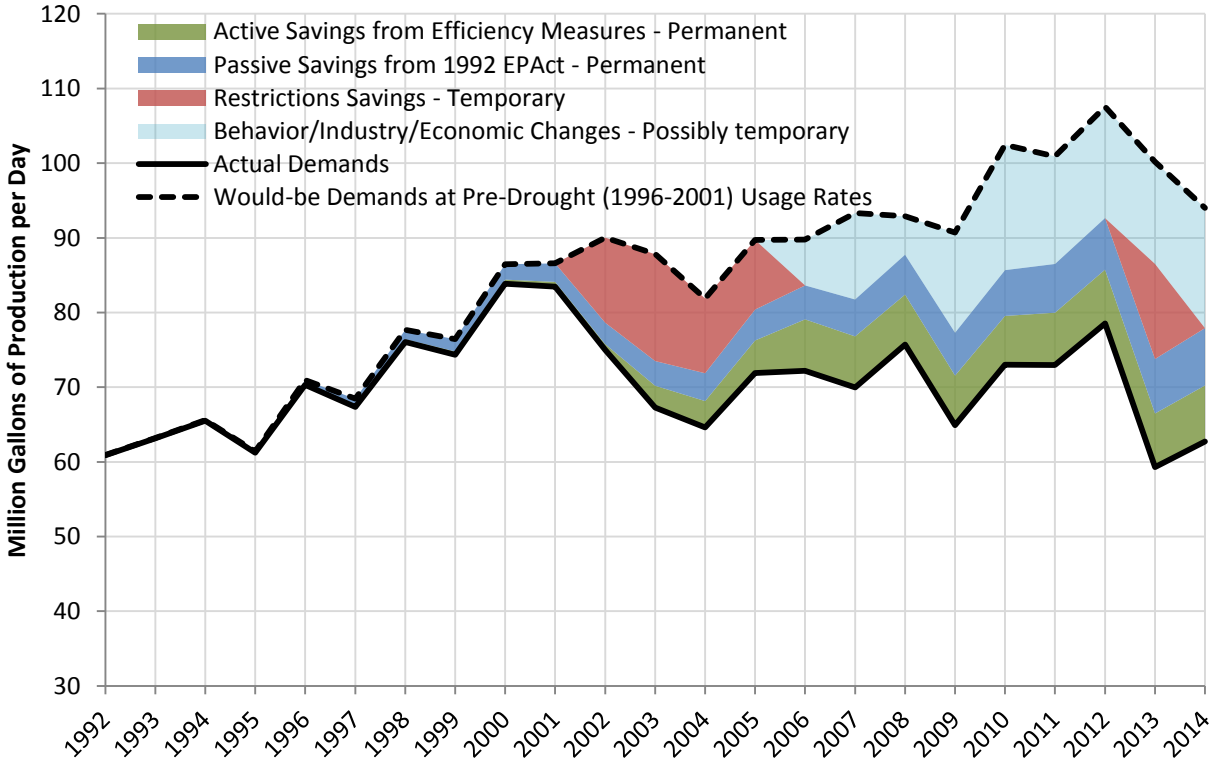

Figure 22: A variety of factors have influenced changes in water use over the past 15 years

Indoor Water Use

Conservation and efficiency measures have had a tremendous affect on water use. And it is important to look closely at emerging water use trends to implement timely water use efficiency measures that are appropriate and cost-effective. As shown in Figure 23, passive and active savings measures have reduced residential indoor water use by 27% since 2000. While there are still large and inefficient users, this may be an indication that further widespread programming is unnecessary.

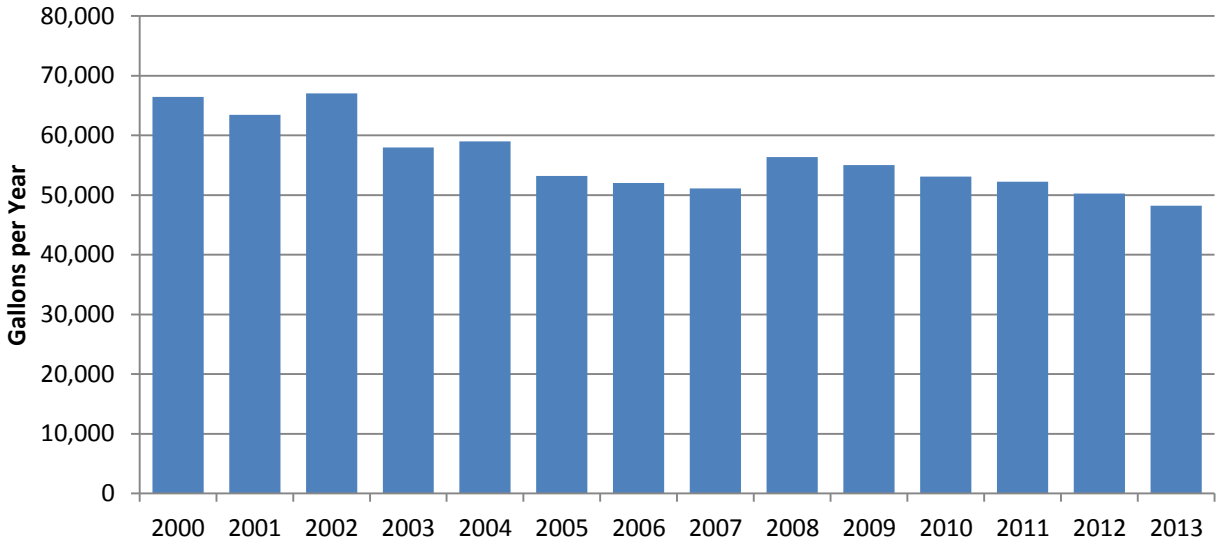

Figure 23: Residential indoor use per customer has declined 27% since 2000

The downward trend in residential indoor use is closely related to the age of housing stock. Figure 24 shows residential use per capita per day by decade of home construction. Energy and water efficiency standards have been improving the efficiency of indoor water use for decades, a trend that is expected to continue for many more years.

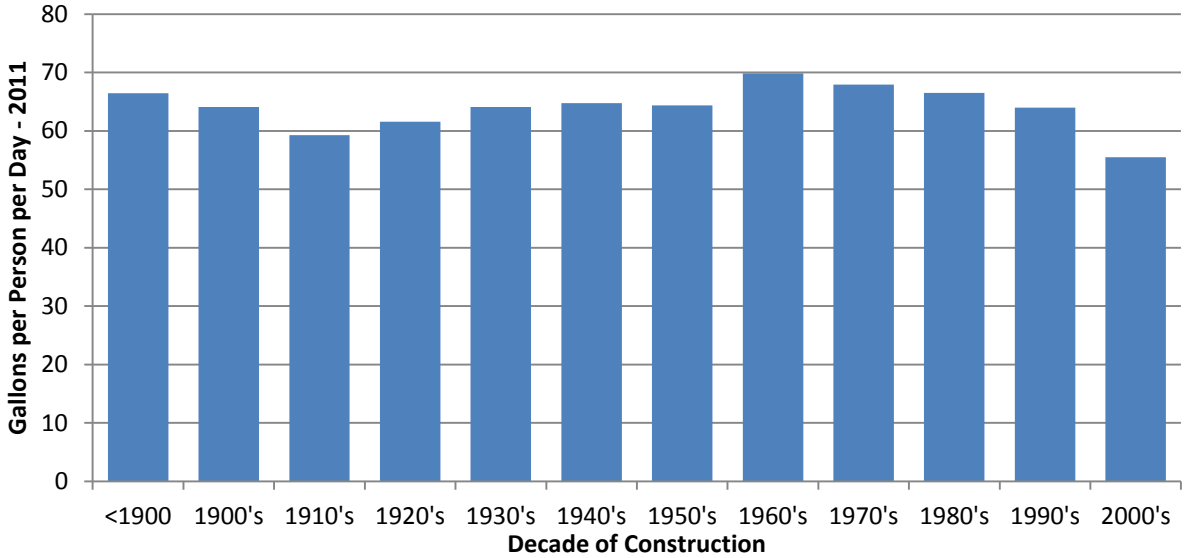

Figure 24: Efficiency standards have effectively reduced indoor water use in newer homes

Outdoor Water Use

Residential outdoor water use does not show a discernible downward trend. With the exception of three relatively wet years in 2004, 2009, and 2013, outdoor use has remained

relatively flat since 2002 as shown in Figure 25. Five years during this period, 2002 - 2005 and 2013, also were subject to watering restrictions.

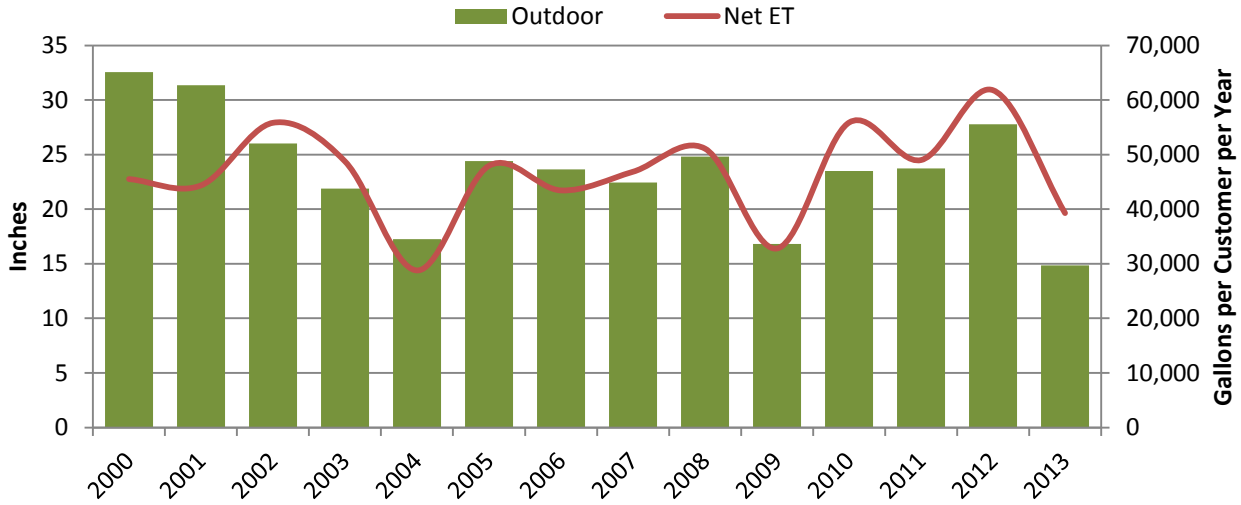

Figure 25: Residential outdoor use has remained relatively flat since 2002 and tends to adhere closely to irrigation need (Net ET)

Outdoor useage rates trend upward in newer homes as indicated in Figure 26. This is particularly true with irrigation application rates. The sharper upward trend in irrigation rates is due to the fact that average lot size and the amount of irrigable area has declined in recent decades. This pattern is associated with the prevalence of automated irrigation systems in new homes since 1990s. While newer homes with irrigation systems tend to be watered adequately or too much, Figure 23 also shows that older homes are typically irrigated at a deficit.

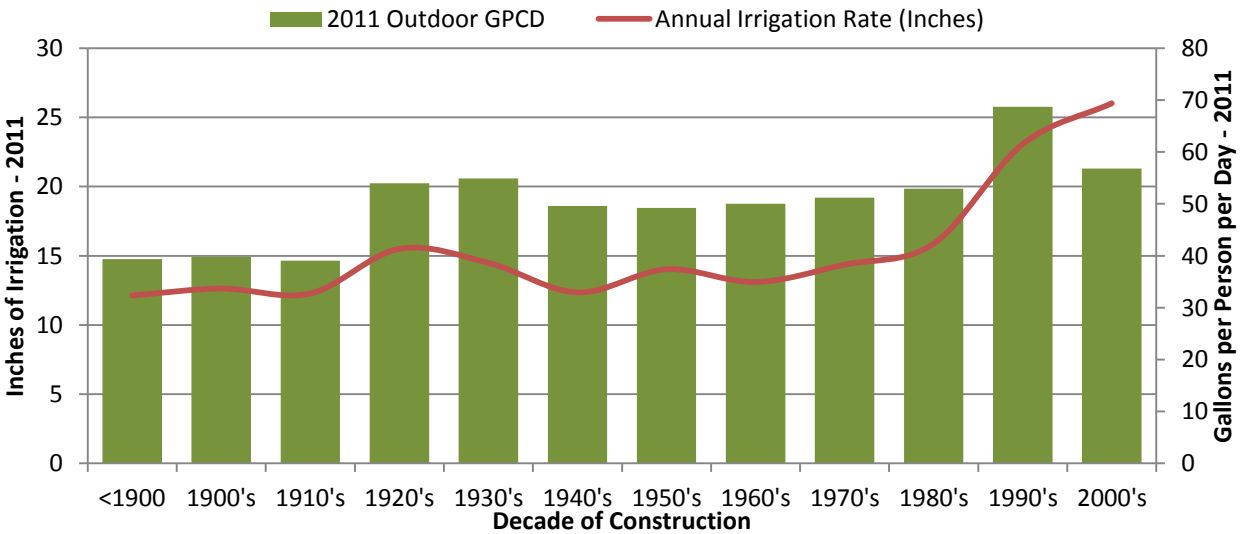

Figure 26: Residential outdoor water use tends to be higher in newer homes, despite the fact that lots sizes and the areas irrigated are smaller

As shown in Figure 27, city-wide (residential and commercial) irrigation application rates have been at deficit levels since 2002. This trend is consistent regardless of whether watering restrictions are in place. However, rates of use are highly variable in both residential and commercial sectors indicating that opportunities for targeted efficiency measures and programs exist. In addition, a trend of this nature negatively impacts landscape health and is not sustainable. This further suggests that many opportunities exist to help customers implement landscape changes that improve health and ensure reliable long-term water savings.

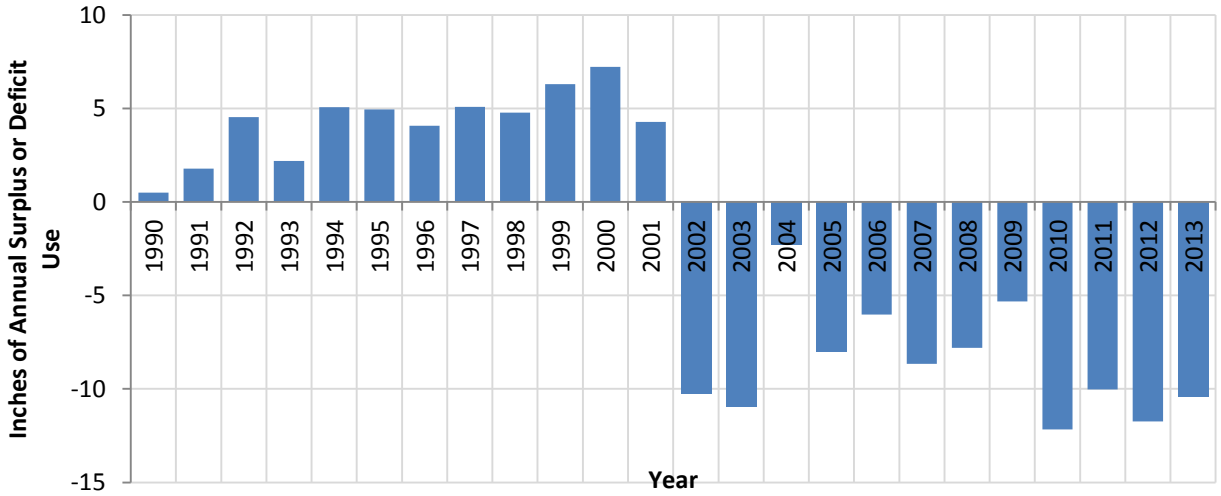

Figure 27: Irrigation application rates have been at deficit level since 2002

On the whole, irrigation rates for commercial customers are higher and are somewhat less influenced by weather, as shown in Figure 28. In some years, commercial outdoor use per customer is on par with pre-drought rates. On average, per customer commercial outdoor use has increased since the mid 2000's. This indicates that there is likely more savings potential in the commercial sector than the residential.

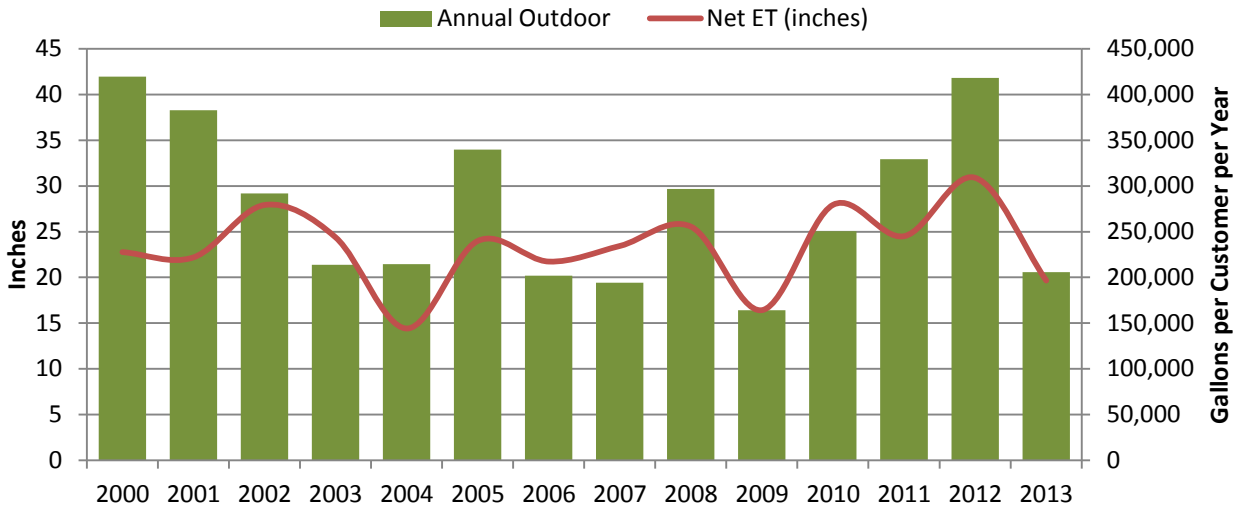

Figure 28: Commercial outdoor use tends to be somewhat more variable from year to year compared to residential outdoor use and is not as closely correlated with weather

Distribution System Water Loss

Over the past few years, Utilities has proactively reduced distribution system water loss by implementing water main replacement, leak detection, and other programs. While water savings for each of these measures and programs are not specified in this Plan. Figure 29 shows the difference between total water production and water sales as a percentage of total production and indicates a downward trend in "non-revenue" water since 2000.

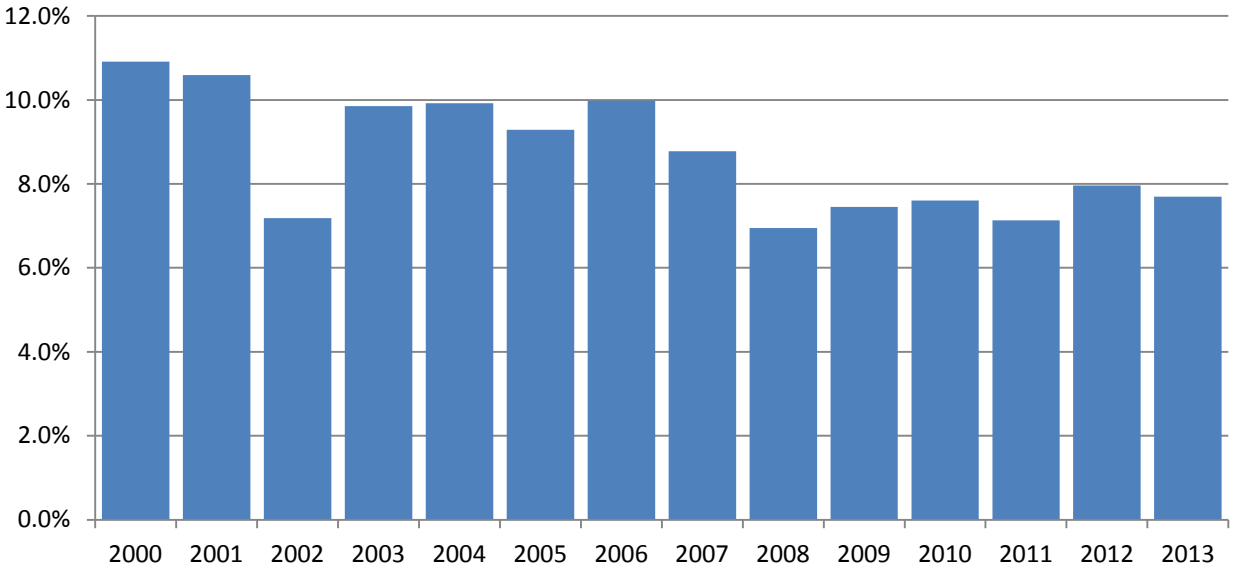

Figure 29: Non-revenue water as a percentage of total production is declining

In addition to a water demand profile and forecast of future demands, recent water demand trends are an important indicator of where water efficiency programming has been effective and where potential still exists for future programming. Useage trends in Colorado Springs, along with the passage of Colorado Senate Bill 14-103 which, beginning in 2016, prohibits the sales of fixture that do not meet EPA WaterSense criteria, indicate that widespread residential indoor measures and programs are no longer necessary. There are no clear trends in commercial indoor use. This, combined with the fact that few programs have been implemented to address commercial indoor use, is an indication that many opportunities for increased efficiency still exist in this sector. Trends in residential outdoor use indicate that additional programs in this area must specifically address unusually large or inefficient customers as well deficit watering resulting in poor landscape health and unreliable water savings. More widespread potential appears to exist in commercial outdoor use, though special attention should be paid to large or inefficient users. Finally, despite a recent downward trend in distribution system water loss, a great deal of potential for savings still exists in this area. This is particularly true considering the increasing importance of reducing system water loss and Utilities' aging water infrastructure.

DEMAND FORECAST

Utilities uses an econometric model to forecast water demand. An econometric model analyzes historical relationships between variables and uses those historical relationships to forecast future variables.

The approach used by Utilities is an evolution of that developed by Montgomery Watson and BBC Research and Consulting in 1993. This approach relates water customers and demand to economic and demographic factors like population, personal income and employment, and includes:

- Weather
- Population growth
- Personal income
- Military expansion
- Water prices
- Housing starts
- Inflation
- Employment
- Seasonal patterns
- Water restrictions and drought shadow

Explanation of Variables

Population forecasts come from the State Demographer's Office. Forecasts for other economic variables like personal income and employment come from Global Insight, an economic consulting firm. Moody's Economics Forecasts are calibrated to the state population forecasts to maintain consistency. The primary difference between the two relates to assumptions around troop transfers at Fort Carson.

The weather variables in the demand forecast are assumed to be normal. This assumption results in a forecast that has an equal chance of being high or low based on weather. This assumption is the best one for forecasting revenue, which is one of the principal uses of the demand forecast. About half the time actual sales will be higher than forecast and half the time actual sales will be lower than forecast. On average the forecast should be consistent with actual results.

The price term used in the forecast is the four-service typical bill. Customers respond to their bill more than to average or marginal prices. Because the bill for all four-services is included, any changes in electric, gas, water and wastewater rates will change customers' bills and impact water demand. All price and income variables are in real (inflation adjusted) terms.

The forecasting equations include seasonal variables and dummy variables. The *seasonal variables* are monthly variables and reflect the normal monthly changes through the year. The *dummy variables* account for errors in the historical data, such as billing changes.

Drought Impacts

The drought shadow dummy variables are included in the forecasting equations to reflect changes that customers made in their water use in response to the 2002 and 2013 drought and water restrictions. The drought was a water shortage that resulted in a higher level of water use awareness among customers. Customers made ongoing behavioral and physical changes to their water use patterns in response to this crisis and in response to communication and rate increases from Utilities. The drought shadow is the persistence of these responses in future water use. The drought shadow is estimated at 5 percent based on customer use in the years after mandatory restrictions. It is updated as more post-drought data is obtained.

The dummy variable for customer response to drought conditions is necessary because use was reduced substantially during water restrictions. This is accounted for in the estimation of the coefficients of the variable. The variable is then used to incorporate the impact of the drought shadow on the forecast. The dummy variable is not returned to zero once restrictions end. The equation is run with zero and non-zero restriction dummies. The values of the restriction dummies are tuned until the forecast is reduced by approximately 5 percent from what the forecast would have been if the restriction dummies had been set at zero. Thus, the forecasts are set to reflect the estimated impact of the drought shadow.

Water forecasts are developed for each customer class and the forecasting equations for each class use the drought shadow dummy variable appropriate for each rate class. The equation and specific variable used for each class are discussed below.

Residential Customers

The primary explanatory variable in the residential customer equation is housing starts. The housing start forecast, is from Moody Economics and is calibrated to the State Demographer's population forecast. Population was tested in the equation, but it was not significant. The equation also includes seasonal variables, dummy variables for errors in the historical data, and the lagged dependent variable (customers in the previous month). The resulting forecast projects customers to grow at a 1.5 percent per year rate from 2014 until 2023 compared with a historical average annual growth rate of 1.3 percent for the last ten years.

Residential Use per Customer

Residential sales are the largest single class and account for almost half of total system water sales. Residential sales are forecast as the product of customers and use per customer. Use per customer reflects the fairly homogenous nature of residential customers. The key variables in the residential use per customer equation include the four-service typical bill, adjusted for inflation. The weather terms include cooling degree days, heating degree days and precipitation. Each of these weather terms is applied during the months of March through November. Cooling degree days are multiplied by a dummy variable for summer water

restrictions to indicate a change in customer response to weather during water restrictions. A winter water restriction dummy variable also is included in the equation.

A post-1994 customer variable is included to account for the proportion of customers whose homes were built after federal water efficiency standards went into effect. This factor is based on the end-use analyses that have been performed for this sector. Seasonal factors also are included in the forecast equation. Personal income, or per capita personal income, is not included because it was not significant.

Commercial Customers

The primary driving variable for the commercial customer equation is residential customers. This is based on the principal that stores follow rooftops. As homes are built, stores will follow. The equation also includes the lagged dependent variable, seasonal factors and several dummy variables to account for changes in the historical data. Multi-family customers are included in the commercial sector in this forecast. Multi-family has switched back and forth from the commercial sector to the residential sector in the historical data. These changes have been accounted for in the data, but there are periods when the data were not recorded separately and could not, therefore, be adjusted. Dummy variables were used to account for these switches. Commercial customers are projected to increase at an average annual rate of 1.3 percent per year over the next ten years.

Commercial Use per Customer

The primary variables in the commercial use per customer equation are price, per capita personal income, weather, water restriction dummies and seasonal factors. The price term, as discussed in the residential sector, is a four-service typical bill. Per capita income is divided into summer and winter months. This results in indoor and outdoor use growing at slightly different rates. Weather terms include cooling degree days, heating degree days and precipitation.

Cooling degree days are crossed with both year and water restrictions to account for a growing response to hot days over time and to account for a change in the response to hot periods during restrictions. Cooling degree days are crossed with some of the monthly variables to indicate a different response to weather in different months. That is, the amount of water used in response in a hot spring month is different than that used in a hot summer month. Commercial use per customer is projected to increase at an average of 0.5 percent per year over the next ten years.

Military Sales

The military sector includes Fort Carson, Peterson Air Force Base and the Air Force Academy. This group accounted for about 7.6 percent of total system water sales in 2013. An equation was developed for the combined group, in part because separate historical data for the three installations was not always maintained.

The variables included in the forecasting equation are price, employment, weather, seasonal variables and dummies for water restrictions. A four-service typical bill was used to represent the price term. The commercial sector typical bill was used instead of developing a special bill for this sector. Since rate changes generally apply for all rate classes, the commercial bill will tend to move in the same direction and at the same time as rate changes for the military sector.

Total employment was used as the indicator of economic activity in the military equation. Water use at the military bases is correlated with total employment in the region. The weather terms include cooling degree days, heating degree days and precipitation. Cooling degree days are crossed with the summer water restriction dummy to account for a different response to hot weather during restrictions. Water restriction dummies were included for both summer and winter use. Military sales are projected to increase at an average annual rate of 0.6 percent over the next ten years.

Other Classes and Total Water Sales

Forecasts are developed for the smaller classes, but are not discussed here. Total Sales is the sum of the individual classes. This approach is referred to as a bottom-up forecast. The bottom-up approach allows the use of variables that are more appropriate to each class. The bottom-up approach also offers the opportunity for errors in one class to be offset by errors in the opposite direction in another class. The benefit of these offsetting errors has been demonstrated in monitoring the variance of the forecasts.

Total system sales are forecast to increase from about 27 million CCF in 2013 to 34 million CCF in 2023. The average growth rate over the next 10 years in both total sales and production is approximately 1.0 percent per year.

WATER USE EFFICIENCY AND CONSERVATION GOALS

Reasonable water savings targets and comprehensive conservation and efficiency goals depend on a sound knowledge of water use patterns and trends and the factors influencing them. Utilities' actual and forecast water use has declined significantly from pre-drought usage rates. However, use is not declining in all areas and efficiency measures have not been widely implemented in all sectors. Achieving significant, permanent savings which can be reliably used to serve future needs requires many years of consistent implementation.

The 2008-2012 Water Conservation Plan established a water savings target of 7.5% or 2,530 million gallons in 2017, from 2007 forecast demands. The efficiency measures already implemented (or currently planned) forecast a savings result of 8.2% or 2,767 million gallons in 2017 as shown in Figure 30. When added to "passive" savings acquired through the EPAct, these water use efficiency savings are 6,000 million gallons, or 17.8%, in 2017. The measures proposed in this Plan would elevate total conservation and efficiency savings from the 2007 forecast, passive plus active, to 19.6% by 2021.

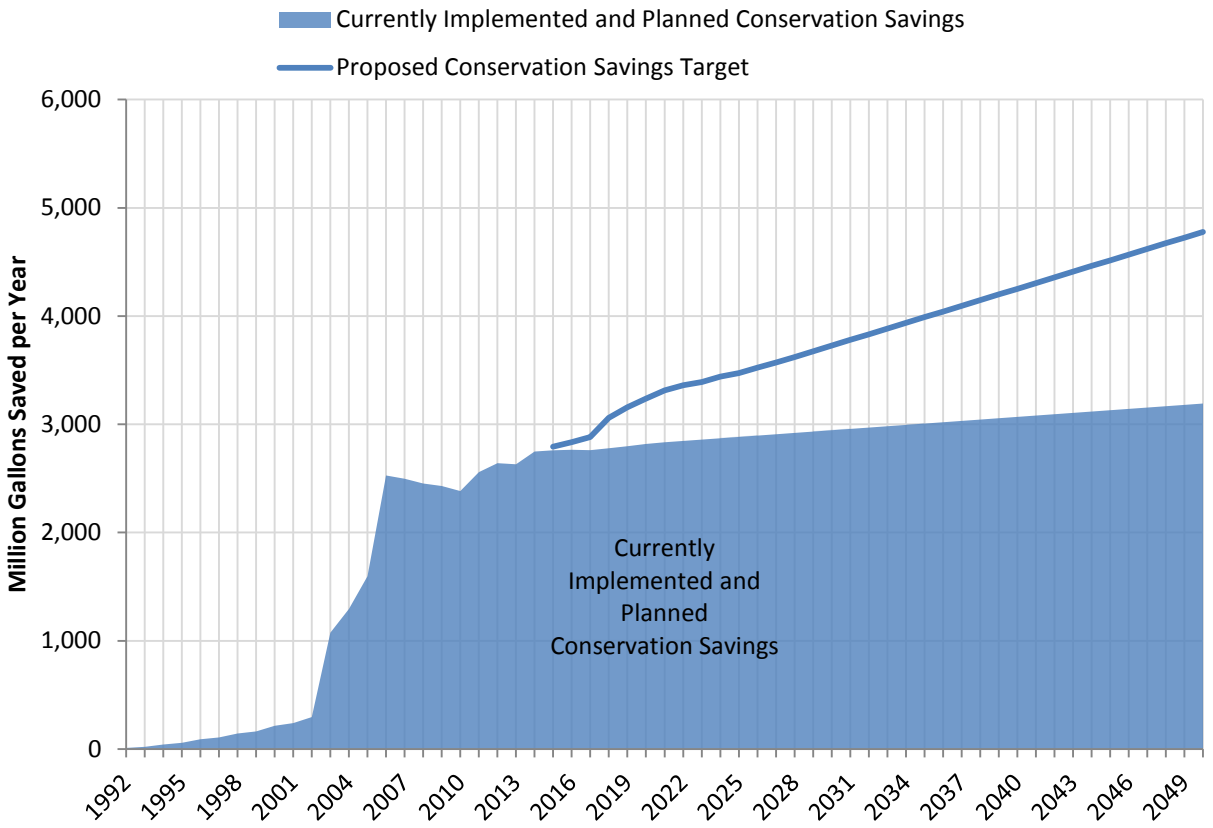

Figure 30: The increased water efficiency savings target proposed in this Plan represents a 23% increase over the current program in 2021

In addition to meeting this water savings target, Utilities intends to build on the successes we have had implementing conservation and efficiency programs for many years. Utilities has achieved the water savings goals set forth in the 2008-2012 Water Conservation Plan and has also maintained a low residential per capita demand, made significant in-roads implementing efficiency measures with commercial customers and established a reputation as a national leader in water conservation. Specifically, Utilities has been recognized nationally for its efforts with 2012 and 2014 EPA WaterSense Promotional Partner of the Year Awards, awarded to only one utility in the nation each year, and the 2013 EPA WaterSense Award for Excellence in Strategic Collaboration.

The primary objectives of the 2014 Water Use Efficiency Plan are to:

1. Implement cost-effective water use efficiency measures and programs that provide reliable water savings which will be utilized as source of supply for future generations in Colorado Springs.
2. Maintain low residential use per capita, specifically working with large users who have not participated in programs and those most significantly affected by increasing water prices to enhance quality of life in the community.
3. Address inefficient use in the commercial sector using industry-specific benchmarking, performance-based incentives and comprehensive water use evaluations.
4. Develop and maintain collaborative relationships that encourage water conservation and efficient water use throughout the region.
5. Maintain a reputation as a national leader in water conservation and efficient water use through innovative programming, analysis and collaboration.

The goals established by Utilities represent a blend of qualitative and quantitative outcomes. Goals are monitored annually and revisited every three to five years.

MEASURE AND PROGRAM SCREENING

To determine the measures and programs Utilities would implement to meet the Plan's water conservation goals, Utilities went through a rigorous process of identifying and selecting potential water efficiency programs.

Many years of ongoing information gathering and experience went into the process of identifying programs for evaluation. The inventory was developed after reviewing best management practices, consultant reports, end-use studies and internal planning documents. With this information and staff expertise, Utilities created an inventory of measures and programs for consideration. In addition to the measures and programs listed below, all existing programs and measures were evaluated. Utilities reviewed conservation measures by category (i.e., education, rates, rebates, audits and regulations) and by market (i.e., indoor vs. outdoor, residential vs. commercial, etc). These measures and programs were then evaluated based on the four screening criteria listed below and described in the following section. Commercial programs considered are listed in Table 10 and residential programs are listed in Table 11.

1. Water Savings Potential
2. Social/Political Acceptance
3. Likelihood of Success
4. Market Potential

Commercial Outdoor Programs Considered	Commercial Indoor Programs Considered
Alternate Water Resource Rebate Program	Basic Commercial Water Use Evaluation
Demonstration Gardens in Community Medians	Commercial Car Wash Certification
Flow Sensing Shut-off Device Rebate Program	Commercial Cooling Tower Equipment Rebate
Habitat Satellite Gardens	Commercial Dishwasher Upgrade Rebate
Landscape Conversion Grants	Commercial Laundry Upgrade Rebate
Landscape Irrigation Ordinance	Commercial RO Rebate Programs
Large Landscape and High Water User Audits	Industrial Agricultural Water Conservation Program
Native Grass Payback	Public School Bathroom Retrofit Contest
Sub Meter Rebate Program - Outdoor	Single Pass Cooling Equipment Upgrade Incentive
The Audubon Cooperative Sanctuary Program for Golf	Sub Meter Rebate Program - New Construction Indoor
Water Budget-Based Rates	WaterSaver Restaurant Certification Program
Water Waste Ordinance	Large Water User Pilot Program
WaterSaver Irrigation Certification Program	Water Efficiency Pay for Performance Program
Water-Wise Landscape Budget	New Utility/Municipal Facility Standards
Xeric Landscape Grants - New Construction	

Table 10: Commercial measures and programs considered

Residential Outdoor Programs Considered	Residential Indoor and New Construction Programs Considered
Dig into Savings Education Program	Mobile Home Community Water Conservation
Drip Conversion Kit	New Home Construction Free-bate
Free Rain Sensors for Homeowners	Plumbers to People
Garden in a Box	Affordable Housing WaterSense and EnergyStar Certification Incentive
Landscape Patio Coupon	New Home Construction Free-bate
Landscape Tree Coupon	New Home Landscape Rebate
New Home Landscape Rebate	Residential Landscape Establishment Permits
Rain Water Harvesting Plant Research Program	WaterWise Landscape on a Model Home
Residential Landscape Ordinance	Xeric Landscape Grants - New Construction
Residential Landscape Establishment Permits	
Water Hog Landscape Video Contest	
Water Wiser Workshop Rebate	
WaterWise Landscape on a Model Home	

Table 11: Residential indoor, outdoor, and new construction measures and programs considered

Program Screening Process and Criteria

Utilities went through multiple screening iterations to reduce the list of potential measures and programs. In addition to the screening criteria, water use trends and forecast, Utilities considered several perspectives – indoor versus outdoor, residential versus commercial and new versus existing construction. Utilities evaluated each conservation measure by SWSI 2010 category (see section on Colorado Springs Water Use Efficiency). A description of the four program screening criteria used by Utilities to evaluate the costs, acceptance, feasibility and benefits of each program are as follows:

1. Water Savings Potential

   Is the water savings potential significant? In order to achieve water savings goals, careful consideration must be given to how much water savings a program may yield. Fixtures using a large volume of water may be a better target than those using a small amount. End uses of water that are widespread may also be good targets. For example, more customers have lawns than water features: restricting lawn watering has more savings potential than limiting water features. Water savings can be influenced by a number of variables including individual unit savings, program length, program life, annual participation and market penetration.

2. Social/Political Acceptance

   Will customers and stakeholders accept the program? Consideration must be given to customer and community preferences. Utilities learns about preferences through the

strategic account management program, individual customer meetings, customer research, customer feedback and public meetings. A program that is a basic expectation for our customers or is an industry best practice received a higher rating than a program that is controversial or unproven. For example, a 2013 survey found that nearly 80% of our customers believe it is important or extremely important for Utilities to provide information on how to use water more efficiently and 70% say it is important or extremely important that we provide rebates and incentives to help them use water more efficiently. On the other hand, onerous regulations tend to be far less popular with our customers. As a result, education and incentive programs received a higher rating than regulations. However, prohibitions on water waste scored in the middle in spite of the fact that regulations are unpopular because reducing water waste is also important to our customers and is an industry best practice.

3. Likelihood of Success

Are there significant barriers to prevent program success? For example, introducing a program that requires modifications to Utilities' billing system would have significant and system impacts. One such program is budget-based rates for residential customers. The expense of seamlessly implementing such a program in the current billing system may be prohibitive. Other barriers to success include programs with high upfront costs, either internally or for customers, or significant staffing requirements.

4. Market Potential

Does the program have the potential to reach a large number of customers? Programs that target a small number of large or inefficient users are important, but it may be equally important to implement programs that impact large numbers of customers. Investing resources in only a small number of projects may not effectively engage the customer base in conservation and efficiency improvements. Programs that effect large numbers of customers, such as conservation-oriented rates, raise awareness while achieving substantial savings in small increments.

MEASURE AND PROGRAM SELECTION

Using the process and criteria discussed previously, the list was narrowed to 21 new programs which were evaluated for water savings and cost-effectiveness. Ultimately, 12 new and 10 existing programs were selected for implementation based on water savings, cost-effectiveness, social acceptance, likelihood of success, and market potential. The following stakeholders were considered throughout the process.

- Builders and developers
- City Council and Utilities Board
- Commercial and industrial customers
- Community organizations
- Environmental and regulatory agencies
- Landscape and irrigation professionals
- Neighboring water providers
- Plumbers and mechanical contractors
- Residential customers
- Trade associations

Water Savings

For each selected program, Utilities conducted a water savings analysis based on the number of units or customers potentially affected, the estimated annual water savings per unit and the expected life span of the unit or measure. Using 2015 as the baseline year, the following table ranks current and proposed programs by water savings.

Rank	Program	2021 Water Savings (AF)
1	Residential Inclining Block Rates	3,617
2	Commercial Seasonal Pricing	950
3	Conservation Education and Awareness	669
4	Water Waste Ordinance	346
5	Commercial Landscape Incentive Program (CLIP)	188
6	Residential Landscape Establishment Permits	145
7	Flow Sensing Shut-off Device Rebate Program	128
8	Commercial Landscape Code and Policy	108
9	Large Water User Audit Program	96
10	Commercial Irrigation Equipment Rebate	82

Table 12: Top 10 Programs ranked by potential water savings in 2021

Cost-Effectiveness

In water efficiency planning, cost-effectiveness is calculated in dollars per unit of water saved. Typically, measures and programs with the lowest total cost per unit of water saved are selected for implementation. However, each of the criteria discussed previously was also considered.

Utilities conducted a rigorous analysis of implementation costs, using industry accepted standards and engineering estimates, where possible. Costs related to program implementation and management were established for both Utilities and customers. Marketing and advertising costs were estimated based on past experience. Labor costs were estimated from across the organization for program development and management.

For the purposes of this analysis, costs per unit saved were calculated for Utilities, customers, and in total. Economic costs to customers were balanced with the economic benefits reaped by customers in terms of reduced utility bills. These were added to total utility costs to derive a "total resource cost". The cost of water saved is calculated using the fifteen-year savings and levelized fifteen-year costs for each program. Levelized costs take into account standard inflation and discount rates. Table 13 ranks selected programs by utility cost per acre foot saved and includes the estimated total resource cost.

Rank	Program Name	Utility Cost Per AF Saved ($/AF)	Total Resource Cost Per AF Saved ($/AF)
1	Residential Inclining Block Rates	$83	$83
2	Commercial Seasonal Pricing	$399	$6,310
3	Flow Sensing Shut-off Device Rebate Program	$808	$934
4	Native Grass Payback	$1,650	$4,356
5	Affordable Housing EPA Certifications Incentive	$1,987	$21,411
6	Commercial Irrigation Equipment Rebate	$2,921	$7,736
7	Residential Irrigation Equipment Rebates	$4,432	$12,982
8	Commercial Landscape Code and Policy	$4,468	$13,093
9	Residential Landscape Establishment Permits	$4,528	$10,883
10	Home Efficiency Assistance Program (HEAP)	$4,587	$4,587
11	Residential Irrigation Evaluations	$4,748	$16,323
12	Commercial Indoor Incentive Program (CIIP)	$5,101	$9,210
13	Large Water User Audit Program	$6,426	$14,273
14	Low Income Residential Fixture Retrofit Program	$6,837	$6,837
15	Water Waste Ordinance	$6,917	$6,917
16	Commercial Smart Irrigation Controller Rebate	$7,500	$18,446
17	Commercial Conductivity Controller Rebate	$7,691	$9,396
18	Commercial Landscape Incentive Program (CLIP)	$9,426	$17,385
19	Residential Spray to Drip Irrigation Rebate	$9,463	$22,083
20	Conservation Education and Awareness	$11,690	$11,716
21	Commercial Spray to Drip Irrigation Rebate	$13,238	$24,289
22	Basic Commercial Water Use Audit	$13,860	$16,463

Table 13: Selected Programs Ranked by Utility Cost-Effectiveness

MEASURE AND PROGRAM DESCRIPTIONS

This section offers a brief definition of existing conservation and efficiency programs and new programs selected for implementation. Specific details of newly selected programs are generally not provided. Utilities has an established process for developing and implementing water conservation programs. The strategy, steps and schedule for how Utilities plans to address the unique characteristics of each program are described in the *Implementation Plan* section.

SWSI Levels Framework

Each of the efficiency measures and programs selected corresponds to one of the four SWSI 2010 Conservation Levels categories. The programs are arranged according to and described within the appropriate category.

Foundational Measures and Programs

Rates

One of the key conservation strategies employed by Utilities since 2002 and continued in this Plan is inclining block rates for residential customers and seasonal rates for commercial customers. Both rate structures use price signals to encourage conservation.

While continuing to implement and evaluate conservation-oriented rates for residential and non-residential customers, Utilities will evaluate the efficacy of implementing budget-based rates for irrigation-only accounts. Utilities recognizes that budget-based rates have several potential advantages:

1. They provide an effective means of promoting water use efficiency.
2. If designed to do so, they can improve revenue stability.
3. They can meet cost of service requirements.
4. They may be used in place of or in addition to water restrictions in time of shortage.

Budget-based rates also can be expensive and difficult to implement, confusing for customers, and potentially controversial.

Water Loss Control

Utilities pursues a holistic approach to water loss control which involves much more than just leak detection. Several programs are currently in place to reduce distribution system water loss. In addition to these programs, Utilities is committed to developing a program to conduct annual water loss audits using the AWWA M36 methodology as well as the WaterRF 4372: Real Loss Component Analysis Tool. The use of these methods and tools will allow Utilities to refine its targets and water savings goals as new data are acquired.

Water Leak Survey and Detection Program

In February of 2013, Utilities developed a Water Leak Survey and Detection Program. As part of this program, four full-time staff pro-actively survey our Water Distribution System using defined routes. The program incorporates active and passive survey techniques. Active leak detection consists of Leak Survey Specialists using acoustic leak noise detection and correlation equipment to detect and pinpoint known and unknown leakages. Passive leak detection consists of Leak Survey Specialists performing survey routes with programmable electronic leak localization equipment, known as Data Loggers, for early awareness of potentially otherwise unknown system leakages.

This program is focused on detection and mitigation of known and unknown water system losses, tracking of Real Losses due to Distribution System leaks, and characterization of leak cause for evaluation in determining future Water Main Replacement Program (WMRP) needs. Maintenance crews use an electronic Water Loss Tracking Report (WLTR) to capture data related to all leaks repaired during the course of each calendar year. Environmental and Regulatory impact data and Best Management Practice (BMP) implementation also is captured on the Report.

Since inception, the Leak Survey and Detection Program has pinpointed more than 180 water distribution system leaks; 30 of these came from passive survey of just over 135 miles (703,982 ft) of mainlines. The pinpointing accuracy of the program was 98%. Utilities identified and mitigated over 129MG of known water loss through repairs. An estimated $300-$350K in cost savings/cost avoidance was realized between February 2013 and January 2014 via this program.

Water Mains Replacement Program

Like most communities across the country, Utilities' potable water distribution system has experienced a dramatic increase in pipeline failures (leaks and breaks) due to aging and deteriorating infrastructure. In Colorado Springs, most failures are attributed to the deterioration of metal infrastructure from corrosion. Utilities' water system has an unusually high working pressure (up to 250 psi) which also plays a significant role in system degradation and failures. Initiated in 2005, the Water Mains Replacement Program (WMRP) defines a funding mechanism to efficiently identify, prioritize, rehabilitate and replace failing or inadequate water distribution pipelines and infrastructure to reduce water loss and ensure safe and reliable water service to our customers. From 2005 through 2013, over 59 miles of failing water mains were replaced. The total number of leaks and breaks in 2005 was 310, and in 2013 the total was 218.

Pipe projects are prioritized using a risk-based prioritization model that weights probability of failure components. Since our data reflects that the 500 miles of cast and ductile iron pipe installed after 1950 accounts for the majority of our breaks and leaks, this set of pipe is prioritized for replacement. Utilities is also focused on understanding the condition and predicting the failure of larger transmission mains that are the most critical to our community and which result in the greatest water loss when they fail. Proactive condition assessments are

performed on such pipes to prevent failure. Studies conducted by water professionals in the United States and Canada have revealed that if corrosion protection is installed and maintained on deteriorating metal infrastructure, that protection can essentially renew the pipe at a fraction of the cost of actual replacement.

The WMRP is a critical component of Utilities' conservation and water loss prevention plan since it funds the replacement of already failed mains and helps prevent catastrophic failures of larger transmission pipelines. This program currently has budget dollars associated with it through 2025 and is projected to reduce the annual failure rate by between one half to one percent.

Corrosion Protection/Prevention Program

The vast majority of water distribution system failures are related to corrosion. Therefore, a greater focus on corrosion management is critical to maximizing infrastructure design life. Utilities is proactively developing the water corrosion program and establishing tasks critical to its success. These tasks include Utilities collecting relevant soil chemistry and electrochemical data as well as pitting data on corroded pipe to ascertain how different soil environments impact the rate of corrosion on steel, cast iron and ductile iron pipes. Utilities has developed a procedure and has been collecting data since January, 2013.

Utilities has also found that the installation of “sacrificial” anodes at leak sites can substantially reduce the leak rate of the water system. Accordingly, a procedure has been developed to install anodes at leak sites. A parallel procedure was developed to capture where and how many anodes are installed at each site. Using these processes, Utilities is able to track how the failure rate is impacted by the addition of these anodes in the water system. Since February of 2013, 240 anodes have been installed in the water system with an anticipated leak rate reduction of one to two percent per year.

Automated Meter Reading

The AMR system was installed from 2005 through 2010. With the installation of this system, Utilities now receives daily read files for every water meter within the system and can detect meter problems, leaks, and various other events within a few days instead of weeks or even months. These data have allowed Utilities and its customers to save money and identify leaks that may have gone unnoticed for years.

Obsolete Meter Exchange

In 2012, Utilities began a new program to remove old and aging water measurement equipment from our system. Many of these meters were ten years old or older or of styles known to have higher than normal failure rates. Today, Utilities combines new meter technology with the AMR system to track usage and identify issues sooner.

Periodic Programs
In 2012, Utilities implemented a program in which the system's largest meters are exchanged and tested at specific intervals. Meters that are 8" and larger are exchanged and tested every year, while those smaller than 8" are on different schedules. This program allows Utilities to consistently test meters and ensure that its meter equipment is as accurate as possible.

Meter Testing
In 2012, Utilities began a new practice of testing 100% of all meters before they are put into service. While it is rare for a meter to fail soon after installation, this new practice assures that all new meters are accurate before they are installed

Utilities also plans to implement a "Water Meter Accuracy Control Program" in 2015-16. The WMAC Program is a periodic testing program to establish guidelines for meter testing and replacement. Meters are grouped by manufacturer, type, size, and manufacturer date and then a random sample from each group is tested. The resulting data will allow Utilities to identify groups of problem meters that need replacement.

Tracking

Customer Water Use Analysis, Benchmarking
Utilities has consistently tracked water use by customer class for more than two decades. However, more sophisticated water use benchmarking within classifications is needed to identify how to help customers use water more efficiently and make the best use of limited resources. Utilities plans to begin developing benchmarks for water use by industry and utilize this information to develop programs that help customers use water more efficiently.

Utilities will continue to use a variety of measurement and verification techniques for tracking water conservation programs. A spreadsheet model is currently used to quantify and track costs and savings for individual programs. The model is also used to compare projected and actual demand-side management (DSM) savings. A comprehensive record of program activity also helps Utilities routinely analyze water conservation program performance. Periodic analysis of programs using a variety of techniques, such as regression analysis, helps Utilities refine assumptions about program savings and savings potential.

Much of the data recorded in the model is annually reported to the Colorado Water Conservation Board -House Bill 10-1051 which requires reporting of specific water use and conservation data for water providers supplying 2,000 acre feet of water or more each year. In 2016, Utilities plans to purchase a software-based alternative to the model currently used. Among other benefits, a new model would simplify and centralize tracking, allow many users access to program information, streamline analyses and make reporting more efficient.

Utilities will continue to use standard methodologies to monitor per customer and per capita demand on a monthly and annual basis. Assumptions are based on industry accepted practices and standards and the best available data.

Ongoing Water Use Measures and Programs

Following careful evaluation, sixteen Ongoing Water Use Measure and Programs, seven existing and nine new, were selected for implementation. Existing programs are listed in Table 14 and new programs are listed in Table 15.

Existing Programs
Residential Irrigation Equipment Rebate
Residential Spray to Drip Irrigation Rebate
Commercial Smart Irrigation Controller Rebate
Commercial Irrigation Equipment Rebate
Commercial Landscape Incentive Program (CLIP)
Commercial Spray to Drip Irrigation Rebate
Home Efficiency Assistance Program (HEAP)

Table 14: Existing Programs selected for continued implementation in the Plan

Newly Selected Programs
Affordable Housing WaterSense® and Energy Star® Certification Incentive
Low Income Residential Fixture Retrofit Program
Basic Commercial Water Use Evaluation
Residential Irrigation Evaluations
Commercial Cooling Tower Equipment Rebate
Flow Sensing Shut-off Device Rebate Program
Large Water User Audit Program
Commercial Indoor Incentive Program (CIIP)
Native Grass Payback

Table 15: New Programs selected for implementation in the Plan

Residential Indoor Measures and Programs

Residential indoor efficiency standards have substantially improved in recent decades and in 2014, Colorado passed its own legislation. Effective September 1, 2016, SB 14-103 further increases efficiency standards in Utilities' service area as it prohibits the sale of lavatory faucets, showerheads, tank-type toilets and flushing urinals not formally approved by WaterSense. With this legislation, Utilities' decided to end its highly successful Residential WaterSense Toilet Rebate Program ends June 30, 2014. The WaterSense New Home Builder Rebate, Commercial and Multi Family Programs also end December 31, 2014.

Since 2002, Utilities has implemented many programs to improve residential indoor water use efficiency though rebate, giveaway and exchanges. Utilities has provided more than 91,000 household plumbing fixtures through these measures. Products include Energy Star clothes washers, Water Sense toilets, high efficiency showerheads, and faucet aerators. The passage of SB14-103 combined with the penetration of these long-lasting programs allows Utilities to

focus residential indoor efficiency programming on low income customers and large users amongst whom program participation has been low. Many of these customers are unlikely to install high efficiency equipment without program assistance. Programs selected are:

- Home Efficiency Assistance Program
  The Home Efficiency Assistance Program (HEAP) is a partnership between Colorado Utilities and the Energy Resource Center which provides free energy and water efficiency improvements for qualified Utilities' residential customers.
- Affordable Housing WaterSense and Energy Star Certification Incentive
  Utilities provides a water and wastewater fee deferral option for developers who choose to incorporate low-income housing into their projects. This program will use whole building system certifications, WaterSense and Energy Star labeling, which provide greater degrees of performance and savings to the developer, its residents, and Utilities than is used currently.
- Low Income Residential Fixture Retrofit Program
  This program is similar to HEAP in that it requires income pre-qualification to participate. While HEAP is a referral-based program primarily focused on energy efficiency, this program is strictly water-focused and participants are invited to participate.

Residential Outdoor Measures and Programs

Landscape watering makes up nearly half of all residential water use in Colorado Springs and more than two-thirds of Utilities' residential customers water with an automatic irrigation system. On average, homes with irrigation systems use more water than those without. Utilities' residential outdoor programs are intended to improve the efficiency of these systems and to promote conversions to more efficient forms of watering and landscapes that require less water than cool season turf grass. The programs selected are:

- Residential Irrigation Equipment Rebate
  Rebates are provided for high efficiency irrigation system equipment including, smart controllers, pressure-regulating heads with check valves, rain sensors and matched precipitation nozzles.
- Residential Spray to Drip Irrigation Rebate
  Drip irrigation is a type of highly-efficient irrigation that delivers water from the irrigation pipe directly to the soil at the root zone of the plant. Utilities' residential drip conversion rebate returns a portion of the cost of drip irrigation equipment to customers converting high-water use landscaping watered with overhead spray irrigations to low-water use landscaping watered with drip irrigation.
- Residential Irrigation Evaluations
  According to the 2014 Water Conservation survey, approximately 71 percent of Utilities' residential customers have automatic irrigation systems. Thousands of residential

irrigation system evaluations conducted in Colorado indicate that many of these systems are inefficient and programmed to use more water than is necessary. Evaluations of these systems provide customers with valuable information to improve system efficiency, scheduling practices and landscape health.

Commercial Indoor Measures and Programs

Commercial indoor efficiency is a high priority in this Plan. Beyond high efficiency toilet and urinal rebates, Utilities has offered few programs related to commercial indoor use. To effectively improve commercial indoor efficiency, through water use evaluations and audits, more knowledge of end-uses and benchmarks must be developed. Due to the variety of commercial end uses, on-site evaluations and performance-based incentives are a preferred approach for assisting customers in becoming more efficient. The programs selected are:

- Basic Commercial Water Use Evaluation
  This program is a voluntary water use evaluation program to address businesses that have water fixtures and appliances found in common commercial kitchens and restrooms. The program will offer businesses tangible information about their water usage, fixtures and appliances; and the costs and benefits of potential upgrades.
- Large Water User Audit Program
  This program targets the largest commercial and residential users who meet specific high consumption criteria. For example, the top 5% of users in a given customer classification might be offered the option to receive a free water use audit. Based on the results of the evaluations, participants will be informed of other programs available to assist with water efficiency. This program also will be available to the largest outdoor users.
- Commercial Cooling Tower Equipment Rebate
  Commercial cooling towers are large consumers of water which are not typically managed to maximize water use efficiency. This rebate will pay commercial, industrial and institutional customers to replace or install conductivity control systems and sub-metering devices on cooling towers.
- Commercial Indoor Incentive Program
  This program will provide an incentive for medium to large commercial customers who reduce indoor water use through equipment or process changes. Participants provide verified water savings through the installation of eligible water use efficiency measures and in exchange receive an incentive based on the volume of water permanently saved. Improvements might include water reuse and recycling.

Commercial Outdoor Measures and Programs

Commercial outdoor water use efficiency also is a high priority in this Plan as it is the one area where per customer use appears to be increasing. Few programs have been implemented to-date and most were implemented in 2013 and 2014 and have yet to provide substantial

benefits. In addition to the Large User Audit Program mentioned previously, the programs selected are:

- Commercial Smart Irrigation Controller Rebate
  This program has been in place since 2008 and provides rebates for the installation of qualified weather or soil moisture sensor-based smart irrigation controllers.
- Commercial Irrigation Equipment Rebate
  Rebates are available for high efficiency irrigation system equipment including, pressure-regulating heads with check valves, rain sensors, and matched precipitation nozzles.
- Commercial Landscape Incentive Program (CLIP)
  This program provides an incentive for medium to large commercial customers who reduce landscape water use through significant equipment or landscape changes. Participants provide verified water savings through the installation of eligible water use efficiency measures and in exchange receive an incentive based on the volume of water permanently saved.
- Commercial Spray to Drip Conversion Rebate
  Utilities' commercial drip conversion rebate returns a portion of the cost of drip irrigation equipment to customers converting high-water use landscaping watered with overhead spray irrigations to low-water use landscaping watered with drip irrigation.
- Flow Sensing Shut-off Device Rebate Program
  This program provides a rebate to customers who purchase and install a flow sensing shutoff device on their irrigation systems. Qualifying equipment may include flow-sensing master valves, individual master valves, and flow sensors.
- Native Grass Payback
  This program provides an incentive for customers who replace cool season turf grass with an approved native grass species. Significant educational materials and follow-up are likely required to ensure success.

Ordinances and Regulations

Ordinances and Regulations is the SWSI 2010 conservation category where Utilities has had the fewest measures and programs. The Colorado Springs Commercial Landscape Code and Policy Manual has been in effect since 1999. This Ordinance is a model for other cities along the Front Range, but is the only water conservation legislation in effect at all times in Colorado Springs. Many other communities, including Denver, Aurora, Fort Collins, Greeley, Thornton, and Westminster all have Water Waste Ordinances, permanent watering rules, residential landscape ordinances, and/or turf establishment permit requirements. Water Waste Ordinances which prohibit watering during the day, water running down gutters, and other measures are considered "no excuse" best practices by the Colorado Water Conservation Board. Residential landscape ordinances are common in communities where high rates of growth are experienced or expected. The measures selected for implementation are:

- Water Waste Ordinance
  A Water Waste Ordinance, as proposed in this Plan, would include limitations on pooling or flowing of water across impervious surfaces, and time-of-day watering restrictions. These rules would apply to all customers at all times. Strict enforcement, to include warnings and fines for violations, would be required for this measure to be effective. The majority of Front Range cities already have water waste ordinances in place and many include restrictions on the number of days customers are permitted to irrigate.

- Landscape Establishment Permits
  Landscape establishment permits which require organic soil amendments for all new lawn plantings are strongly supported by landscape professionals because they improve the health of the landscape and save water. Landscape establishment permits will require customers to install a specified amount of organic material for every 1,000 square feet of new cool season turf installed. These permits currently are only required during a Stage 2 Water Shortage Declaration.

Educational Measures and Programs

Water education is the foundation for all water use efficiency and conservation activities and supports Utilities' overall mission of providing safe, reliable, competitively-priced water services to our citizen owners.

Water education programs are designed to encourage customers to become active participants in discussions and decisions around water as it affects our future. The primary objective is to improve customers' understanding of water issues, which in turn increases their appreciation of this limited resource. This increased understanding results in more conservation-minded practices and supports our conservation programs, rebates and incentives. The benefit of educating our customers about careful water use in our community is that it stretches a limited resource, benefits the environment and ultimately the helps them as rate payers by providing a less expensive more reliable water supply.

Across the community, Utilities collaborates with educational organizations to lead the design and implementation of water education and conservation in the Pikes Peak Region. We have developed and foster a strong level of trust among water and environmental education partners and landscape associations, with whom our water expertise is valued.

Water education programs include in-depth presentations, tours and how-to events. They offer a better understanding of water as a resource, how it's managed, and the diverse demands upon it. They also provide residential and business customers with best practices on Xeriscape and water efficient landscape management. Our programs are tailored by topics and audience:

- Xeriscape and landscape education
- Youth education

- Adult education
- Professional education
- Community events
- Water Saving Events

In 2013 our water education programs connected with well over 20,000 children and adults. Utilities also helps customers better understand their water use through comparisons to similar customers using *My Usage*, a web-based tool launched in 2013 which provides customers access to daily usage data and comparisons to similar customers. The *My Usage* site received nearly 157,000 visits in 2013. Utilities will continue to utilize this form of communication in the future.

Estimated Water Savings

Utilities developed a water savings and cost-benefit analysis model using industry accepted practices and standards. With 1999 as the baseline year, Utilities estimates that the amount of water saved through previously implemented conservation programs equals approximately 10.6% of the current demand forecast. With implementation of this Plan, Utilities further estimates that the amount of water saved equals nearly 10,000 (including savings from previous programs) acre feet per year in 2021 as shown in Table 16. This is approximately 11.9% of the current demand forecast in 2021. These savings are not used to modify the Demand Forecast, but are or will become inherent in it as savings are realized. Savings for each selected program is listed in Table 17 below.

	By 2021
Annual Acre-Feet Saved	9,952
Percent of Current Annual Forecast Production Saved	11.9%

Table 16: Estimated annual water savings from all conservation and efficiency activities in 2021

Program Name	2021 Savings (Acre Feet)
Residential Inclining Block Rates	3,617
Commercial Seasonal Pricing	950
Conservation Education and Awareness	669
Water Waste Ordinance	346
Commercial Landscape Incentive Program (CLIP)	188
Residential Landscape Establishment Permits	145
Flow Sensing Shut-off Device Rebate Program	128
Commercial Landscape Code and Policy	108
Large Water User Audit Program	96
Commercial Irrigation Equipment Rebate	82
Native Grass Payback (Turf Replacement Program)	80
Residential Irrigation Equipment Rebates	63
Commercial Smart Irrigation Controller Rebate	62
Commercial Indoor Incentive Program (CIIP)	43
Residential Irrigation Evaluations	41
Low Income Residential Fixture Retrofit Program	35
Commercial Spray to Drip Irrigation Rebate	20
Home Efficiency Assistance Program (HEAP)	18
Residential Spray to Drip Irrigation Rebate	16
Commercial Conductivity Controller Rebate	10
Basic Commercial Water Use Audit	10
Affordable Housing EPA Certifications Incentive	1

Table 17: Annual water savings and cost of water savings by measure or program in 2021

SWSI 2010 Conservation Levels

As shown in Table 18, Utilities' water conservation program has measures in all SWSI 2010 Conservation Level categories, and programs in Levels 1, 2 and 3 in the Foundational, Ongoing Water Use, and Educational Measures and Programs categories. Currently, Utilities has programs only in Level 2 of the Ordinances and Regulations category. This Plan adds a measure in Level 1 of the Ordinances and Regulations category. And, several other programs are added to strengthen our position in each of the four SWSI 2010 Conservation Levels categories. Figure 31 provides a breakdown of water savings by SWSI 2010 Conservation Levels category in 2021, assuming this Plan is implemented as proposed.

Foundational Activities	Currently	2014 Plan
Rates	Yes	Yes
Leak Detection (Water Loss Control)	Yes	Yes
Tracking	Yes	Yes
Ongoing Water Use Measures and Programs		
Level 1	Yes	Yes
Level 2	Yes	Yes
Level 3	Yes	Yes
Ordinances and Regulations		
Level 1	No	Yes
Level 2	Yes	Yes
Level 3	No	No
Educational Measures and Programs		
Level 1	Yes	Yes
Level 2	Yes	Yes
Level 3	Yes	Yes

Table 18: The 2014 Water Use Efficiency Plan has measures and programs in all SWSI 2010 Conservation categories and all but one level

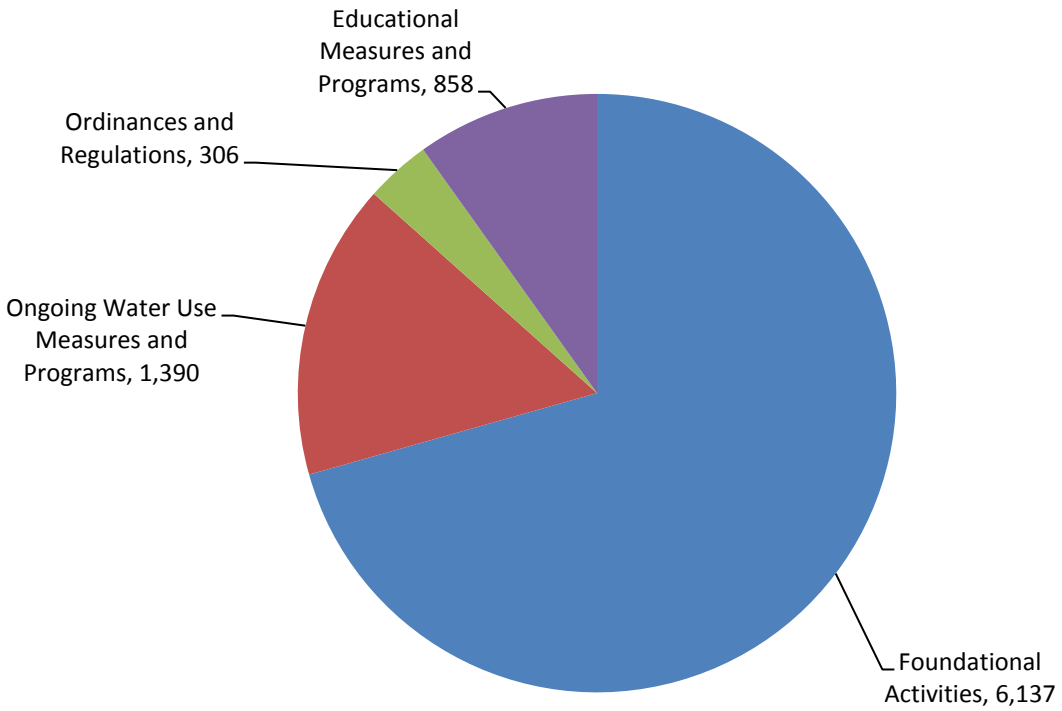

Figure 31: 2021 Savings in Acre Feet by SWSI 2010 Category

IMPLEMENTATION PLAN

The following section specifies the strategy, steps and schedule Utilities will employ to implement the 2014 Water Use Efficiency Plan. This section includes a description of the public participation program, including past, present and future activities. This section also addresses the timing for review and revision of the plan, and the process for adoption and approval.

Implementation Strategy

Over the next twenty years, Utilities faces a number of strategic challenges, including escalating costs, aging infrastructure and increasing rate pressures associated with more capital expenditures and changes to legislative and environmental regulations. The challenges are compounded because Utilities must be responsive to market conditions not only in the water industry, but in the energy industry as well. In order to achieve the goals established for this Plan, Utilities must concentrate on those opportunities which bring the greatest benefits at the lowest cost.

Utilities will implement programs that address legitimate customer needs and contribute to measurable water savings. To assure best results, some programs may take several years to develop and implement. During the first year, internal processes will be established and market assumptions will be tested. For most programs, a "pilot approach" will introduce the first year of a program. During the second year, Utilities will rely upon measurement and verification to confirm program assumptions. For most programs, water savings may not be realized for two to three years after program launch. Although time-consuming, experience has taught that slow and deliberate implementation is most effective in introducing new water conservation programs to the market in Colorado Springs.

Implementation Steps

Utilities' process for developing and implementing demand-side management solutions includes the following ten steps which are designed to address the unique characteristics of each program.

Step One. Review internal policy and procedure documents to ensure programs are implemented consistent with organizational processes. Identify project manager, stakeholders and subject matter experts. Establish project schedule, budget and quality metrics.

Step Two. Assess organizational policies (i.e., Ends and Executive Limitations) and community plans (i.e., City Charter and Comprehensive Plan) for strategic alignment. Review City Code and Regional Building Code to ensure compliance.

Step Three. Investigate applicable state and federal regulations. Involve regulatory agencies early in the process. Make legislative changes as necessary. Identify potential legal issues for

review by the City Attorney's Office.

Step Four. Research water conservation studies, sources and standards to ensure integrity of program design. Interview other water conservation professionals to identify strengths and weaknesses of program design and implementation.

Step Five. Establish launch date. Estimate market penetration rate. Agree on annual participation goals and market saturation objectives. Verify assumptions and calculations used in the technical analysis. Refine the cost/benefit analysis.

Step Six. Develop budget for years 2015 through 2019. Estimate human resources necessary to develop and manage program. Formalize request for regular, seasonal and temporary staff. Identify internal and external training needs.

Step Seven. Determine program requirements. Develop list of prospective bidders. Draft request for proposal and evaluation criteria. Evaluate proposals and select suppliers. Finalize agreements with vendors, contractors and consultants.

Step Eight. Conduct pricing analysis for materials and services. Evaluate customer segments and assess segment potential. Define target segment. Develop marketing strategy, tactics and materials. Identify distribution channels.

Step Nine. Describe measurement and verification plan. Create activity numbers, work order numbers and accounting strings for budget tracking. Develop management tracking reports.

Step Ten. Launch program. Routinely monitor and evaluate program. Track implementation costs, water savings data, annual participation and market penetration. Verify original assumptions and refine program over time.

Implementation Schedule

Various factors impact the implementation schedule: shifting organizational priorities may limit budget and staffing availability; regulatory and technology changes; and drought and shifting water resource availability. Utilities will adapt the implementation schedule to keep up with these changes. Existing Programs selected for continued implementation are shown in Table 18 and the Implementation Schedule for new programs is shown in Table 19. A chart of annual savings by program and year is shown in Figure 32.

Existing Programs
Residential Inclining Block Rates
Commercial Seasonal Pricing
Potable to Non-Potable Conversions
Water Loss Control and Prevention
Residential Irrigation Equipment Rebate
Commercial Smart Irrigation Controller Rebate
Commercial Irrigation Equipment Rebate
Home Efficiency Assistance Program (HEAP)
Commercial Landscape Incentive Program (CLIP)
Commercial Spray to Drip Irrigation Rebate
Residential Spray to Drip Irrigation Rebate
Commercial Landscape Code and Policy
Conservation Education and Awareness

Table 19: Existing Programs as of 2015

New Programs	2015	2016	2017	2018	2019	2020	2021
Affordable Housing WaterSense and EnergyStar Certification Incentive							
Low Income Residential Fixture Retrofit Program							
Basic Commercial Water Use Evaluation							
Commercial Cooling Tower Equipment Rebate							
Flow Sensing Shut-off Device Rebate Program							
Large Water User Audit Program							
Commercial Indoor Incentive Program (CIIP)							
Residential Irrigation Audits							
Water Waste Ordinance							
Native Grass Payback							
Residential Landscape Establishment Permits							

Table 20: Implementation Schedule for New Programs

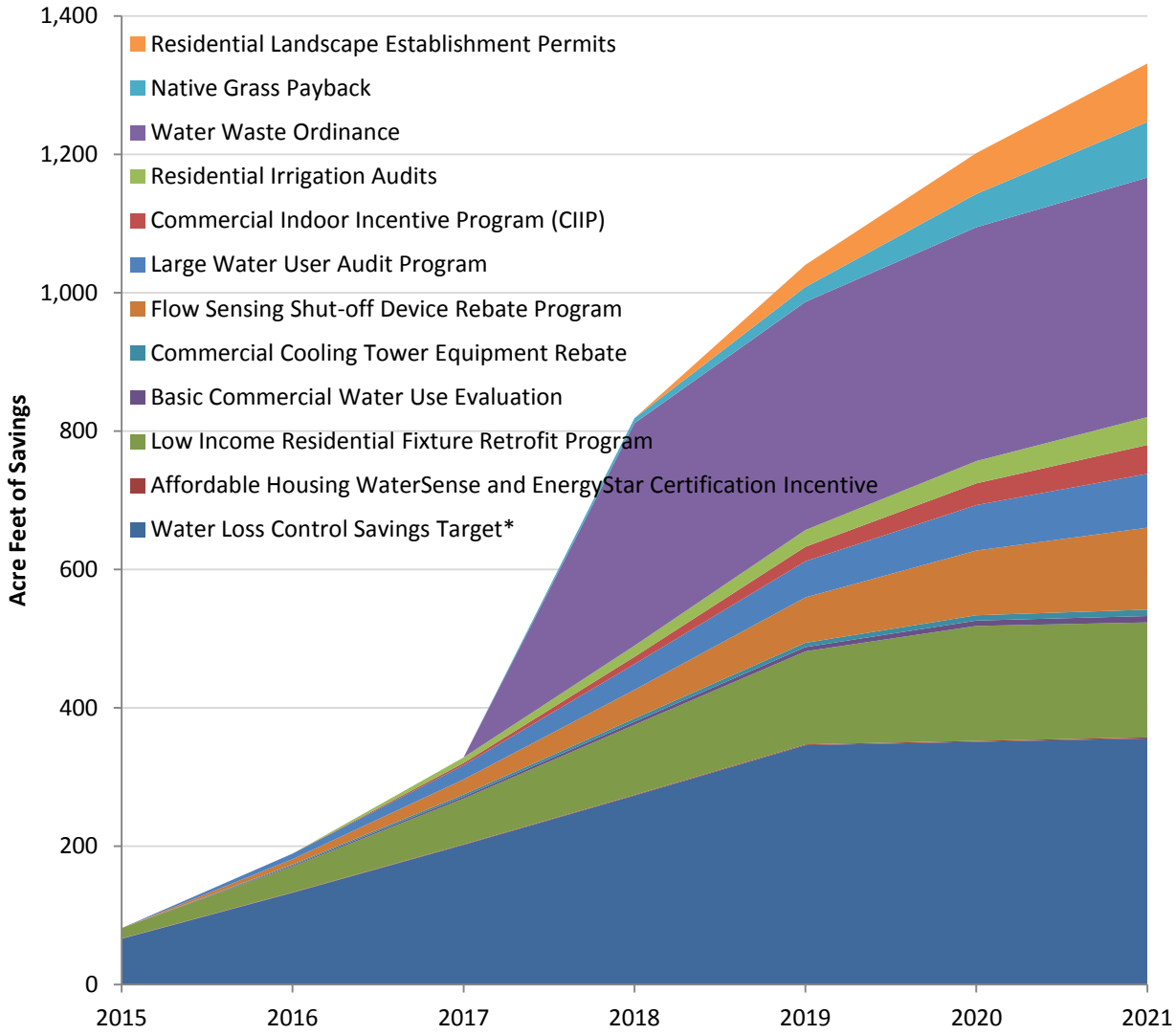

*Figure 32: Total water savings in acre feet by year for new measures and programs only. *Water Loss Control is an existing program while the establishment of a savings goal for this program is new.*

MONITORING PLAN

Utilities monitors all conservation and efficiency program activity on a monthly basis, tracking program participation rates, costs, and water savings estimates. This deliberate process has been in place since 2002 and is planned to continue for as long as we implement programs. Accurate tracking is critical to understanding the impacts of conservation and efficiency programs on water use, customers and utility finances. It is also critical due to annual CWCB reporting requirements associated with House Bill 10-1051. These data are tracked in a model which provides relatively easy access to information for all conservation activities since 2002.

In addition to monitoring program activities monthly, Utilities monitors water demands, and weather data on a daily, weekly, monthly and annual basis. Conservation staff also regularly evaluates program performance to continually improve the effectiveness. Each year, multiple programs and the assumptions made to estimate water savings and other performance criteria are evaluated using actual water consumption and other benchmarking data. These analyses are generally performed using regression analysis or comparisons of participant and control groups. The results of these analyses are used to update and refine cost and savings assumptions.

Utilities has also conducted annual water conservation surveys for many years. These surveys provide information on customer values related to water use efficiency as well as information about water end use penetration rates and water use behaviors. Survey and other customer-specific data will also be used to derive water use benchmarks for a variety of commercial sectors, such as hotels, restaurants, and office buildings. These benchmarks will allow conservation staff to more effectively identify inefficient water users.

PUBLIC REVIEW, REVISIONS AND APPROVAL

Public Review and Comment

The purpose of public involvement is to communicate planning goals with our stakeholders. Their feedback assists in the development of initiatives aimed at public preferences and potential concerns.

Utilities has an active public participation program that regularly involves citizens through customer surveys, focus groups, public meetings, advisory committees and community presentations. From inception, the Plan was drafted to reflect the core values of the Colorado Springs community while balancing the operational needs of the organization.

In accordance with the Colorado Water Conservation Board requirements and the Code of the City of Colorado Springs, the 2015 Water Use Efficiency Plan was made available for public review and comment from October 20, 2014 through December 30, 2014.

Internet

Colorado Springs Utilities' website and social media was used to facilitate posting and receiving comments regarding the Plan. Commercial and industrial customers were reached through the *First Source* electronic newsletter.

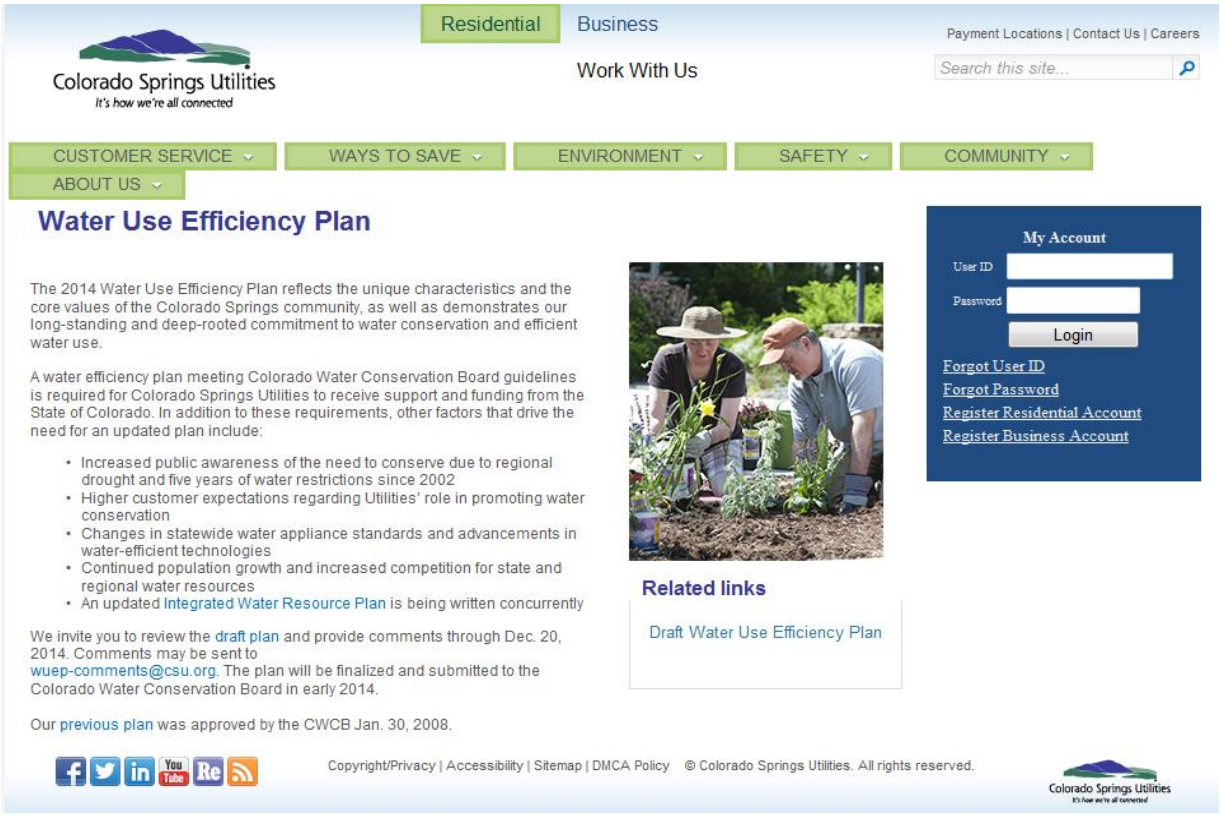

Figure 33: The Draft Plan was posted on the Utilities web site on October 20, 2014

Printed Media

Residential customers were notified of the Plan's availability and review period via *Connection*, Colorado Springs Utilities' monthly residential newsletter distribution.

Stakeholder Contacts

The following stakeholders listed in Table 21 were identified and reached during the public involvement process. Contacts were made via email notifications, presentations or one-on-one meetings.

American Institute of Architects	Organization of Westside Neighbors (OWN)
American Society of Landscape Architects	Pikes Peak Association of Realtors
Cascade Metropolitan District	Pikes Peak Lodging Association
Catamount Institute	Pikes Peak Mechanical Contractors Association
Chamber of Commerce	Pikes Peak Regional Building Department
Cherokee Metropolitan District	Pueblo Board of Water Works
City of Fountain	Pueblo West Metropolitan District
City Parks & Recreation	Recycling Coalition
City Planning & Community Development	Regional Business Alliance
Colorado Department of Health and Environment	Rocky Mountain Sod Growers Association
Colorado Restaurant Association	School Districts 2, 11, 12 and 20
Colorado Springs Urban Intervention	Security Water District
Community Association Institute	Southeastern Colorado Water Conservancy District
Convention & Visitors Bureau	Stratmoor Hills Water & Sanitation District
Council of Neighbors & Organizations (CONO)	Sustainable Fort Carson
CSU Extension, El Paso County	The Downtown Partnership
Economic Development Corporation	U.S. Army Corps of Engineers
El Paso County Development Services	U.S. Bureau of Land Management
Fountain Creek Watershed District	U.S. Bureau of Reclamation
Green Cities Coalition	U.S. Environmental Protection Agency
Green Industries of Colorado	U.S. Fish and Wildlife Service
Green Industry Advisory Group	USGBC Colorado (southern branch)
Horticultural Art Society	Utilities IWRP Advisory Group
Housing & Building Association (HBA)	Utilities Strategic Account Management
Large Water Users	Western Resource Advocates
Middle Market Entrepreneurs	Widefield Water District

Table 21: Stakeholder groups notified directly of the Draft Plan

Surveys

Utilities also conducted multiple customer surveys in order to better understand customer preferences regarding water conservation programs. Survey results indicate that conservation and efficiency is a high priority for most customers. Specifically, the following surveys informed this Plan.

- Annual Water Conservation Surveys
- Feb 2014 IWRP Customer Survey

When asked what solutions Utilities should consider in future water planning, 2014 IWRP Customer Survey respondents used a scale of 1 to 5 to rate each statement where 1 means "this solution is not at all important" and 5 means "this solution it is extremely important." The mean score for the top seven responses are shown in Table 22.

Continuing to educate customers about water efficient use	4.40
Developing more water re-use programs	4.39
Offering more rebates and incentives for water efficient practices	4.15
Obtaining more water rights and more access to water	4.10
Building more storage	4.01
Requiring more water efficient fixtures and practices from new customers	3.96
Requiring more water efficient fixtures and practices from all customers	3.90

Table 22: Customers indicated that conservation and efficiency are among the top priorities for Utilities to consider in future water planning.

When asked what they would be willing to do to improve the reliability of future water supply, IWRP Customer Survey respondents used a scale of 1 to 5 where 1 means "you absolutely would not be willing" and a 5 means "you absolutely would be willing." The mean score for the responses are shown in Table 23.

Pay closer attention to my water use to ensure I use less	4.34
Invest in water efficient appliances and fixtures to save water	4.20
Invest in converting part or all of my landscape to plants that use less water	3.91
Continue to follow water restrictions, even if that means policies that regulate water use inside and outside the home	3.81
Convert my landscape to rock or other no-water-use materials	3.43
Pay more for water to assure a sustainable future for Colorado Springs	2.89
Pay more for water – I am willing to pay a premium for water so that I may continue to use the same amount	2.63

Table 23: Customers indicated that they are more willing to conserve in a variety of ways than use what they currently do if it means paying pay more.

Public Comment Period

A cover memo and link to the plan was distributed twice via email to all stakeholder groups during the period of October 20, 2014 – December 30, 2014.

Local Approval

The 2015 Water Use Efficiency Plan was approved for adoption on February 19, 2015 by Utilities' Chief Executive Officer Jerry Forte.

Revisions and CWCB Approval

The 2015 Water Use Efficiency Plan was submitted to the CWCB on March 2, 2015 and review was completed by Kevin Reidy of the CWCB on June 19, 2015. Conditional approval was given by the CWCB pending the completion of the Review and Revision sections and the inclusion of a Monitoring Plan. These revisions were submitted to the CWCB on June 24, 2015.

APPENDIX A – PUBLIC COMMENTS

During presentations to stakeholder groups, the following questions were captured:

Community Association Institute

- Question regarding our use of a system similar to Germany's reuse process.
- What is the payoff of SMART controls?
- How is Utilities working with City Planning to help manage growth and water issues?

Green Industries of Colorado, October 31, 2014

- Questions regarding types of grass and dormancy periods.
- How to help customers understand that xeric garden maintenance is not labor. intensive and how to encourage them to do more Xeriscape.
- Rebate on high pressure regulating sprinkler heads?
- Differences in soil prep and non soil prep areas?

Integrated Water Resource Plan (IWRP) Advisory Group, November 10, 2014

- Make sure we are encouraging our customers to have "turf with a purpose".
- How do we encourage customers to be more conservative in water use, to see the bigger purpose?
- Would like to know more about greywater reuse and how that will be encouraged in the future.
- Want to continue to see how we are planning for drought and incorporating water use efficiency measures in the WUEP and IWRP.
- Would like to see efficiency-based incentives on new development fees.

The following comments were provided in an email received December 17, 2014:

Drew Beckwith, Western Resource Advocates

- Really like Table 8 (quantifying the savings from all your programs) I know that's not easy to tease out – and all the other tables in the program selection section, good data points.
- Dig Figure 22 (the projection v actual demands figure ala Seattle Public Utilities famousness).
- Like the analysis of indoor v. outdoor use and the suggestion that there should be more focus outdoors and less indoors.
- 20% by 2021 savings goal is more than my 1%/yr idea (and greater than the SWSI's high conservation scenario trend).
- Good to get a level 1 water waste ordinance in the works – hope your council sees the benefit.

No other questions or comments were received during the Public Review and Comment Period.

APPENDIX B – UNITS OF MEASURE

Abbreviations

AF	acre-feet
CF	cubic feet
CCF	hundred cubic feet
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
kgal	one thousand gallons
mgd	million gallons per day

Conversion Factors

1 acre = 43,560 square feet
1 acre-foot = .3259 million gallons
1 acre-foot = 325,851 gallons
1 acre-foot = 43,560 cubic feet
1 cubic foot = 7.4805 gallons
1 hundred cubic feet = 748 gallons
1 million gallons = 3.0689 acre-feet
1 million gallons per day = 1,121 acre-feet per year

APPENDIX C – GLOSSARY

acre-foot: A volume of water equal to one foot in depth covering an area of one acre.

annual growth rate: The total increase or decrease in a given area's population during a period of one year divided by the area's population in the previous year. This figure is expressed as a percentage and reflects the number of births and deaths and the number of people moving to and from an area during the year.

aquifer: An underground deposit of sand, gravel or rock through which water can pass or is stored. Aquifers supply the water for wells and springs.

audit (end-use): A systematic accounting of water uses by end users (residential, commercial or industrial), often used to identify potential areas for water reduction, conservation or efficiency improvement.

audit (system): A systematic accounting of water throughout the production, transmission and distribution facilities of the system.

automated meter reading (AMR): The technology of automatically collecting data from metering devices (water, gas, electric) and transferring that data to a central database for billing and/or analyzing.

average-day demand: A water system's average daily use based on total annual water production (total annual gallons or cubic feet divided by 365).

baseline: An established value or trend used for comparison when conditions are altered, as in the introduction of water conservation measures.

beneficial use: Application of water without waste for human or natural benefit.

benefit-cost analysis: A comparison of total benefits to total costs, usually expressed in monetary terms; used to measure economic efficiency and evaluate alternatives.

best management practice: A measure or activity that is beneficial, empirically proven, cost-effective, and widely accepted in the professional community.

block: A quantity of water for which a price per unit of water (or billing rate) is established.

capital facilities: Physical facilities used in the production, transmission, treatment and distribution of water or the collection, treatment and disposal of wastewater.

Clean Water Act: The federal law that sets forth how the United States will restore and maintain the chemical, physical and biological integrity of the country's waters (oceans, lakes, streams and rivers, ground water and wetlands).

Colorado Water Conservation Board (CWCB): A division of the Colorado Department of Natural Resources, the CWCB was created in 1937 for the purpose of aiding in the protection and development of the waters of the state. The mission statement of the CWCB is to conserve, develop, protect and manage Colorado's water for present and future generations.

conservation (water): Any activity that increases the productivity of water supply and use in order to satisfy water needs without compromising desired water services. Includes water use efficiency, wise water use, system efficiency and supply substitution.

conservation pricing: Water rate structures that help achieve beneficial reductions in water usage.

consumptive use: Any use of water that permanently removes water from the natural stream system.

Continental Divide: An imaginary boundary line that runs north-south along the crest of the Rocky Mountains, separating river and drainages that flow west to the Pacific Ocean from those that flow south and east to the Gulf of Mexico.

cost-effectiveness: A comparison of costs required for achieving the same benefit by different means. Costs are usually expressed in dollars, but benefits can be expressed in another unit (such as quantity of water).

customer segment: A group of customers (residential, commercial, industrial, wholesale) defined by similar costs of service or patterns of water usage.

decreasing-block (or declining-block) rate: A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) decreases with the amount of water used.

demand forecast: A projection of future demand that can be made on a system-wide or customer-class basis.

demand-side management (DSM): Measures, practices, or programs deployed by water utilities to permanently reduce the level or change the pattern of demand for a utility service.

demographic: Having to do with population or socioeconomic conditions.

diversion: The removal of water from its natural course or location, or controlling water in its natural course or location by means of a ditch, canal, flume, reservoir, bypass, pipeline, conduit, well, pump or other device.

discount rate: A percentage that is used to adjust a forecast of expenditures to account for the time value of money or opportunity costs; it can be based on the utility's cost of capital.

distribution facilities: Pipes, treatment, storage and other facilities used to distribute drinking water to end users.

drought: A sustained period of inadequate or subnormal precipitation that can lead to water supply shortages as well as increased water usage.

end use: Fixtures, appliances and activities that use water.

end user: Residential, commercial, industrial, governmental, institutional or other water user that applies water to beneficial use.

Energy Policy Act (EPACT): A 1992 federal law that states that after January 1, 1994, toilets for household use may not use more than 1.6 gallons per flush and that showerheads and faucets may not use more than 2.5 gallons per minute.

evapotranspiration (ET): Water losses from the surface of soils and plants.

exchange: A process by which water, under certain conditions, may be diverted out of priority at one point by replacing it with a like amount of water at another point.

firm annual yield: The yearly amount of water that can be dependably supplied from the raw water sources of a given water supply system.

groundwater: Water found below the earth's surface, often between saturated soil and rock, that supplies wells and springs.

incremental cost: The additional cost associated with adding an increment of capacity.

integrated resource planning: An open and participatory planning process emphasizing least-cost principles and a balanced consideration of supply and demand management options for meeting water needs.

irrigation scheduling: A method for optimizing outdoor water use by matching the watering schedule to plant needs; can refer to manual or automated scheduling.

leak detection: Methods for identifying water leakage in pipes and fittings.

life span: The expected, useful life of a supply-side or demand-side project, measure, or practice.

load management: Methods for managing levels and patterns of usage in order to optimize system resources and facilities.

low water-use landscaping: Use of landscape designs and plant materials that are appropriate to an area's climate and growing conditions (usually native and adaptive plants). See Xeriscape™.

market penetration: The extent to which an activity or measure is actually implemented compared to all potential uses or markets.

maximum-day demand: Total production for the water system on its highest day of production during a year.

measure (conservation): A technology or practice that directly reduces water use.

meter: An instrument for measuring and recording water volume.

National Environmental Policy Act (NEPA): The federal law enacted to ensure the integration of natural and social sciences and environmental design in planning and decision-making for projects that may impact the quality of the human environment.

peak demand: The highest point of total water usage experienced by a system, measured on an hourly or a daily basis.

per capita use: Total use divided by the total population served.

potable: Water that is considered safe for domestic consumption; drinkable.

program (conservation): An action or policy that encourages, requires or otherwise leads to implementation of water-saving measures.

rain sensor: A switching device connected to an automatic irrigation system that causes the system to shut down in the event of rainfall.

raw water: Untreated water.

reclamation: Treatment of used water to make it available for beneficial reuse.

reservoir: An impoundment of collected water controlled by a dam (raw water) or storage tank (potable water).

retrofit: Replacement of parts in an existing plumbing fixture or water-using appliance in order to improve its operational efficiency.

return flows: The unused portion of water that returns to a stream or river after a beneficial use.

reuse (water): The reclamation and recycling of water for a beneficial use.

runoff: Water that flows on the earth's surface to streams, rivers, lakes and oceans.

Safe Drinking Water Act (SDWA): Federal legislation that regulates the treatment of water for human consumption. Requires testing for and elimination of contaminants to levels for the protection of human health.

seasonal rate: A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) varies by season of use; higher rates usually are charged in the season of peak demand.

service area: The geographic area served by a water utility.

source of supply: Facilities used to extract and/or store raw water prior to transmission and distribution.

submetering: Metering for units comprising a larger service connection, such as apartments in a multi-family building.

supply-side management: Measures and programs deployed by the utility that improve the efficiency of production, transmission and distribution facilities.

surface water: Water present on the earth's surface.

system (water): A series of interconnected conveyance and treatment facilities owned and operated by a water supplier.

system efficiency: Water conserving improvements to a water supply and distribution system, such as operational changes that stretch supplies or distribution system leak repairs that reduce water losses.

system loss: An amount of water, expressed as a percentage, lost from a water storage or distribution system due to leaks, evaporation, seepage and unauthorized use.

tariff: The schedule of a utility's rates and charges.

transmission facilities: Pipes and canals used to transport raw or treated water to distribution facilities.

transmountain diversion: The conveyance of water from one drainage basin to another across the Continental Divide.

treated water: Water treated to meet drinking water standards.

tributary: A stream or river that flows into a larger one.

ultra-low-flush toilet: A toilet that uses not more than 1.6 gallons per flush.

unaccounted-for water: The difference between the water entering the distribution system and the water that is metered.

water conservation: Any activity that increases the productivity of water supply and use in order to satisfy water needs without compromising desired water services. This includes water use efficiency, wise water use, system efficiency, and supply substitution.

Water Conservation Act: The "Water Conservation Act of 2004," which amended Section 37-60-126 of the Colorado Revised Statutes concerning water conservation planning by covered entities and the role of the State related to plan review and approval.

water right: A property right or legal claim to withdraw a specified amount of water in a specified time frame for a beneficial use.

watershed: A regional land area, defined by topography, soil, and drainage characteristics, within which raw waters collect and replenish supplies.

water use efficiency: Technologies and practices that provide the same or better level of end-use service.

wholesale water: Water purchased or sold for resale purposes.

Xeriscape™: Landscaping that involves seven principles: proper planning and design; soil analysis and improvement; practical turf areas; appropriate plant selection; efficient irrigation; mulching; and appropriate maintenance.

APPENDIX D – CWCB GUIDELINES

Adopted by the CWCB May 25, 2005
Amended on May 19, 2010 1
GUIDELINES FOR THE OFFICE TO REVIEW AND EVALUATE
WATER CONSERVATION PLANS

1. TITLE. Guidelines concerning Water Conservation Plans prepared by covered entities (as defined in Section 4 of the guidelines) and submitted to the Office of Water Conservation and Drought Planning ("Office") for review and approval as required in §37-60-126, C.R.S. (2009), shall be hereinafter referred to as the "Water Conservation Plan Guidelines."

2. PURPOSE OF GUIDELINES. The Water Conservation Plan Guidelines as presented herein are to be used by the Colorado Water Conservation Board ("Board") and the Office when reviewing and approving Water Conservation Plans submitted to the Office in accordance with §37-60-126(7). Water Conservation Plans may be submitted to the Office for review and approval by a "submitting entity" that consists of one of the following:

a) Covered entities that are required to submit and adopt a Water Conservation Plan in accordance with §37-60-126; or

b) Planning entities that desire to have a Water Conservation Plan reviewed, approved and posted on the Board website by the Office.

In addition, these guidelines apply to any covered entity or planning entity that is seeking to gain approval from the Office of an updated Water Conservation Plan. These guidelines are intended to apply to any entity that submits a Water Conservation Plan to the Office for review and approval, including but not limited to, any municipality, agency, special district, or privately or publicly owned utility that seeks: to improve water use efficiency and wise water use, water transmission and distribution efficiency, and supply substitution; and to institute a long-term increase in the productive use of water supply in order to satisfy water supply needs without compromising desired water services.

3. STATUTORY AUTHORITY. The statutory authority for the Water Conservation Plan Guidelines is found at §37-60-126. Nothing in these rules shall be construed as authorizing the Board to deprive the people of the state of Colorado of the beneficial use of those waters available by law and interstate compact.

4. DEFINITIONS

Acre Foot: The amount of water it would take to cover an acre of land to a depth of 1 foot, approximately 325,851 gallons.

Board: means the Colorado Water Conservation Board as defined in §37-60-101, 103 and 104, C.R.S. (2009).

Board Office: The Colorado Water Conservation Board's Office is located at 1313 Sherman Street, 7th Floor, Denver, CO 80203. The phone number is (303) 866-3441. The facsimile number is (303) 866-4474. The Board's website is http://www.cwcb.state.co.us.

Colorado Water Conservation Board (CWCB): A division of the Colorado Department of Natural Resources, the CWCB was created in 1937 for the purpose of aiding in the protection and development of waters of the state. The Board's authority and role is defined in §37-60-101, et seq., C.R.S. (2009). The Mission Statement of the CWCB is to conserve, develop, protect, and manage Colorado's water for present and future generations.

Covered Entity: means each municipality, agency, utility, including any privately owned utility, or other publicly owned entity with a legal obligation to supply, distribute, or otherwise provide water at retail to domestic, commercial, industrial, or public facility customers, and that has a total demand for such customers of two thousand acre-feet or more. §37-60-126(1)(b).

Individual with the Authority to Commit Resources: means any individual within the submitting entity that has the authority to commit the organization's resources for the development and implementation of a water conservation plan. Examples include the City or County Manager, Mayor, Executive Director of a Special District, City Councilperson, etc.

Leak Identification: A systematic search for water loss in a delivery system or at an end user's location.

Metering: The measurement of water use with a meter to generate data on actual customer use, which is often used for billing purposes.

Office: means the Office of Water Conservation and Drought Planning created in section 37-60-124, C.R.S. (2009).

Plan elements: means those components of Water Conservation Plans that address water-saving measures and programs, implementation review, water-saving goals, and the actions a covered entity shall take to develop, implement, monitor, review and revise its Water Conservation Plan. §37-60-126(1)(e).

Planning Entity: means any municipality, agency, utility, including any privately owned utility, or other publicly owned entity with a legal obligation to supply, distribute, or otherwise provide water at retail to domestic, commercial, industrial, or public facility customers that has a total demand for such customers of less than two thousand acre-feet.

Public Facility: means any facility operated by an instrument of government for the benefit of the public, including, but not limited to, a government building, park or other recreational facility, school, college, university, or other educational institution, highway, hospital, or stadium.

Retail Water Delivery: means all water sales, except wholesale water sales, made by the covered or planning entity except wholesale water sales through installments, credit sales, or the exchange of property, as well as, the sale thereof for money; every such transaction for a consideration, conditional or otherwise, constituting a sale; and/or the sale of furnishing of water.

Submitting Entity: means each municipality, agency, utility, including any privately owned utility, or other publicly owned entity that has submitted a water conservation plan to the Office for review and approval.

Water Conservation: means water use efficiency, wise water use, water transmission and distribution system efficiency, and supply substitution. The objective of water conservation is a long-term increase in the productive use of water supply in order to satisfy water supply needs without compromising desired water services.

Water Reuse: Use of reclaimed water for a beneficial use constitutes water reuse. Direct water reuse includes treating wastewater and piping it directly into a water system without intervening dilution in natural water bodies. Indirect reuse includes an intermediate step between the generation of reclaimed water and reuse, which may be through discharge, retention, and mixing with another water supply.

Water-Saving Measures and Programs: includes any device, fixture, practice, hardware, or equipment that reduces water demands and a program that uses a combination of measures and incentives that provides for an increase in the productive use of a local water supply.

5. PLAN SUBMITTAL, REVIEW, AND APPROVAL PROCEDURE

5a. Plan Submittal – Covered entities shall submit a Water Conservation Plan ("Plan"), or updates of a previously submitted and approved Water Conservation Plan, to the Office for review and approval, in accordance with §37-60-126. All planning entities with retail water deliveries of less than 2,000 acre-feet per year, may submit a Water Conservation Plan, or a revised or updated Water Conservation Plan, to the Office for review and approval. Plan submittals must include a Cover Letter that contains the name and contact information of the submitting entity seeking Office approval, a listing of the organizations and/or individuals including those hired or otherwise retained by the submitting entity that assisted in preparation of the Plan, the identification of retail water delivery by the submitting entity for each of the past five years (in acre-feet or million gallons), the population served by the retail water delivery, the dates and information related to the public review and comment process, the signature of an individual with the authority to commit the resources of the submitting entity seeking approval, and a copy of the submitting entity's Water Conservation Plan. Additional information characterizing past water use by sector (e.g., residential, commercial, industrial) and source (e.g., groundwater vs. surface water, raw water, treated water, etc.) is preferred, but not required. A checklist of the information that is required in the submittal cover letter is provided in Table 1.

5b. **Timeframe for Review** – Upon receipt of the Plan submittal, the Office will, within 10 working days, acknowledge receipt of the Plan via a letter provided to the submitting entity. In such a letter, the Office will also inform the entity of any deficiencies in the Plan submittal Cover Letter, as required by Section 5a and summarized in Table 1. If the Office identifies any deficiencies, they will need to be addressed in writing by the submitting entity before the Office can proceed with the plan review and approval process. Once all Plan submittal Cover Letter

information has been received by the Office as specified in Section 5a, the Office will initiate Plan review and comment and return a written notice of approval, conditional approval, or non-approval within 90 days of receipt of the completed Plan submittal Cover Letter from the submitting entity.

5c. **Approval Process** –

(1) Upon completion of the review of the submitted Plan, the Office will provide a written notification to the submitting entity of the determination of the Office, as follows:

(a) ***Approval*** – means that the submitting entity's Plan has met the minimum statutory requirements and meets the requirement of these guidelines, and the submitting entity may proceed with the implementation of the Water Conservation Plan as submitted. The Office will post the Plan on the CWCB web site and will provide copies of the approval notification to the CWCB Office of Water Supply and Finance and the Colorado Water Resources and Power Development Authority.

(b) ***Conditional Approval*** – means the submitting entity's Plan has substantially met the minimum statutory requirements and substantially meets the requirement of these guidelines, and the submitting entity may proceed with the implementation of the Water Conservation Plan as submitted, subject to certain required modifications or conditions set forth by the Office and provided in its written notification. The Office will specify in its written notification a schedule for when the submitting entity will need to resubmit relevant portions of the Water Conservation Plan to the Office. Once the relevant Plan components have been resubmitted and reviewed and approved by the Office, the Office will post the Plan on the CWCB website and will provide copies of the approval notification to the CWCB Office of Water Supply and Finance and the Colorado Water Resources and Power Development Authority. Re-submittal of the Plan must occur within 180 days of the date when the Office's Conditional Approval letter was sent (not received) or the Plan will need to be resubmitted for review and approval by the Office.

(c) ***Disapproval with Modifications*** – means that the submitting entity's Plan has not met the minimum statutory requirements and/or is inconsistent with the guidelines, and the submitting entity should not proceed with the implementation of the Water Conservation Plan until the stated deficiencies are corrected as delineated in the Office's written notification and the submitting entity resubmits all or those relevant portions of the Plan to the Office for subsequent review. The submitting entity has 180 days from the date the Office's written notification was sent to complete any re-submittal of those relevant portions of the Plan to the Office for subsequent review or will be required to re-initiate the Plan submittal process in accordance with these guidelines.

(2) In situations where a covered entity has received a loan surcharge from the Board or the Colorado Water Resources and Power Development Authority in association with an unforeseen emergency as determined by the Board or the Colorado Water Resources and Power Development Authority but had not submitted and adopted a Water Conservation Plan in compliance with §37-60-126, the Office will provide notification of the covered entity's Water Conservation Plan approval to the appropriate organization, when and if such a plan has been reviewed and approved by the Office in accordance with these guidelines.

5d. Procedural Guidelines for Contesting Plan Disapproval by the Office –

(1) When a submitting entity contests the determination provided by the Office regarding its submitted Plan, that entity can submit a request for a Contested Plan Review to the Board.

(2) In submitting a request for a Contested Plan Review, a submitting entity may raise only those issues relevant to the statutory determinations required by §37-60-126 and the requirements of the guidelines in full.

(3) To request a Contested Plan Review, a submitting entity must comply with the provisions of 5d. The Office must receive the request for a Contested Plan Review within 180 days of the date of the written notification letter sent by the Office to the submitting entity, pursuant to 5c, or if the 180th day falls on a weekend or holiday, on the first business day thereafter. The date of the written notification letter is the date the letter was sent, not the date it was received.

(4) A request for a Contested Plan Review shall be made in writing and contain the following information:

(a) Identification of the person(s) requesting the review;

(b) Identification of the plan and submitting entity at issue; and,

(c) The contested facts and a general description of the data upon which the person(s) will rely to the extent known at that time.

(5) The Board will review the Contested Plan Review facts and arguments and make a ruling to agree or disagree with the contested issue(s). The Board, at its discretion, may request the entity requesting the Contested Plan Review to appear before the Board to clarify concerns and understand the facts. The public will be given a chance to comment on the Contested Plan Review prior to the Board making its ruling, if the Board determines that such comments will support and enhance the decision-making process.

(6) The Board will provide to the submitting entity in writing the results of its review within 90 days of receipt of the request for a Contested Plan Review. The Board will also provide specific guidance on how any plan discrepancies or deficiencies need to be addressed such that the submitting entity can receive Office approval for its plan.

(7) The guidelines of 5d are intended to assure that information is received by the Board to understand and review the contested case in a timely manner. Where these guidelines do not address a procedure or issue, the Board shall determine the

procedures to be followed on a case-by-case basis. The Board may waive the requirements of the guidelines whenever the Board determines that strict adherence to the guidelines is not the best interest of fairness, unless such waiver would violate applicable statutes.

6. PLAN CONTENT REQUIREMENTS

6a. Plan Adoption – The manner in which the submitting entity develops, adopts, makes publicly available, and implements a Plan, established pursuant to subsection (2) of §37-60-126 shall be determined by the submitting entity in accordance with the guidelines.

6b. Model Plan – The Board will maintain a Model Water Conservation Plan ("Model Plan") online that depicts a preferred format and delineates the preferred content for a Water Conservation Plan that would lead to meaningful (i.e., more effective) water conservation by covered entities and planning entities in the State and further explains the minimum requirements of the statute as listed in Section 6d.

6c. Schedule for Plan Implementation – The Plan shall include a schedule for its implementation.

6d. Plan Elements – A Plan development by a submitting entity pursuant to subsection (2) of §37-60-126 must provide adequate information and narrative to indicate that the following Plan Elements were considered and included in the submitting entity's Water Conservation Plan, as appropriate:

(a) The water-saving measures and programs to be used by the submitting entity for water conservation. In developing these measures and programs, each submitting entity shall, at a minimum, consider the following:

(I) Water-efficient fixtures and appliances, including toilets, urinals, showerheads, and faucets;

(II) Low water use landscapes, drought-resistant vegetation, removal of phreatophytes, and efficient irrigation;

(III) Water-efficient industrial and commercial water-using processes;

(IV) Water reuse systems;

(V) Distribution system leak identification and repair;

(VI) Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations;

(VII) Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner (note that the Department of Local Affairs may provide a technical assistance to entities that are local governments to implement water billing systems that show customer water usage and that implement tiered billing systems);

(VIII) Regulatory measures designed to encourage water conservation;

(IX) Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures;

(b) A section stating the submitting entity's best judgment of the role of Water Conservation Plans in the submitting entity's water supply planning;

(c) The steps the submitting entity used to develop, and will use to implement, monitor, review, and revise its Water Conservation Plan;

(d) The time period, not to exceed seven years, after which the submitting entity will review and update its adopted plan; and

(e) Either as a percentage or in acre-foot increments, an estimate of the amount of water that has been saved through a previously implemented conservation plan and an estimate of the amount of water that will be saved through conservation when the plan in implemented.

6e. Plan Public Review – Each submitting entity shall follow that entity's rules, codes, or ordinances to make the Draft Plan available for public review and comment. If there are no rules, codes, or ordinances governing the submitting entity's public planning process, then each entity shall publish a Draft Plan, give public notice of the Plan, make such a Plan publicly available, and solicit comments from the public for a period of not less than sixty days after the date on which the Draft Plan is made publicly available. Reference shall be made in the public notice to the elements of a Water Conservation Plan that have already been implemented. The submittal to the Office shall include a description of the public review and comment process conducted, including a list of the public comments received, and the responses generated by the submitting entity, if appropriate.

7. PLAN UPDATING

7a. Plan Updates – A submitting entity may at any time adopt changes to an approved Water Conservation Plan in accordance with these guidelines after notifying and receiving written or verbal concurrence from the Office. If the proposed changes are major, as determined by the Office, the submitting entity shall give public notice of the changes, make the changes available in draft form, and provide the public an opportunity to comment on such changes before adopting them in accordance with these guidelines.

8. REVISING AND UPDATING THE GUIDELINES

8a. Board Authority – The Board has the authority to revise and update the guidelines at their discretion in response to new and changing needs of the State, and its citizens, or to improve upon the guidelines.

9. LOAN SURCHARGE

9a. Imposition of a Loan Surcharge – In accordance with §37-60-126 (9a), neither the Board nor the Colorado Water Resources and Power Development Authority ("CWRPDA") shall release loan proceeds to a covered entity unless such covered entity provides a copy of the water conservation plan adopted pursuant to the Water Conservation Act of 2004 (hereafter "Act"); except that the Board or the CWRPDA may release such loan proceeds if the Board or the CWRPDA determine that unforeseen emergency exists in relationship to the covered entity's loan application, in which case the Board or the CWRPDA, as applicable, may impose a loan surcharge upon the covered entity that may be rebated or reduced if the covered entity submits and adopts a plan in compliance with the Act in a timely manner. Any imposed loan surcharge, and the terms and condition of such surcharge, will be negotiated with the covered entity during the development of the loan contract with the originator of the loan, either the Board or the CWRPDA, as appropriate.

10. APPLICATION OF GUIDELINES TO INTEGRATED SYSTEMS

- It is the goal of the CWCB to promote, to the fullest extent possible, the efficient and productive use of water by covered entities and non-covered entities.

- Some water systems in Colorado are connected through contracts and service agreements, whereby one covered entity supplies water to other covered entities and non-covered entities.

- To promote water efficiency and best management practices, the CWCB recognizes that these systems may utilize a common water conservation plan.

- Therefore, the CWCB shall accept as fulfilling the requirements of these guidelines, a CWCB-approved water conservation plan, such as a water conservation master plan, a community water conservation plan, or a regional water conservation plan (hereafter "water conservation master plan"), that has been locally adopted, per the guidelines, by the covered entity responsible for administering the water conservation master plan.

- The water conservation master plan must identify the covered entities that will utilize the water conservation master plan to comply with the State's requirement for a CWCB-approved water conservation plan.

- The covered entity responsible for administering the water conservation master plan shall submit all provisions in contracts, service agreements, and operating rules that define the responsibilities for compliance with these guidelines, with the water conservation master plan when submitted to the CWCB for approval.

- Under the water conservation master plan, the covered entity(ies) responsible for administering the water conservation master plan, must assume responsibility throughout the integrated system for compliance with the water conservation master plan, unless denoted differently and agreed upon by another covered entity.

- In order to ensure that the water conservation master plan accurately reflects the application of these guidelines throughout the integrated system, the covered entity responsible for administering the water conservation master plan must submit an updated plan to the CWCB for approval.

Table 1

Water Conservation Plan Submittal Cover Letter Checklist Checklist Item	Description
1. Include name and contact information	Include Phone number, fax number, and address
2. List organizations and individuals assisting in plan development	Include those organizations and individuals that were hired, and/or other organizations and individuals that provided substantial support or technical assistance in preparation of the Plan.
3. Quantify retail water delivery	List retail water delivery for each of the past five years on an annual basis in acre-feet or million gallons per year. If the retail water deliver can be segregated by residential, commercial, industrial, and other uses that would be preferred but not required. Also, a listing of the water supply source(s) used by the entity (e.g., groundwater, surface water as raw water or treated water) would be preferred but not required.
4. Identify population served by retail water delivery	Provide an estimate of the population served by the entity's retail water delivery for each of the years where retail water delivery is reported and/or estimated.
5. Provide public review and comment information	Provide information, including dates of meetings and/or hearings related to the public involvement process, that was used to engage the public in the water conservation planning effort.
6. Include signature of individual with the authority to commit resources of the submitting entity	The cover letter must be signed by an individual that has the authority to commit the resources of the submitting entity
7. Include copy of the entity's Water Conservation Plan	

APPENDIX E – REFERENCES

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