Water Efficiency Master Plan

2015 ~~- DRAFT~~

Utilities Department
Water Resources Division
Water Conservation Division

~~DRAFT~~ FINAL ~~April 2015~~July 21, 2015
~~For Public Comment~~

Acronyms and Abbreviations

AF	acre-feet
AF/yr	acre-feet per year
AWWA	American Water Works Association
cfs	cubic feet per second
Town	Town of Castle Rock
CWCB	Colorado Water Conservation Board
deg F	degrees Fahrenheit
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
HOA	Homeowner's Association
MG	million gallons
MGD	million gallons per day
PCWPF	Plum Creek Water Purification Facility
Plan	Water Efficiency Master Plan
sf	square feet
SFE	Single Family Equivalent
w/	with
w/o	without
WISE	Water Infrastructure and Supply Efficiency

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Acknowledgments

The development of the Town of Castle Rock Water Efficiency Master Plan was a collaborative effort led by the Water Resources and Water Conservation Divisions at the Town of Castle Rock. The following staff members made significant contributions of time and input on this document:

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Executive Summary

Introduction

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 per year (AF/yr) 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. During the 2004 legislative session, the State of Colorado revised the minimum requirements of the Water Conservation Act of 1991 in House Bill 04-1365. This House Bill now requires the conservation plans to include the following information:

- 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; and
- 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.

The April 1992 Water Resources Management Plan outlined conservation as a viable method to extending water supply. In June 1996, the Town of Castle Rock adopted a water conservation plan that set water conservation goals for the community. In December 2006, the Town of Castle Rock adopted the 2006 Water Conservation Master Plan. Numerous factors require the plan to be updated including:

- CWCB's efforts in developing and implementing the Colorado Water Supply Plan;
- The projected population growth and the need for securing a sustainable renewable water supply for the future;
- Advancements in technology;
- Changes in conservation programs and goals; and
- Growth and change in the customer base.

The 2015 Water Efficiency Master Plan, (Plan) meets or exceeds the requirements of the CWCB Municipal Water Efficiency Plan Guidance Document and provides a brief summary of the Town, the water demand forecast, water use, system improvements, implementation and monitoring of programs, updated efficiency goals and programs.

This Plan does not address long-term water supply plans; however, the Water Resources Strategic Master Plan is being updated in 2015 which does address long-term water supply. This Plan focuses on demand-side activities, such as education, rates, rebates, audits, and regulations. This Plan also solidifies the Town's commitment to efficient water use and conservation.

Efficient water use is a key element of living in the semi-arid Colorado environment and is a critical part of the Town of Castle Rock's (Town) water resource strategy. Additionally, the State of Colorado requires that water providers who sell 2,000 AF/yr of water or more annually have a State approved water efficiency plan. As part of the Town's water resource planning approach, managing water demand is key. Effective management of the community's resources is good environmental and financial stewardship. This 2015 Water Efficiency Master Plan (Plan) outlines a goal-oriented, performance based, and cost-effective strategy that delineates our current conservation programs and identifies the Town's plans for other conservation programs that will result in water savings to our community. The Plan and conservation in general, is a key puzzle piece of Castle Rock's long-term water plan as shown in **Figure 1**. Continuing to be a leader in conservation and efficiency has the potential to save the customers and community tens of millions of dollars in renewable water investments over the next thirty years.

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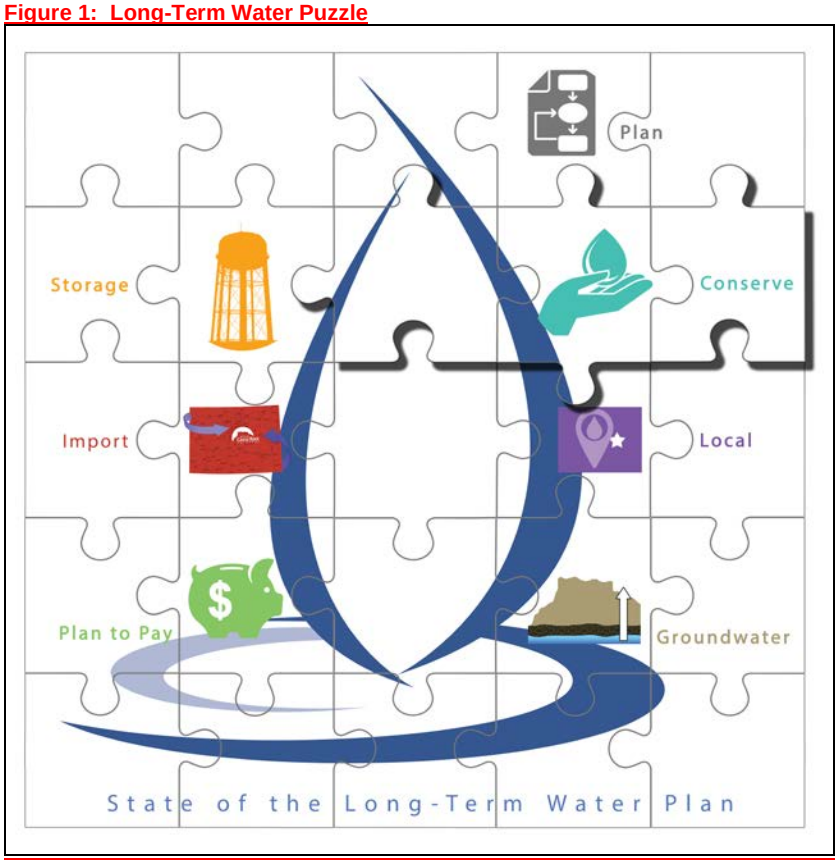
Figure 1: Long-Term Water Puzzle



Water use efficiency has short and long-term positive social and economic impacts. The Town has involved the community in the development, review and implementation of this efficiency plan. Water use efficiency ensures effective use of existing and future water resources.

Profile

The Town of Castle Rock is located midway between Denver and Colorado Springs. Castle Rock provides treated water and wastewater services to a 34 square mile service area with approximately 56,600 people. The current population is expected to nearly double by 2055 as the Town continues to grow. Castle Rock's climate is known to be one of the best in the nation with more than 300 days of sunshine, clear blue skies and less than 15 inches of precipitation each year.

The Town relies predominately on Denver Basin groundwater for approximately 87% of its annual water supply. The remaining 13% of the Town's annual water supply comes from renewable water rights in Plum Creek captured at alluvial wells.

Population

The previous master plan estimated serving a population of 100,000 by 2027, but the population forecast has since been revised. The Town of Castle Rock currently estimates it will provide water service to approximately 105,200 people by 2055, which is an increase of 186 percent over the 2014 population served. Every year, the Town does a population estimate and compares the estimate to all current master plans.

Future Demand

At the present time, the Town has a projected demand of 15,400 acre-feet to serve a population of 105,200 people in 2050. If the community can conserve 18% of that future demand, the demand will decrease by 2,770 acre-feet and could save the Town approximately $97 million in future renewable water acquisitions.

Efficiency Goal

The Town has a future water conservation goal of an additional 18% by maturity, which is estimated to be around 2055. Soon after implementation of the 2006 Water Conservation Master Plan, the Town decreased its water consumption from 165 GPCD to 135 GPCD. The current 5-year average consumption rate is 122 GPCD. An additional 18% would reduce consumption to 100 GPCD and save the community approximately $97 million which equates to about $130 per year for the average customer. Staff estimates that this additional reduction is achievable by the community. Colorado's State Water Plan has set a 2050 goal for our region of 129 GPCD. We have already surpassed that value but plan to continue conservation programs as outlined in this plan.

Stakeholder Participation

The Town sought feedback from Castle Rock Water customers during the planning process. Nineteen (19) resident volunteers were solicited to provide feedback through focus groups moderated by a third party consulting firm. Additionally, the Town hosted an online survey to solicit input on the Plan which was advertised on social media, the Town website (CRgov.com), Town Talk, H2O Access, e-mail alerts, and Town Council. 660 residents responded to the

survey. The community feedback was valuable in guiding staff to select and modify water efficiency programs included in this Plan.

New Programs/Policies

Multiple new activities, incentive programs, ordinances/regulation changes, as well as education activities will be considered over the next several years. These items are as follows:

- Advanced Metering Infrastructure
- Formal Meter Testing Program
- Water Budget Rate Structure Changes
- Public Right-of-Way & Town Park Landscape & Irrigation Retrofits
- Indoor Conservation Incentive Program
- Irrigation Audit/Sprinkler Inspection Fee
- Hot Water Recirculation Units
- Evaluate Additional Water Saving Options and Potentially Make Changes to Local Building Code
- Water Wiser Certification Expiration
- Water Wiser Online Course
- Water Wiser Course Fee
- Conservation Contests

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1.0 Profile of Existing Water Supply System

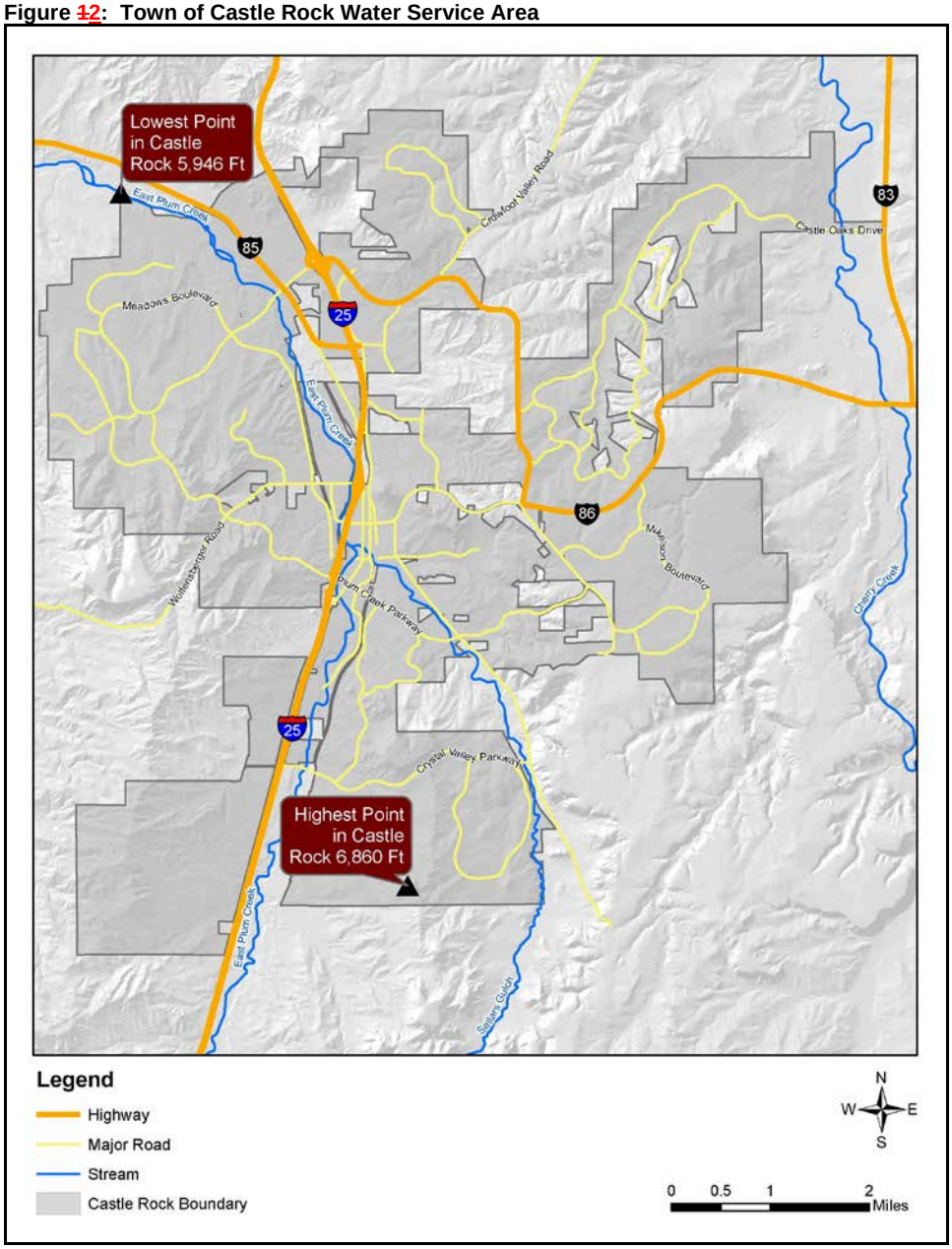
1.1 Overview

The Town of Castle Rock is located midway between Denver and Colorado Springs. Castle Rock occupies 34 square miles and is the seat of Douglas County. Incorporated in 1881, the Town lies between 5,946 and 6,860 feet in elevation in the Plum Creek Valley along Interstate 25 at the base of the Rocky Mountains. Castle Rock's climate is known to be one of the best in the nation with more than 300 days of sunshine, clear blue skies and less than 15 inches of precipitation each year.

The Town has a Council-Manager form of government. Water resources, water delivery, wastewater collection, and stormwater management services are provided through separate enterprise funds within the municipal government. The Town Utilities Department provides these services to over 18,000 customer accounts. Wastewater treatment is provided by the Plum Creek Water Reclamation Authority, of which the Town is a member.

The estimated 2014 population of the Town was 56,645 people. The population of the Town is expected to continue to grow rapidly over the next several years. A table of Town population and growth projections is included in **Appendix A** of this Plan. By 2055, the Town estimates its population will be 105,200 which is an increase of approximately 186 percent over the estimated 2014 population served. **Figure ~~1~~ 2** depicts Castle Rock's water service area.

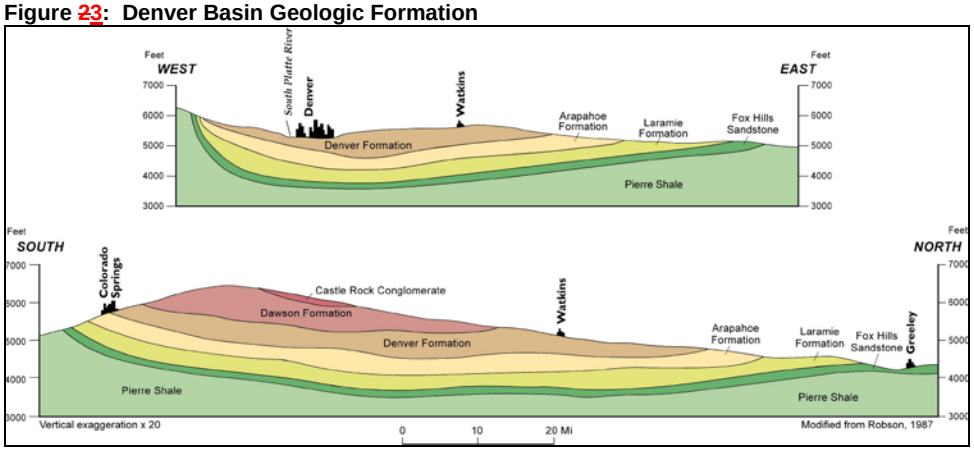
Figure ~~12~~: Town of Castle Rock Water Service Area



1.2 Water Supply and Reliability

Currently, approximately 87 percent of the Town's water is pumped from the Town's fifty-four deep groundwater wells, with 13 percent coming from renewable water resources which include nine active shallow alluvial wells along East Plum Creek. Castle Rock overlies the Denver Basin, a geologic formation with four principal aquifers: the Dawson, Denver, Arapahoe, and the deepest of the four, the Laramie-Fox Hills as shown in **Figure ~~2~~3**. These aquifers are a non-renewable water source that do not recharge regardless of rain or snow melt. In the future, Castle Rock plans to construct a surface diversion along Plum Creek to fully capture the Town's renewable surface water rights.

Figure ~~2~~3: Denver Basin Geologic Formation



The Town of Castle Rock currently owns more than 44,000 acre-feet of water rights between surface water and Denver Basin groundwater. Of this total, 97% is groundwater (non-renewable) and 3% is renewable water. Groundwater is a non-renewable resource, and therefore, it is imperative that we continue transitioning to the Town's ultimate water portfolio goal of 75% renewable and 25% non-renewable water in the future. As a comparison, a typical family uses half an acre-foot of water per year. That means, each year Castle Rock has rights to enough water to fill a football field-sized swimming pool 6.5 miles deep.

Castle Rock has long recognized the need to diversify its water portfolio and extend the life of its aquifers. The Town recognizes its limited water supply source will ultimately not meet water needs. Water Resource programs and projects are currently being implemented that speak to the feasible life of groundwater aquifers and support the Town's goal of obtaining sustainable long-term renewable water supplies. In 2006, the Town adopted its Water Resource Strategic Master Plan to address the future water needs for the Town to achieve a sustainable long-term water supply. In 2011, the Town adopted the 2010

Water Resources Master Plan Update which is scheduled to be updated again in 2015. The plans consist of implementing the following activities:

- Implementation of a water conservation plan;
- Fully develop and use the Town's current water rights;
- Make full use of the water rights from reclaimable water the Town is entitled to use; and
- Work in partnership to import surface water to reach an overall water supply mix of renewable and reusable water that is 75% sustainable.

The goal of the Water Resource Strategic Master Plan is to evaluate the major water supply options potentially available to the Town in a manner that will result in an optimal mix of conservation, reuse, groundwater and renewable water sources in order to provide the Town with a long-term, sustainable water supply for 75% of the Town's future water needs. Transitioning to renewable water supplies for 75% of the Town's future water needs will lessen the reliance on the Denver Basin groundwater aquifers which are experiencing declining water levels each year. The Plan presents options in a manner that will allow the Town to map out a program that best fits its goals and financial capabilities.

The potential water resources available to the Town fall within four primary categories as shown in **Table 1**: existing Town-owned groundwater, Town-owned alluvial water, imported surface water, and the reuse of the Town's return flow to Plum Creek.

Table 1: Castle Rock's Projected Future Water Supply

Water Source	Raw Water Supply Volume (Acre Feet/Year)	Contribution Percentage
Denver Basin Groundwater	3,850	25%
Town Alluvial	1,400	**
Reclaimed Water Program	5,700	37%
Imported Surface Water	5,850	38%
Total		100.0%

**Due to the uncertainty associated with some of the Town's junior water rights, they are not considered as a firm supply.
Source: 2010 Water Resources Strategic Master Plan Update

Castle Rock utilizes a water supply and demand forecasting model that was developed with the assistance of a water resources consultant to model water supplies, storage capacities, and demands out to 2055. This model is currently being updated to forecast supplies and demands out to 2065. The model allows the user to account for supplies in drought years, wet years, and average rainfall

years in regards to renewable supplies. At the present time, the model does not include climate change impacts.

The Statewide Water Supply Initiative 2010 and Colorado's Water Plan have a 2050 water conservation goal of 129 gallons per capita per day for the Metro Basin, which Castle Rock is a part of. For conservative measures, the Town uses a demand of 135 gallons per capita per day for the model. However, the Town's current 5-year potable water consumption average is 122 gallons per capita per day to serve the community. Therefore, the Town is below the future 2050 water conservation goal set by the Colorado Water Conservation Board.

The Town's model also takes into account available storage capacities for excess water supplies that may occur during wet years. Castle Rock owns capacity in Rueter-Hess Reservoir, has space reserved in the Chatfield Reallocation Project, and is pilot testing aquifer storage and recovery (ASR) in two Denver Basin aquifer wells for feasibility. During years when excess supplies are available, the Town will store unused supplies. Additionally, the Town is planning to complete feasibility studies for transporting excess Front Range water for storage in Rueter-Hess Reservoir.

Groundwater

The primary resources available to the Town at this time are our groundwater rights within the Denver Basin aquifers and alluvial ground water rights from the Plum Creek alluvium. In 2014, 13% of the Town's demands were met using renewable alluvial ground water rights. To ensure responsible use of this resource, the Town has commissioned different consultants to develop groundwater and water rights planning models that help Town staff evaluate the resources. The models better define the Town's aquifers characteristics, allowing the Town not only to evaluate the conditions of the aquifers today, but also evaluate the impacts of other water supply projects to the life of the aquifers.

With the majority of the Town's water produced from deep groundwater aquifers, it is essential to use this resource responsibly and efficiently. By applying groundwater and planning models to this resource, Town staff will have a tool to not only evaluate our final water supply option, but also to help guide our decisions as factors change over time. The models provide a framework for assessing the impacts on the groundwater resource over the next 50 years.

The water rights planning model will be used in determining the preferred water supply options. The model will provide a basis on which to evaluate the optimal mix of conservation, reuse, groundwater and renewable water and its impacts on to the Town's aquifers.

The initial results of the models indicate the Town has time to address its long-term water supply issues. However, the cost to continue down the current path of relying on non-renewable groundwater is high and the time to develop a strategic plan to diversify the Town's water portfolio is now. Many of the renewable water projects required to reduce the Town's dependence on non-renewable groundwater will take decades to develop.

Surface Water

Work continues on evaluating the options of bringing renewable water to the Town. The Town has three primary areas where renewable water can be obtained in adequate quantity, which include using the Town's existing senior water rights along East and West Plum Creek, importing water through the South Metro Water Infrastructure and Supply Efficiency (WISE) Project, and importing water from the South Platte River, also called the Box Elder Project. The scope of the renewable projects is so expansive; Castle Rock alone cannot develop the financial or political capabilities to implement them. The Town's involvement in local and regional efforts is crucial to the Town's success in the renewable water arena. The Town is currently participating in several regional programs as part of the Alternative Source of Supply Project which includes the WISE Project and the Box Elder Project, as well as developing conjunctive use plans with other water providers, increasing existing reservoir storage capacities and participation in new storage projects.

Another renewable water source is alluvial well water. Alluvial water makes up the balance of the Town's current renewable water portfolio. Historically, the Town did not have an adequate way to treat the alluvial water. In 2013, the Town began operating a newly constructed surface water treatment facility (Plum Creek Water Purification Facility) and six new alluvial wells to begin utilizing this renewable water source. To date, alluvial water contributes to about 13% of the Town's annual supply. The Town is considering additional diversion options along Plum Creek to maximize its use of senior surface water rights in the basin. The Town anticipates a surface water diversion structure to be available in 2017 and pumping additional water to the Plum Creek Water Purification Facility.

Reclaimed Water

Water used by the Town that is collected and conveyed to the Plum Creek Water Reclamation Authority treatment plant for treatment and discharge to Plum Creek can, by law, be reclaimed by the Town. Similarly, a portion of the water used for lawn, park, and golf course irrigation that returns to Plum Creek can also be reclaimed by following the proper procedures. The Town plans to maximize the use of this water through indirect reuse.

Indirect reuse involves capturing the reclaimed wastewater effluent that is discharged directly to Plum Creek and then pumping it back (further downstream) after it undergoes some natural treatment processes and mixing with native stream flows. The reclaimed water would be delivered back to the Town for further treatment at Plum Creek Water Purification Facility (PCWPF) to meet drinking water quality standards and sent into the water distribution system.

For further information regarding the use of reclaimed water, see the Water Resource Strategic Master Plan and Wastewater Master Plan, which is scheduled for update in 2015.

Water Storage

The Town of Castle Rock secured 8,000 acre-feet of raw water storage in Rueter-Hess Reservoir in 2008. An additional 200 acre-feet of raw water storage space in Chatfield Reservoir has been set aside for the Town in 2014. To date, the Town has approximately 20 acre-feet of treated effluent flows from the Cherry Creek Basin stored in the Rueter-Hess Reservoir. Beginning in 2016, unused WISE water deliveries can be also stored in the Rueter-Hess Reservoir. Beginning in October 2017, the Town will be able to begin storing raw water from the Plum Creek Basin in the Chatfield Reservoir provided all deadlines are achieved in accordance with the Water Storage Agreement signed by the State of Colorado and the US Army Corps of Engineers.

Additionally, the Town has modified two of our existing deep groundwater wells for use as underground reservoirs (aquifer storage and recovery). This project is in the pilot phase and will be evaluated in 2015 for effectiveness. When we have excess renewable water, it can be stored in these wells. When we need additional water, it can be pumped out of these wells and sent to the water treatment facilities for treatment and distribution.

1.3 Supply-Side Limitations and Future Needs

The Town has developed a water supply and demand forecasting model and continues to improve it to reflect future growth, water supplies, storage options, water delivery obligations, conservation efforts, and demand scenarios with the help of a consultant. The current model projects demands out to 2055 and is being updated to project demands out to 2065.

A summary of water supply limitations and future needs is shown in **Table 2**. This table is based on Worksheet A from the CWCB guidance document.

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Table 2: Water Supply Limitation and Future Needs

Future Need or Challenge	Yes	No	Comments on Limitation or Future Need	How is Limitation or Future Need Being Addressed
Supply is in a designated critical water supply shortage area	X		Castle Rock relies primarily on Denver Basin groundwater. This supply has limitations.	The Town is planning to secure a sustainable renewable water supply through various projects that will utilize 75% renewable and 25% non-renewable water for its supplies by 2050.
System experiences frequent water supply shortages and/or emergencies		X		
System has substantial non-revenue water		X		
Experiencing high rates of population and demand growth	X		Population is expected to double by 2050.	The Town is planning to secure a sustainable renewable water supply through various projects that will utilize 75% renewable and 25% non-renewable water for its supplies by 2050.
Planning substantial improvements or additions	X			Additional renewable water supplies, indirect potable reuse, and infrastructure expansions are planned.
Increases to wastewater system capacity anticipated	X		Additional wastewater treatment capacity may be needed.	The Town's wastewater is treated at Plum Creek Water Reclamation Authority (PCWRA). PCWRA provides the planning associated with wastewater treatment.
Need additional drought reserves		X		
Drinking water quality issues	X		Some WISE supplies obtained in 2030 and thereafter may have water quality issues that may need additional treatment.	The WISE members are evaluating the possibility of constructing additional treatment processes to resolve the potential issue.
Aging infrastructure in need of repair		X		
Issues with water pressure in portions of distribution system		X		

1.) Based on Worksheet A from CWCB guidance document. See Section 7 for reference information.

2.0 Profile of Water Demands and Historical Demand Management

2.1 Demographics and Service Area Characteristics

The Town of Castle Rock provides treated water, wastewater services, and stormwater management to a service area with 56,000 people. The current population is expected to approximately double by build-out which is anticipated to be in the 2050s. The Town of Castle Rock was incorporated in 1881 but remained a small town of less than 4,000 residents until 1980 when parties began annexing into the Town of Castle Rock and developing the land. The population has continued to grow steadily since. More detailed population data is attached in **Appendix A**.

The majority of the Town's customers utilize automatic irrigation systems. All new residential construction that includes landscaping is installed with an automatic timer and rain sensor. Every commercial landscaping over 500 square feet is installed with a smart controller, rain sensor, master valve, and flow sensor as required by the Landscape and Irrigation Performance Standards and Criteria Manual.

The peak day demand typically occurs between mid-June to mid-August each year. Over the past three years, the peak day ranged between 14 and 14.5 mgd which is approximately 2.3 times the average daily demand. The peak day demand is less than it would be without the Town's demand management program which is described in the next section.

To better understand water use among different categories of customers, the Town of Castle Rock uses the following customer category assignments for its water service accounts. Each water account is assigned one of the following category designations:

- Residential
- Multifamily
- Commercial
- Irrigation
- Bulk

Customer information is stored in the Utilities Department's customer billing system.

2.2 Historical Water Demands

According to the data from the billing department, the 5-year average annual metered use by all customers is 6,526 acre-feet (2.13 billion gallons) between 2010 and 2014 which equates to 122 gpcd, which is less than CWCB's future conservation goal for the Denver Metro area of 129 gpcd. The Town recently began tracking water loss using the American Water Works Association (AWWA) Water Loss Control Committee Free Water Audit Software which utilizes the AWWA M36[1] methodology. The water loss in 2012 was calculated to be 9.9%, 8.1% in 2013, and 7.9% in 2014. The Town is continuing to reduce water loss by:

- Developing a formal meter testing program,
- Performing acoustic leak detection testing on the potable water distribution system, and
- Utilizing a leak logger within the distribution system to identify leaks.

As shown in **Table 3**, the residential customer category comprises approximately 92% of the Town's accounts and accounts for approximately 66% of the Town's annual water demands between 2010 through 2014. The pie chart in **Figure ~~3~~ 4** shows the percentages of annual consumption for each customer category between 2010 through 2014. Total annual demands in the Town between 2010 through 2014 are shown in **Figure ~~4~~5**.

Table 3: Historic Average Water Demand & Percentage by Customer Category, 2010-2014

Customer Category	Percent of Total Accounts	Percent of Total Annual Water Deliveries	Total Annual Demand (AF)
Residential	91.8%	66%	4,289
Multifamily	2.4%	8%	532
Commercial	3.6%	14%	899
Irrigation	2.0%	11%	694
Bulk	0.3%	2%	112
Total	**100%**	**100%**	**6,526**

The five largest customers in the Town of Castle Rock in terms of annual water use are:

1. Government Entity
2. Rental apartment community
3. Government Entity
4. Homeowner's Association
5. Commercial Facility

[1] American Water Works Association. 2009. *AWWA Manual M36 Water Audits and Loss Control Programs*.

Over the past several years, the Town has taken the initiative to decrease water consumption in Town-owned and maintained parks by installing synthetic turf fields, weather-based central control system, rain and flow sensors. The Utilities Department continues to provide outreach and education to the Parks Department, HOAs, and business community to find methods to decrease water consumption.

Figure ~~34~~ 4: Pie Chart of 5-year Average of Historic Water Demands by Category, 2010-2014

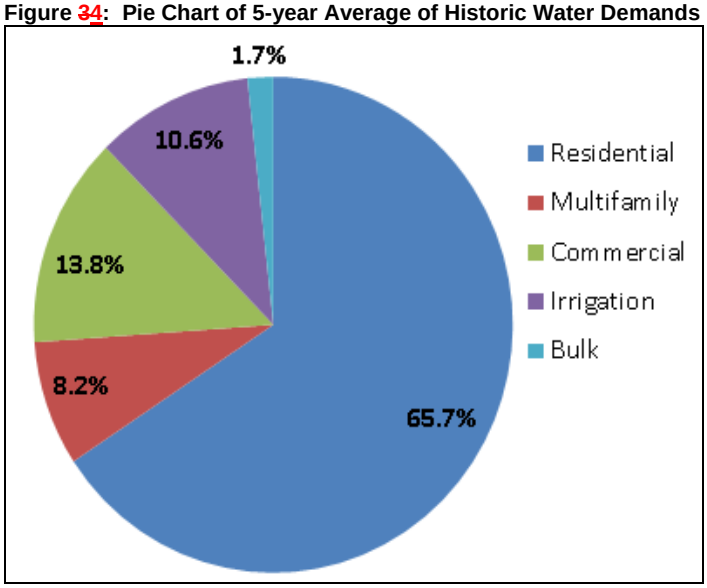


Figure ~~4~~5: Town of Castle Rock Metered Water, 2010-2014

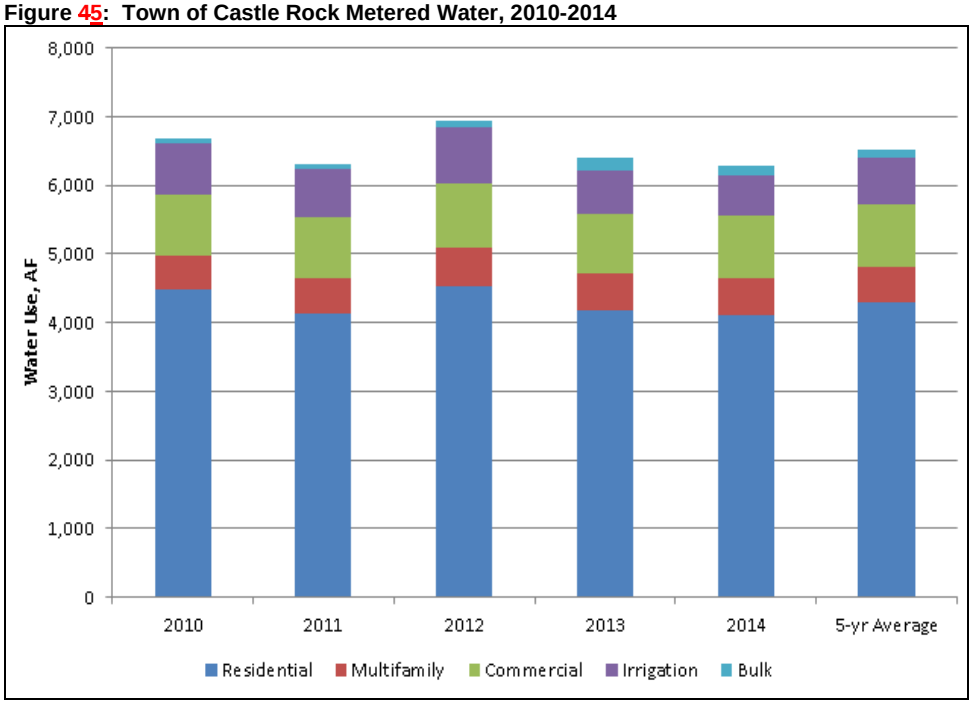
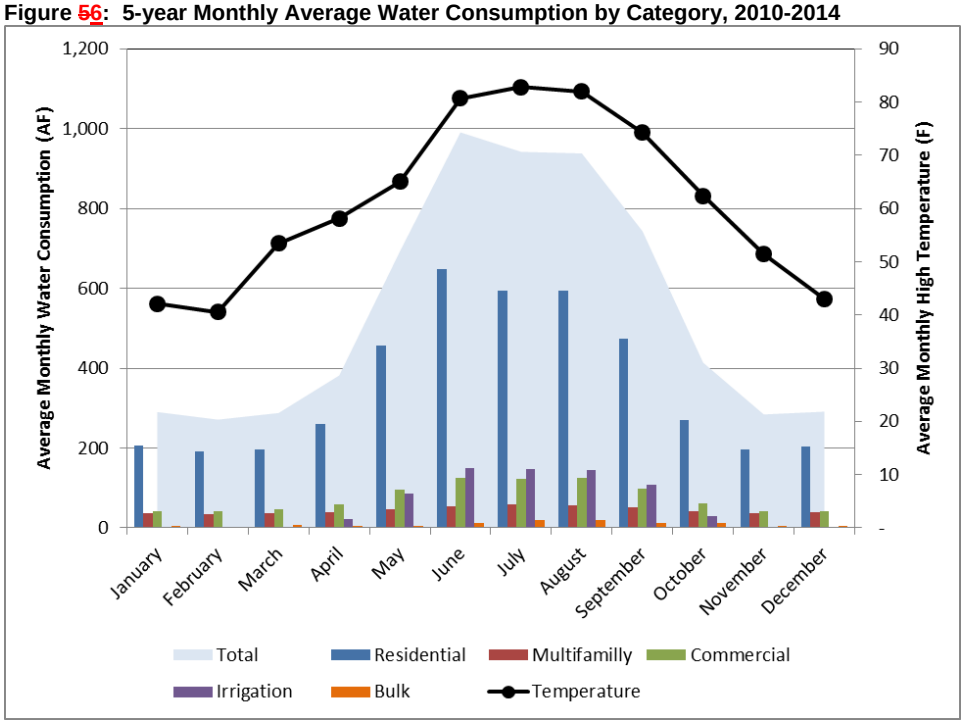


Figure ~~5~~ 6 below represents the 5-year (2010-2014) monthly average water consumption by category in relation to average monthly temperature during that same time period. As expected, cooler temperatures relate to reduced water consumption and warmer temperatures relate to increased water consumption.

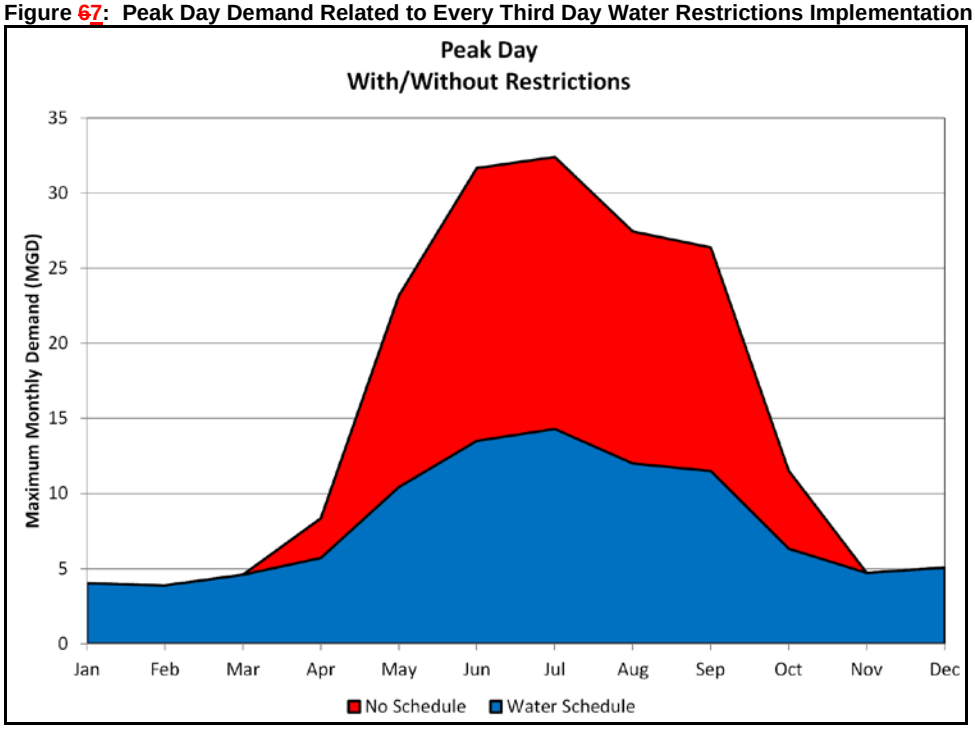
Figure ~~5~~6: 5-year Monthly Average Water Consumption by Category, 2010-2014



2.3 Past and Current Demand Management Activities

The Town of Castle Rock has implemented several demand management activities over the past three decades which include every third day water restrictions which have limited irrigation hours as well as the water budget rate structure. The every third day watering restrictions that were implemented in 1985 provide good water system management, while providing adequate irrigation times for plant material. Without watering restrictions, the peak water demands would increase by approximately three hundred percent as presented in **Figure ~~6~~7**.

Figure ~~6~~7: Peak Day Demand Related to Every Third Day Water Restrictions Implementation



The water budget rate structure was implemented in 2009 and 2010. This billing structure promotes water conservation through a tiered rate system that rewards conservation and water consumption within the assigned water budget.

The Town has numerous water efficiency activities that have been implemented over the past three decades. The earliest activity was outdoor watering restrictions which was a demand management activity. Table 4 lists all water efficiency activities the Town has implemented by category and their current status.

Table 4: Water Efficiency Activities

Water Efficiency Activities	Period of Implementation	Notes
Foundational Activities		
Increasing block rate structure	1989 – 2008	Water savings are not tracked by individual water efficiency activity.
Water budget rate structure (Commercial)	2008 – present	
Water budget rate structure (Residential)	2009 – present	
Historical Consumption Information on Bills	2009 – present	
Public Right-of-Way Retrofits	2009	
Leak Detection / Non-revenue Water Program	2008 – present	
Targeted Technical Assistance and Incentives		
Clothes washer rebate program	2006 – 2012	Water savings are not tracked by individual water efficiency activity.
Rotary nozzle retrofit	2009 – present	
Smartscape landscape retrofit	2009 – present	
Rain sensor	2009 – present	
Smart controller	2009 – present	
Irrigation Audit/Sprinkler Inspection	2008 – present	
Ordinances and Regulations		
Water Use Management Plan	Early 2000 – present	Water savings are not tracked by individual water efficiency activity.
Watering Restrictions	1985 – present	
Water Monitoring Program	Early 2000 – present	
Soil Amendment and Inspection Requirements	Early 2000 – present	
Irrigation Exemptions	1985 – present	
Landscape Regs for New Development	1999 – present	
Water Efficiency Plan Guidelines	2014 – Present	
Education Activities		
Historical Consumption Info on Bills	2009 – present	Water savings are not tracked by individual water efficiency activity.
Water Wiser	2004 – present	
Public information and education*	Early 2000 – present	
Xeriscape demonstration garden	Early 2000 – present	
Registration for Landscape Professionals	2004 – present	
Water Ambassador Program	2009 – present	
Water Conservation Website	2010 - present	

*This activity includes facility tours, classroom visits, and xeric design workshops.

The Town does not currently track water savings by individual water efficiency activity. The Town has estimated the amount of water saved over the last five years. The amount of water that was consumed was compared to the gallon per capita per day value calculated in 2007 after the implementation of the 2006

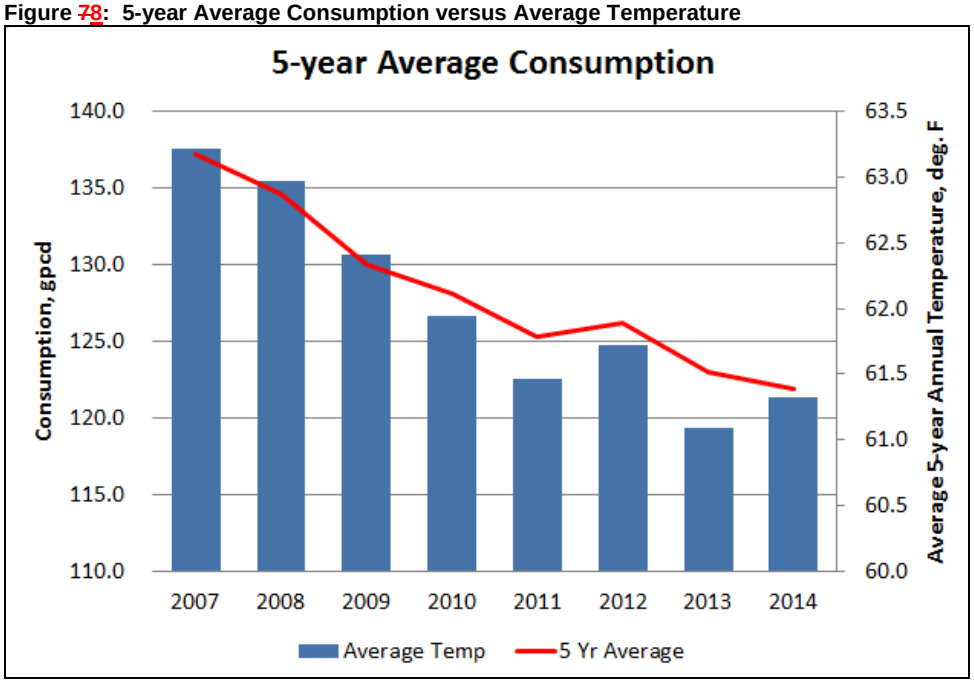
Water Conservation Master Plan. The amount of water saved each year is realized as a dollar amount for the Town. Water saved is water that the Town does not have to secure in the future as part of the Town's long-term water plan. The Town currently estimates that the cost to secure fully-developed renewable water is approximately $32,000-$35,000 per acre-foot. **Table 5** shows the value of water saved over the last 5 years as compared to 2007's average water consumption value. This savings would be a one-time cost avoidance by minimizing the amount of future renewable water acquisitions and associated infrastructure capacity.

Table 5: Estimated Water Savings, 2010-2014

Description	2010	2011	2012	2013	2014	Notes
Population	49,002	49,949	51,573	54,238	56,645	
System-Wide Annual GPCD	132	123	131	116	108	
Annual Water Savings (Compare to 135 gpcd), gpcd	3	12	4	19	27	Achieved 135 gpcd in 2007.
Annual Water Saved, gallons	51,648,234	216,735,888	84,209,273	380,324,938	555,007,457	
Value of Water Saved	$5,549,603	$23,288,271	$9,048,286	$40,865,915	$59,635,551	$35,000/AF

Figure ~~7~~ 8 represents the 5-year average gallons per capita per day consumption rates since 2007 through 2014 as well as the 5-year average daily temperature. It is clear that the Town has decreased water consumption over the past 8 years. It is difficult to attribute the decrease in consumption solely to conservation efforts as the average temperature declined also. Typically, a decline in temperature would suggest that less irrigation water would be necessary as compared to a hotter temperature.

Figure ~~7~~8: 5-year Average Consumption versus Average Temperature

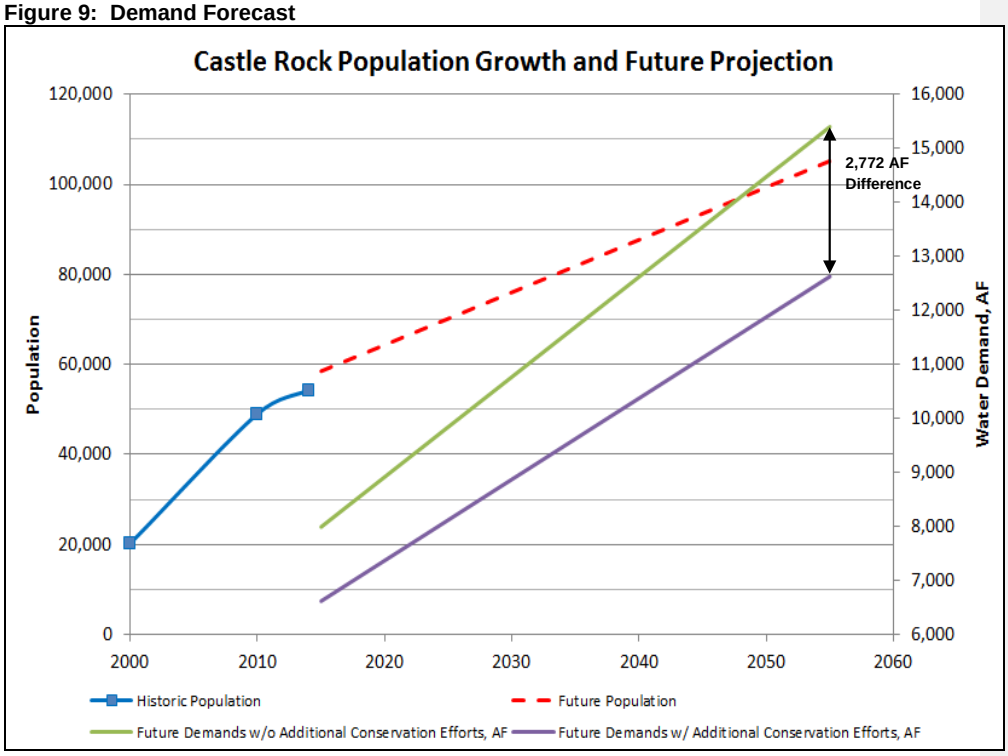


2.4 Demand Forecast

The Town utilizes a supply and demand forecasting model to determine there are adequate water supplies available to serve the community. This model is updated annually and is used as a tool for water resources planning. **Figure 9** shows the projected population in relation to the anticipated water demand through 2055 without conservation and with an additional 18% conservation goal. The Town currently estimates fully-developed renewable water to cost up to $35,000 per acre-foot. As this figure shows, with an additional 18% conservation goal, the Town would reduce the amount of renewable water the Town would need to secure in the future by 2,772 acre-feet which amounts to approximately $97 million saved.

The demand forecast model includes population projections, consumption projections, available renewable water supplies, available nonrenewable water supplies, imported water supplies, and storage capacity. The Town is currently updating the model to include conservation efforts, water efficiency plans, additional storage options, lawn irrigation return flow supplies, and options for extraterritorial agreements.

Figure 9: Demand Forecast



3.0 Integrated Planning and Water Efficiency Benefits and Goals

3.1 Water Efficiency and Water Supply Planning

The Town of Castle Rock has a water resource strategic master plan in which supply options are evaluated and implemented. The Town has a goal of 75% renewable water supply by 2050-2055. In order to achieve this goal The Town must import water and continue to emphasize conservation and water efficiency. In either case, the estimated cost for obtaining new, fully developed, renewable water supplies is $32,000 - $35,000 per acre foot. To address future water supply needs, the following targets have been identified in the 2010 Water Resources Master Plan Update:

- Renewable water will make up 75% of the Town's supply
- Denver Basin groundwater will make up 25% of the Town's supply
- Indirect potable reuse will make up an estimated 50% of future renewable water demand and is part of the overall renewable water supply.
- An aggressive water efficiency program will reduce future demands by 2,700 acre feet, by around 2050-2055.

These water supply / water efficiency activities are budgeted through 2050. The budget is updated annually, with a revised 5-year projection.

Section 2.0 described the Town's demand forecast model and how additional water savings of 18% can decrease future water acquisition costs.

3.2 Water Efficiency Goals

Water efficiency is a primary goal of future supply planning. The 2006 Water Conservation Master Plan had three efficiency goals that were selected because they were measurable and practical. The Town of Castle Rock feels these same three goals are still the same goals for this revised Water Efficiency Master Plan because of their proven effectiveness as outlined in **Tables 4** and **5**.

Goal 1: Reduce current and future water demands.

"Gallons per capita per day" (GPCD) is used to compare demand. GPCD is calculated two different ways. The first is "Potable GPCD" and is calculated using metered sales of water from billing data and monthly population estimates. The second is "Raw GPCD" and is calculated using source water distribution data (such as a meter at the well) and is calculated using water production data

prior to delivery, and monthly population estimates. The potable GPCD is a true measurement of water being used by the community. The raw GPCD is a more accurate reflection of the total water needed to serve the community, and takes into account such things as hydrant flushing, fire suppression, water main breaks, and system losses.

Goal 2: Create a community culture that embraces water efficiency.

In order for water efficiency to be a sustainable effort, the community needs to understand the "value of water". The Castle Rock community needs to know where our water comes from, that groundwater is a finite resource, and that transitioning to surface water is expensive. Ultimately Castle Rock's goal is to supply 75% of our water from renewable surface water and 25% of our water from non-renewable groundwater.

Goal 3: Ensure financial stability.

Castle Rock Water is a "cost of service" based utility. In order to ensure the rates are set appropriately for each customer class, a cost of service rate study is completed at the end of each year, and adjustments to the rates and fees are made as needed for the coming year.

In 2008, a non-residential water budget rate structure was developed and implemented. In 2009, a residential water budget rate structure was developed and implemented. All billing is done in thousand gallons. The water budget rate structure uses the average winter monthly consumption (AWMC) to calculate the indoor budget and sewer charge for the year and the actual irrigable area to provide a monthly outdoor allocation during April – October. All meters are read monthly, on the first, second, or third day of each month.

3.3 Water Efficiency Objectives and Implementation

The Town developed objectives to help meet the goals set for the Water Efficiency Master Plan. Each objective is summarized within this section.

Objective 1: Reduce average water consumption 18% by 2050.

The State of Colorado Water Plan conservation goal for the Denver Metro area water providers is 129 GPCD by 2050.

As stated in the original Town of Castle Rock Water Conservation Master Plan (adopted by Town Council December 2006), the goal was to reduce consumption by 18% from 165 GPCD to 135 GPCD. This goal was achieved in 2008 with a 5-year average (2004-2008) of 135 GPCD. Since then, each individual year, and

the running 5-year average, Castle Rock has maintained consumption at or below this original goal.

The current goal is to conserve an additional 18% as we continue to promote the efficient use of water. The current 5 year average (2010 – 2014) is 122 GPCD, potable. This additional 18% reduction (122 – 18%) would result in a sustained potable consumption of 100 GPCD by the year 2050.

Objective 2: Preserve / enhance Castle Rock's landscape architecture.

What is the "Castle Rock look"? Castle Rock is considered a semi-arid high desert. According to the National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (www.ncdc.noaa.gov/cdo-web/datatools/normals) Castle Rock receives 13.95" of precipitation during an average irrigation season (April – October).

The "look and feel" of Castle Rock can vary greatly, depending on the part of town. The topography, elevation, and exposure are highly variable. The elevation ranges from 5,946' to 6,860'. The low point is at the northern edge of town where East Plum Creek intersects with the town boundary. The high point is on the south side of town, southwest of the Crystal Valley Ranch neighborhood. (See **Figure 1**) The natural landscape ranges from heavily wooded evergreen trees, to Gamble Oak, to natural grasslands, to rocky plateaus. There are more than 80 individual home owners associations and metropolitan districts in the Town of Castle Rock. Each of these associations or districts maintains common area landscaping and irrigation systems, and may also choose to promote and protect the natural surroundings of their own individual neighborhood. Because of the variable natural surroundings throughout the town, the look and feel of each neighborhood, through its HOA or Metropolitan District, may be determined by specific covenants.

The geographic location and climate reinforce water conserving plant selections and efficient irrigation techniques. By using natural surroundings, future development could remain more sustainable.

Implementation Strategy

The Town developed an implementation strategy to help achieve the goals and objectives of the water efficiency plan. The strategies include implementation of landscape regulations and public education programs.

The Town has implemented landscape regulations for new development that results in efficient use of water, is aesthetically pleasing, and enhances the type of land use. The first regulations specific to landscape and irrigation were included in the Public Works Regulations, and adopted in 1999. The next

several years saw greater development and the need for a stand-alone document to address landscape and irrigation concerns. This led to the *Town of Castle Rock Landscape Regulations and Principles*, adopted in July 2003. As time, development, technology, and management practices all continued to move forward, it became clear that a revision and update to the 2003 regulations was needed. In December 2012, the Landscape and Irrigation Performance Standards and Criteria Manual was adopted, with the first update to this manual taking place in early 2015. This manual sets forth clear guidelines for design and construction of new non-residential development. This includes such areas as parks, streets, churches, commercial, and HOA common areas. The Town plans to continue working with the development community to ensure changes and updates are realistic and achievable.

Another major implementation strategy is to implement public education programs that allow the Community to make conservation a way of life. Since 2006, the Town has implemented several public education programs that are described in **Table 4**.

3.4 Short-term Drought Response

The Town has never had to enact an emergency regulation of water. The Town has regulations within the Municipal Code Chapter 13.12.070 that allow Town Council to regulate water usage during times of drought, shortage, fire or other emergency. The language for the emergency regulation of water can be found in **Appendix C**. As part of the Utilities Department's Strategic Plan, the department plans to develop a Drought Mitigation and Response Plan that aligns with regional water providers in 2016.

4.0 Selection of Water Efficiency Activities

4.1 Summary of Selection Process

The Town has had a positive experience with the water efficiency plan goals that were selected. These goals helped the Town meet the initial conservation goal of 18% reduction and were therefore selected to remain goals for this Water Efficiency Master Plan revision. The Town has developed a few additional activities that are currently in the process of being developed or are under review for economic feasibility. A robust conservation program helps promote the efficient use of water and ensures long-term stability.

4.2 Components of Water Efficiency Plan

The Water Efficiency Plan components are summarized in **Table 6**. The components in the table include existing programs and additional programs the Town is currently developing or is evaluating for economic feasibility. The components are broken into four different categories: foundational activities, targeted technical assistance and incentive programs, ordinance and regulation requirements, and educational activities.

Table 6: Plan Components by Customer Class

Water Efficiency Activities	Period of Implementation	Customer Class
Foundational Activities		
Water budget rate structure (Non-residential)	2008 – present	Non-residential
Water budget rate structure (Residential)	2009 – present	Residential
Historical Consumption Information on Bills	2009 – present	Residential, Non-residential
Advanced Metering Infrastructure	Considering	Residential, Non-residential
Formal Meter Testing Program	In progress	Residential, Non-residential
Leak Detection / Non-revenue Water Program	2008 – present	Municipal
Public Right-of-Way & Town Park Landscape & Irrigation Retrofits	Considering	Municipal
Targeted Technical Assistance and Incentives		
Rotary nozzle retrofit	2009 – present	Residential, Non-residential
Smartscape landscape retrofit	2009 – present	Residential
Rain sensor	2009 – present	Residential
Smart controller	2009 – present	Residential, Non-residential
Irrigation Audit/Sprinkler Inspection	2008 – present	Residential, Non-residential
Indoor Conservation Incentive Program	Considering	Could apply to residential and non-residential

Water Efficiency Activities	Period of Implementation	Customer Class
Ordinances and Regulations		
Water Use Management Plan	Early 2000 – present	Residential, Non-residential
Watering Restrictions	1985 – present	Residential, Non-residential
Water Monitoring Program	Early 2000 – present	Residential, Non-residential
Soil Amendment and Inspection Requirements	Early 2000 – present	Primarily for non-residential, but recommended for residential
Irrigation Exemptions	1985 – present	All residential and non-residential irrigation customers
Landscape Regs for New Development	1999 – present	Requirements for non-residential, recommended for residential
Water Efficiency Plan Guidelines	2014 – present	Residential, Non-residential
Hot Water Recirculation Units	Considering	Could apply to residential and non-residential
Education Activities		
Historical Consumption Info on Bills	2009 – present	Residential, Non-residential
Water Wiser	2004 – present	Available for all sectors but geared toward residential
Xeric Design Workshop	2009 – present	Residential
Public information and education*	Early 2000 – present	Residential, Non-residential
Xeriscape Demonstration Gardens	2005 – present	Residential, Non-residential
Registration for Landscape Professionals	2004 – present	Landscape & Irrigation design, installation, and maintenance contractors
Water Ambassador Program	2009 – present	Residential customers through school education
Water Conservation Website	2010 – present	Residential, Non-residential
Conservation Contest	Considering	All

*This activity includes facility tours, classroom visits, and xeric design workshops.

The water conservation activities identified in **Table 6** are discussed in detail below.

4.2.1 Foundational Activities

The Town has several foundational conservation activities that help with demand management.

Water Budget Rate Structure

The Town has had a tiered rate structure for several decades (refer to **Appendix B**). The Town implemented rate strategies, such as a water budget rate

structure that reward efficient water use and discourage water waste. In 2008, a non-residential water budget rate structure was developed and implemented. In 2009, a residential water budget rate structure was developed and implemented. All billing is done in thousand gallons. These rate structures calculate the indoor budget during the winter months of November – February, and provide a monthly outdoor allocation during April – October. These rate structures consist of four (4) inclining tiers described below.

Tier one is based on the average winter monthly consumption (AWMC) of November – February. It is assumed all water consumed during this period is indoor consumption only, as it is outside the normal irrigation period. If the AWMC does not average to an even thousand gallons, then the average is rounded up to the nearest thousand gallons to become tier one and rounded down to the nearest thousand gallons to establish the sewer charge until the next AWMC period.

Tier two is the "in budget" outdoor irrigation rate. Each account that has irrigation is assigned a square footage based on the actual irrigable area for that meter. Residential accounts are limited to a maximum of 7,000 square feet.

Tier three is the out of budget or "excess" tier for irrigation. For residential customers, this tier is anything in excess of tier two, up to 40,000 gallons in a single billing cycle.

Tier four (residential only) is the conservation surcharge and only applies to consumption in excess of 40,000 gallons in a single billing cycle.

As part of the Plan implementation, additional discussions and evaluations are required to determine if decreasing the limitations of tier two, three, and four are appropriate.

Historical Consumption Information on Bills

The Town began showing historical consumption information on bills since at least 2009. The Town could not verify the status of this information on bills prior to 2009 because of a software conversion that occurred in 2009. Once customers can see their historical usage, they are able to realize their total consumption and relate any water use changes to more or less consumption.

Advanced Metering Infrastructure (AMI)

The Town is currently evaluating the economic feasibility of installing AMI equipment. AMI equipment includes electronic hardware and software that would provide real-time demand data for Castle Rock Utilities and/or customers via a webpage or mobile App. The Town realizes that AMI has significant

benefits which include providing real-time data for customers who are interested in tracking water usage for conservation efforts, locating leaks in the system, and tracking non-revenue water demands. The Town will compare the infrastructure cost to the value of water that would be saved.

Formal Meter Testing Program

The Town is currently in the process of developing a formal meter testing program. The program will identify a standard operating procedure for testing meters within the system and help reduce non-revenue water from inaccurate meters.

Leak Detection / Non-Revenue Water Program

In 2012, Castle Rock Water's Operation and Maintenance Division launched a systemic leak detection program to determine repair and rehabilitation areas of the potable water distribution system. The Town has 400 miles of potable water distribution piping with a goal to perform leak detection over the entire system every 5 years to reduce non-revenue water. Furthermore, the Town has performed some form of leak detection on the system that dates back to 1995.

Since 2012, the Utilities Department has been tracking non-revenue water loss using the AWWA Loss Control Committee Free Water Audit Software which utilizes the AWWA M36 methodology.

Public Right-of-Way Retrofit & Town Park Landscape & Irrigation Retrofits

In 2009, the Town funded two landscape median projects: Woodlands and Meadows medians. The Town pays for water to irrigate these medians but the landscaping and irrigation was maintained by the area metro districts. While the total costs of the projects amounted to about $250,000, the Town has determined that approximately $11,000 of annual operation and maintenance costs were saved as well as approximately $100,000 was saved in long-term renewable water needs.

The Town is evaluating the expansion of these previous projects into a program that provides landscape and irrigation retrofits or SmartScape renovations for public right-of-way and Town park facilities. There is a possibility that the Utilities Department could loan money to the various departments to fund the projects. The Utilities Department would recoup the loaned money in monthly utility bill fees.

4.2.2 Targeted Technical Assistance and Incentives

The Town has implemented incentive programs that encourage existing properties to be water efficient and aesthetically pleasing. The following is a list of the current rebate and customer assistance programs. The funds for the rebate programs are limited and the rebates are issued on a first-come, first-served basis. Additionally, a resident must complete the Water Wiser program to be eligible for any of the following rebate programs.

Rotary Nozzles

Customers can receive a rebate up to $5 per nozzle ($2,000 maximum for non-residential customers) when less efficient traditional spray nozzles are replaced with more efficient rotary nozzles. Customers are required to provide an application, receipt, and old nozzles to take advantage of this program.

SmartScape Renovation

Residential customers can receive a rebate of $1/square foot (maximum $1,500) for removal of high water use plant material (such as Kentucky Blue Grass), and replacement with Xeriscape or hardscape. The sprinkler system must also be retrofitted with drip irrigation for Xeriscape areas or removed for hardscape areas.

Rain Sensors

Residential customers can receive a rebate of 50% of the cost (maximum $50) when they purchase and install a rain sensor for their irrigation system.

Smart Irrigation Controller

Receive a rebate of 50% of the cost of an approved “smart” controller (maximum $300) when replacing a traditional sprinkler timer with a smart controller. A smart controller is one that automatically adjusts the sprinkler run times or irrigation frequency depending on changes in the weather or soil moisture. Non-residential customers are eligible for rebates on up to five (5) controllers for a maximum rebate of $1500 ($300 x 5 = $1500).

Irrigation Audits & Sprinkler Inspections

The Town has a limited number of irrigation audits (sprinkler inspections) available for those customers who qualify. Because of the limited number of audits available, the Town reserves them for customers who consistently have a difficult time staying within their monthly water budget, or those customers with consistently high bills. The sprinkler inspection typically consists of a visual

inspection of all zones in operation, a review of the clock and programming, and a recommendation on how to improve management and overall system efficiency. For 2008-2014, the Town has contracted with The Center for ReSource Conservation (CRC) to provide their Slow the Flow Colorado irrigation audit program. Through the CRC Impact Analysis, average Slow the Flow program water savings is 5,000 gallons per season per participant. Castle Rock customers that participated in the program in 2013 showed an average water savings of 33,000 gallons per season per participant after implementing recommendations.

Through the online community outreach effort, about 70% of the respondents stated they are likely to participate in the program for a fee of $25. Therefore, the Town is considering making this irrigation audit and sprinkler inspection program have a $25 fee for participants.

Indoor Conservation Incentive Program

Based on the community outreach the Town completed in February 2015, the majority of the online survey respondents thought incentives for high efficiency toilets and shower heads was appealing. About half of the respondents thought low-flow faucet aerators and hot water recirculation systems were appealing. Additional responses included incentive programs for water heaters, washing machines, dishwasher, and grey water repurposing. The Town has given rebates for high efficiency washing machines but found the program to not be beneficial. The Town will evaluate whether the expansion of the incentive program to indoor use is advantageous.

4.2.3 Ordinances and Regulations

Water Use Management Plan

The Water Use Management Plan includes Watering Restrictions, Water Monitoring Program, soil amendment and inspection requirements, and irrigation exemptions for new sod and seed. This plan is evaluated annually and adjusted as appropriate.

Watering Restrictions

The Town has implemented mandatory every third day watering restrictions since 1985. By limiting water usage for outdoor irrigation, the Town has limited the demands on the system during the summer months by approximately one-third. The restrictions are enforced through the water monitor program during the peak irrigation season (typically June, July, August).

Non-residential customers can irrigate from 10 pm to 5 am every third day and residential customers can irrigate from 8 pm to 8 am every third day.

Water Monitoring Program

During the restriction season, water monitors look for water waste which includes broken sprinklers, sprinklers out of adjustment, or sprinklers running too long creating runoff. The water monitors also look for customers watering on the incorrect day or time. The water monitors initially approach the violation as an opportunity to educate the water user about conservation methods. If the education effort fails, the water monitors have the authority to issue violations to users.

Soil Amendment and Inspection Requirements

New development is required to amend soil with a minimum of 4 cubic yards of organic material per 1,000 square feet tilled to a minimum depth of 6 inches. Organic material must be Class I or Class II compost. New landscapes must pass a soil inspection prior to receiving an irrigation exemption.

Irrigation Exemptions

Irrigation exemptions can be issued for new construction of landscape or retrofits. New sod can be exempt for up to 30 days. New seed or other plant material can be exempt for up to 45 days. The customers are exempt from the every third day restriction but normal watering times and water budget still apply.

Landscape Regulations for New Development

The landscape and irrigation regulations consist of residential and non-residential irrigation efficiency requirements. The Town has developed the Landscape and Irrigation Performance Standards and Criteria Manual that all new development must follow. The key requirements in this manual include water efficient design, construction, and maintenance components.

Water Efficiency Plan Guidelines

The Town has created minimum water efficiency design criteria which can be used by new development. These criteria include indoor and outdoor water conservation efforts as well as specific water budgets for properties included within a water efficiency plan. The effectiveness of the plans will be evaluated as new communities are developed. To date, one development, The Lanterns, has utilized these guidelines to develop their approved development specific water efficiency plan.

Hot Water Recirculation System

The Town may consider implementing a requirement to install hot water recirculation systems in new homes. Hot water recirculation systems have demonstrated both water and energy savings.

4.2.4 Educational Activities

Historical Consumption Information on Bills

The Town has been providing historical consumption information on bills since at least 2009. The Town could not verify the status of this information on bills prior to 2009 because of a software conversion that occurred in 2009. In addition to being a foundational activity, this item is also an education activity. Once customers can see their historical usage, they are able to realize their total consumption and relate any water use changes to more or less consumption.

Water Wiser

Water Wiser is an interactive, hands-on workshop aimed at residential customers. The workshop introduces the seven principals of Xeriscape and focuses on irrigation efficiency and water management to provide customers with easy to implement conservation techniques. Once customers complete the program, they are exempt from the every third day watering restrictions. Staff is currently evaluating the practicality of the expiration of the Water Wiser designation. Through the community outreach effort, it was determined that nearly all respondents to the online survey who completed the Water Wiser program found the program to be useful. About one-third of the respondents believe the program should expire after 3-5 years. Utilities Commission felt this program should cost a fee to reduce no-shows and provide this educational opportunity to only those interested in conserving water. Many participants perceive the course as a way to water whenever they want and have no desire to conserve water. The funds collected could be used to enhance the program.

Additionally, through the community outreach effort, there was a strong preference to participate in online Water Wiser courses. These online courses could be made available for participants that have expired Water Wiser certifications. The Town feels that first-time Water Wiser participants must attend the Water Wiser course in person to receive the full educational benefits.

Xeric Design Workshop

These workshops focus on the "Colorado Xeriscape-style", including the top ten trees and shrubs that thrive in the Castle Rock environment, and the benefits of low-water-use plant material.

The workshop at the Plum Creek Water Purification Facility includes a tour of the xeric garden.

Facility Tours

The Town offers water treatment facility tours with all interested groups including businesses, schools, civic organizations, and other water providers. Attendees are able to witness the five-step treatment process at the Plum Creek Water Purification Facility which includes: 1) chemical pretreatment, 2) flocculation/sedimentation, 3) greensand filtration, 4) membrane filtration and 5) post-filter disinfection. Since the plant was constructed, we have had about 537 people tour the facility.

These tours help raise awareness of not only where our water comes from, but the processes involved in treating, storing, and delivering water. Once people understand all that is involved in delivering clean water, they can then appreciate the true value of water and understand why using this resource efficiently and responsibly is imperative to creating a sustainable community.

Classroom Visits

The Town coordinates classroom visits with local schools. The interactive presentation covers: the water cycle, where Castle Rock gets its water, groundwater and surface water, stormwater and water quality, and importance of conservation and water efficiency.

Xeriscape Demonstration Garden

The Town has ~~three~~ five Xeriscape demonstration gardens to show residents that it is possible to have a beautiful yard or landscape without using a lot of water. The ~~three~~ five gardens are located at Ray Waterman Regional Water Treatment Facility, Plum Creek Water Purification Facility, ~~and~~ Utilities Department offices, Milestone Pump Station, and Diamond Ridge Pump Station . These gardens include labels on all plant materials for public reference. Tours of these gardens are given during the Xeric Design Workshops the Town holds every year.

Registration for Landscape Professionals

The Town of Castle Rock requires industry professionals, including designers, installers and maintenance contractors, performing landscape and / or irrigation work for non-residential customers within Town limits to be registered.

To become registered, a landscape professional must attend a Town seminar and score a minimum of 75 percent on the associated open book test. Additionally, the following minimum certifications must be obtained, kept current and filed with the Town:

- Landscape designers must possess, at a minimum, a certificate of completion from Green Industries of Colorado (GreenCO) for its best management practices program.
- Irrigation designers must possess, at a minimum, the Certified Irrigation Designer certificate from the Irrigation Association or a certificate of completion from GreenCO for its best management practices program.
- Installation / construction contractors must possess, at a minimum, a certificate of completion from GreenCO for its best management practices program or be a landscape industry certified technician through the Associated Landscape Contractors of Colorado in the areas of hardscape installation, softscape installation and irrigation.
- Maintenance contractors must possess, at a minimum, a certificate of completion from GreenCO for its best management practices program or be a landscape industry certified technician through the Associated Landscape Contractors of Colorado in the areas of turf maintenance, ornamental maintenance and irrigation.

Water Ambassador Program

The Water Ambassador Program is a water education program serving the south metro area under Douglas County Water Resource Authority management since 2009 and transitioned to South Metro Water Supply Authority (SMWSA) beginning in 2014. The purpose of the program is to teach younger generations the following:

- Water is a precious and limited resource;
- We must each do our part to use this resource wisely; and
- We should be educated in and support solutions for the future.

This program is focused on providing in-depth information on local water issues and solutions. It provides a comprehensive view of how water works in the western United States and, specifically, here in the south metro area.

Through the program, motivated high school students volunteer to become Water Ambassadors and, ultimately, impart what they've learned to elementary students. During the high school training, students learn about why water is important, the water cycle, weather patterns, and the history, law, and politics of water use in Colorado. Other topics covered are the fundamentals of water rights, an overview of water projects, and impact of population on water use, water reuse, and ways to conserve. Once a high school student becomes an Ambassador, they lead elementary students in a series of activities including assemblies, classroom presentations, and hands-on water-specific exercises. Since it began, the program has educated over 23,000 students and their families in the region.

Water Conservation Website

In 2010, the Town began creating the water conservation website, CRconserve.com, which was formally launched in August 2011. The website is geared toward residential customers but non-residential customers can also benefit from the information available. The website contains water conservation tips, low-water use plant material, and Xeriscape information. The website had nearly 8,000 people visit it in 2013.

Conservation Contests

As part of the community outreach effort, respondents recommended conservation contests as a way to help educate and incentivize the community to learn more about water conservation. These contests would have to provide edutainment - be educational, yet provide a fun way to educate the public.

5.0 Implementation and Monitoring Plan

5.1 Implementation Plan

The Water Conservation Specialist for the Town of Castle Rock is chiefly responsible for implementation of this plan. The Water Conservation Specialist has been successfully implementing the Town's water conservation program since 2007. The Town will continue to work to budget money and pursue CWCB water efficiency grants to further its water conservation goals.

5.1.1 Community Outreach

As part of the Plan update and implementation, the Town conducted community outreach to better understand the community's feelings and opinions about water conservation, water usage, and how they would like to be educated about conservation efforts.

On December 8, 2014, two focus groups were conducted with 19 respondents. Several key water conservation activities were explored through these groups. Focus group 1 was over 45 years of age. Focus group 2 was between 25-45 years of age. Both groups were very supportive of the idea of creating a community culture that involves water conservation and realize that conservation is necessary to meet long-term water demands. However, these respondents had almost no understanding of how much water they use nor how to monitor or control their household usage. The focus group participants suggested ideas for future conservation education and messaging which included school programs, bill inserts, mailings, online resources and home stores. The younger participants showed great interest in mobile solutions and applications.

During February 2015, the Town conducted an online conservation survey for Castle Rock Water customers. The purpose of the 26 question (~20-minute) online survey was to evaluate if the same key points discussed in the focus group are representative of the entire community. Approximately 660 Castle Rock Water customers participated in the online survey. It was determined that the majority of respondents are in support of additional conservation efforts and learning more about water conservation through bill inserts, e-mail, and websites. The survey also established that the most popular conservation program and the program with the most interest is Water Wiser. Eighty-five percent of the respondents were in favor of extending the no watering period from 8 am to 8 pm for the 2015 watering season.

5.1.2 Implementation

The existing programs as listed in **Table 6** are on-going and have been implemented. Through the community outreach effort, it was determined that customers are very interested in several existing conservation programs. The Town developed an evaluation schedule for new water efficiency activities as shown in **Table 7**. The Town will be evaluating the possibility of adding these activities to the water efficiency program. The activities will be evaluated for costs as well as water savings.

Table 7: Water Efficiency Activity Implementation Schedule

Water Efficiency Activities	Evaluation Period of New Activities
Foundational Activities	
Advanced Metering Infrastructure	By year end 2018
Formal Meter Testing Program	Program details currently under development
Water budget rate structure changes	Considering viability of changes
Public Right-of-Way & Town Park Landscape & Irrigation Retrofits	Considering viability of program
Targeted Technical Assistance and Incentives	
Indoor Conservation Incentive Program	Considering viability of program
Irrigation Audit/Sprinkler Inspection Fee	Considering viability of fee
Ordinances and Regulations	
Hot Water Recirculation Units	Considering viability of programs
Local Building Code Changes	Consider any water saving changes to incorporate
Education Activities	
Water Wiser Certification Expiration	Considering changes to program
Water Wiser Online Course	Considering viability of online course
Water Wiser Course Fee	Considering viability of fee
Conservation Contests	Considering effectiveness of contests

Additionally, the Town currently markets conservation efforts, primarily education activities, foundational activities, and regulations on its website, in bills, mailers, issues flyers at any type of Town event, e-mails, and coordinates school conservation programs with interested neighborhood schools. The Town also provides conservation information to HOAs to help minimize water usage. The Town currently does not market the rebate or incentive programs it offers. These programs are offered to customers that are struggling with high water usage and consistently going over their water budget. Without marketing, the Town spends every dollar budgeted for the program each year.

The Town may consider expanding the marketing for the education programs based on the feedback from the community outreach. The Town may consider

using social media to advertise future programs, events, or conservation efforts. The Town has a Facebook page that could be utilized to regularly post conservation information, efforts, or tips. Additional marketing ideas to consider include websites, classes, public displays and restaurant table tent cards.

Additionally, these items will become a part of the Utilities Department Strategic Plan and be monitored regularly for achievement, implementation goals, and/or modification.

The Town conducts an annual rates and fees analysis using the 5-year capital improvements and operations budget information that is refined each year. Depending on the needs of the conservation program modifications, the Town may increase the rates and fees or keep them the same. At the present time, Castle Rock Water projects an increase of 2-3.5 percent each year for water and renewable water rates and fees.

5.2 Monitoring Plan

The Town monitors the water demands on a monthly basis and is able to track daily supplies. Conservation program impacts are evaluated annually following the end of a calendar year. The Water Conservation Specialist maintains an extensive data set of water use, summarizes and evaluates water demands on a regular basis, and evaluates the impacts of the water conservation program.

The annual accounting summarizes total treated water production, the number of accounts in the system, metered deliveries, non-revenue water, temperature, and evapotranspiration. This continued monitoring will help the Town determine where the GPCD value is relative to the goal of 100 GPCD.

6.0 Adoption, Public Review, and Approval of Water Efficiency Master Plan

6.1 Water Efficiency Master Plan Adoption

On April 21, 2015, the Town Council ~~will~~ was ~~be~~ updated on the Water Efficiency Master Plan and Town Council directed staff to make the Plan available for public comment. ~~.~~ The 60-day public comment period began on April 22, 2015 and ended on ~~. The public comment period ends on~~ June 22, 2015. ~~Once s~~Staff received 3 ~~addresses all~~ public comments from residents and very minor changes were included in the Plan. The public comments are included in **Appendix D.**~~, staff will bring the Plan to Town Council for adoption in July 2015.~~

On June 24, 2015, the Utilities Commission recommended Town Council approval of the Plan on July 21, 2015.

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6.2 Public Review Process

The Town hosted two focus groups on December 8, 2014, to obtain feedback and opinions regarding conservation practices as well as how the customers would like to be educated regarding conservation. The groups were divided by age (25-45 and 45+ years of age) and included 19 customers. The objectives of the focus group are summarized below.

- Gain a deeper level of insight and understanding of the attitudes and behavior of residents of the Town of Castle Rock, better understanding key decision-makers' tacit and emotional beliefs about water usage and water conservation, now and in the future.
- Evaluate respondent reactions to the Town of Castle Rock's Water Conservation Master Plan to understand overall appeal and interest, identify the most compelling elements, and determine opportunities to optimize overall appeal.
- Identify the most effective and compelling means to educate residents of the Town of Castle Rock on water conservation methods, and any new implications from the new Water Conservation Master Plan.

Valuable information was gathered from the focus groups and is summarized below:

- Awareness and interest in water conservation is mixed; some respondents are actively involved in practicing water conservation at home, and somewhat aware of the Town of Castle Rock's water conservation

practices, whereas other respondents do not really think much about the source of their water, and may only consider limiting water use to decrease their bill.

- The Water Conservation Master Plan is appealing, in part because it is comforting to know that *"someone is thinking about it,"* but also because it addresses key water conservation goals via a multi-faceted plan that includes landscape regulations, Incentive programs, rate strategies, and public education programs.
    - Respondents unanimously agreed that successful Castle Rock water management must involve a combination of water procurement, and water conservation among residential and commercial water users.
    - A major question with which to deal is how these water management efforts can offset the projected growth for the Town, and co-exist with HOA regulations that drive exterior water consumption.
- While respondents understand the Town faces water supply issues, most, especially younger respondents, do not appear to have a grasp on the scope of the problem.
    - Exacerbating the fact is that respondents have almost no understanding of how much water they use, nor how to monitor or control household usage.
- Awareness and use of consumer-facing education programs and incentive programs is relatively low, except for the Water Wise program; awareness of Town programs to conserve and procure water is almost non-existent, except for the Rueter-Hess project.
    - Some respondents complain that existing water management communications are not easy to comprehend, and that programs that require a significant investment of time have limited appeal, especially for respondents with young children in the home.
- Respondents are comfortable with stricter regulations for new development, especially given the frustration of the prospect of the Town doubling in size when water concerns already exist, however, they feel it would be unfair to enact strict regulations for existing homeowners,
    - For example, home water regulations, both interior and exterior, are expected for new development; however, respondents feel behavior change needs to be incentivized, not regulated, for existing homes.

The consultant made the following recommendations after reviewing the data from the focus groups:

- Communicate the Castle Rock water issue via visual messaging to help consumers understand the size and scope of the problem; younger

respondents especially need to understand the issue to be motivated to change behavior.

- Find opportunities to drive insight to homeowners on how to monitor and control water usage, as it is difficult to drive accountability without measurable information.
    - Smart Metering and consumer water measurement devices may be keys to this.
- Provide information via bills regarding comparative usage that allows consumers to assess their usage versus similar consumers in similar homes.
- Use regulations to affect change for new development, and incentivize programs and education to drive behavior change for existing homeowners.
- Provide greater access to education programs, with 24/7 online access via interactive training modules that 'test' users after training.
- Use a variety of vehicles to educate and inform consumers, including alerts; seasonal water conservation tips/reminders and updates on Town efforts.
    - Potential vehicles include restaurant table tent cards, school programs, learning centers at home improvement stores such as Lowes or Home Depot, and online resources such as CRconserve.com and applications.

The complete documentation from the focus group is located within **Appendix ~~D~~E**.

Additionally, the Town performed an online survey to obtain additional feedback from the community and to verify if the same thoughts, feelings, and opinions were representative of a larger sample size. This survey was completed on February 23, 2015. It consisted of a 26 question (~20-minute) survey conducted among 660 Castle Rock Water customers. The survey questions were focused on the same objectives that were discussed in the focus groups.

The key information obtained from the online survey is summarized below:

- Most respondents are interested in learning about water conservation.
    - Bills/inserts, e-mail and websites are preferred communications methods.
- Awareness of many Town programs and tools is low, but interest is high.
    - Roughly two-thirds are unaware of rebate/incentive programs (e.g. Smart irrigation, Rotary nozzle, etc.), and the CRConserve.com website.
- Water Wiser is the Town's most popular program.

- 85% of respondents are aware, and 97% of participants find it valuable.

- There is very strong support for additional conservation efforts:
  - 85% approve of extending the 'no watering' period to 8:00am-8:00pm.
  - 69% are very interested in a $25 sprinkler inspection program that could save up to 5,000 gallons of water over the sprinkling season.
  - 70% percent are interested in indoor rebate programs for high efficiency toilets and shower heads
- Lack of interest in water conservation in general correlates to lack of water conservation activity.
- Judgmentally, there is a small subset of people who simply are not concerned with water conservation or conservation activities.

The complete online survey summary is located in **Appendix ~~E~~F.**

Additionally, CWCB requires that all approved plans have a minimum 60-day public review process per CRS 37-60-126(5) to ensure that the plan is endorsed by the community. The Town plans to comply with this and will take public feedback into consideration with the final plan. On April 21, 2015, the Town Council will be updated on the Water Efficiency Master Plan. The 60-day public comment period is set to begin on April 22, 2015. The public comment period is set to end on June 22, 2015. Staff will be posting notices about the public comment period in the May 2015 publication of *Town Talk* (which is a water utility bill insert distributed to every customer in Town), Facebook, Twitter, and e-mail notifications.

6.3 Efficiency Plan Approval

6.3.1 Local Approval

Staff provided Town Council and the community with the Plan to provide comments. Public comments were received and proposed changes were presented to the Town Council on July ~~_____~~, 21, 2015. Town Council formally adopted the 2015 Water Efficiency Master Plan on July ~~____~~, 21, 2015 by resolution.

6.3.2 CWCB Approval

Following Town Council approval of the ~~The Town of~~ Castle Rock Water Efficiency Master Plan, staff will ~~was submitted~~ submit a copy of the Plan to the Colorado Water Conservation Board Office of Water Conservation and Drought Planning ~~on _____, 2015. On _____, 2015, the Town received official notification that the plan was~~for approval ~~approved by the CWCB~~.

6.4 Water Efficiency Master Plan Review and Update

The Town plans to review and update this efficiency plan every seven years. The next update is scheduled for 2022. Demand data and program information collected during this period will be used to help update the plan in 2022.

7.0 References

AMEC Environment and Infrastructure. July 2012. *Municipal Water Efficiency Plan Guidance Document.* Prepared for: Colorado Water Conservation Board.

Aquacraft Water Engineering and Management. August 2012. *Sample of a Municipal Water Efficiency Plan.* Prepared for: Colorado Water Conservation Board.

CDM. January 2011. *Statewide Water Supply Initiative – 2010*. Prepared for: Colorado Water Conservation Board.

Colorado Water Conservation Board. December 2014. *Colorado's Water Plan.* Prepared for: Governor John W. Hickenlooper.

Castle Rock Water Engineering. March 2011. *2010 Water Resources Master Plan Update.* Prepared for: Town of Castle Rock.

CH2M Hill. January 2012. *Water Resources Strategic Master Plan.* Prepared for: Town of Castle Rock.

Appendix A – Population and Growth Projections

YEAR	% GROWTH	POPULATION
1990*	N/A	8,708
1995*	22.9	10,700
2000	89.0	20,224
2005*	90.1	38,451
2010	27.4	49,002
2015*	**19.4**	**58,492**
2020*	**12.4**	**65,786**
2025*	**9.0**	**71,706**
2030*	**8.3**	**77,626**
2035*	**7.6**	**83,546**
2040*	**7.1**	**89,465**
2045*	**6.6**	**95,385**
2050*	**6.2**	**101,305**
2055*	**3.8**	**105,200**

*Note: Actual population/growth percentages are not available, or are estimated.

Appendix B - Castle Rock Water's Utility Rate Structure Summary

Year	Water Base Rate	Cost per 1,000 gallons
1980	$10.00/Quarter	15,000 gallons included; $0.50/1,000 @ 15,001+
1981	$11.50/Quarter	15,000 gallons included; $0.50/1,000 @ 15,001+
1982	$12.65/Quarter	15,000 gallons included; $0.65/1,000 @ 15,001+
1983	$14.00/Quarter	15,000 gallons included; $0.70/1,000 @ 15,000+
1984	$3.00/Month	$0.70/1,000 0-20,000; $1.60/1,000 @ 20,001+
1985	$3.00/Month	$0.70/1,000 0-20,000; $1.60/1,000 @ 20,001+
1986	$4.20/Month	$0.85/1,000 0-15,000 $1.75/1,000 @15,001+
1987	$7.20/Month	$0.85/1,000 0-15,000 $1.75/1,000 @15,001+
1988	$7.55/Month	$0.90/1,000 0-15,000 $1.85/1,000 @15,001+
1989	$10.00/Month/EQR	$1.00/1,000 0-5,000 $1.50/1,000 5,001-15,000 $2.00/1,000 15,001+
1990	$10.00/Month/EQR	$1.00/1,000 0-5,000 $1.50/1,000 5,001-15,000 $2.00/1,000 15,001+
1993	$10.00/Month	1-5,000 gal @ $1.00/1,000 5,001-15,000 gal @ $1.50/1,000 15,001-25,000 gal @ $2.00/1,000 $2.00/1,000 Bulk (min $40, includes 15,000 gal)
1998	Single Family Residential	
	First 5,000 gallons	$2.27
	Next 10,000 gallons	$3.18
	Over 15,000 gallons	$5.09
	Multi-Family	$2.67
	Nonresidential	$2.78
	Irrigation	$3.89

Water service charges from 1999 through 2001 were as follows:

Meter Size (inches)	1999-2001
¾	$10.00
1	$10.30
1 ½	$11.60
2	$15.30
3	$20.70
4	$27.80
6	$41.50
8	$64.60
Water Volume Charge	$/1,000 gallons
Single Family Residential	
First 5,000 gallons	$1.93
Next 10,000 gallons	$2.70
Over 15,000 gallons	$4.32
Multi-Family	$2.33
Nonresidential	$2.42
Irrigation	$3.39

Water service charges from 2002 through 2005 are as follows.

Meter Size	2002	2003	2004	2005
¾"	$10.40	$10.90	$11.30	$11.80
1"	$10.90	$11.50	$12.20	$12.90
1 ½"	$12.90	$14.20	$15.60	$17.00
2	$17.20	$19.10	$21.20	$23.30
3	$23.00	$25.50	$28.00	$30.60
4	$32.00	$36.00	$40.00	$44.00
6	$49.00	$58.00	$66.00	$76.00
8	$90.00	$117.00	$145.00	$174.00
Water Volume Charge $/1,000 gallons				
Single Family Residential				
First 5,000 gallons	$2.00	$2.08	$2.15	$2.24
Next 10,000 gallons	$2.80	$2.91	$3.02	$3.13.
Over 15,000 gallons	$4.48	$4.65	$4.83	$5.01
Conservation Surcharge			$4.83/1,000 30,001+	$5.01/1,000
Multi-Family	$2.43	$2.52	$2.63	$2.74
Commercial	$2.56	$2.71	$2.87	$3.03
Bulk rate/Irrigation	$3.53	$3.67	$3.82	$3.97
Renewable Water Volume Charge $ per 1,000 gallons				
All Customers	$0.20	$0.21	$0.22	$0.23

Water service charges from 2009 for residential and non-residential customers are as follows:

Residential Water Budget			
Meter Size			**Cost (2008-2009)**
¾"			$12.03
1"			$12.75
Water Volume Charge $/1,000 gallons			
Irrigation Season – April 1 through October 31 Consumption			
Class	**Block 1**	**Block 2**	**Block 3**
Residential	$2.16	$4.10	$6.81
Winter Season – November 1 through March 31 Consumption			
Class	**Block 1**	**Block 2**	**Block 3**
Residential	$2.16	$4.10	N/A

Non-Residential Water Budget	
Monthly Service Charge (includes all classes)	**Charge**
¾"	$12.75
1"	$13.52
1.5"	$15.03
2"	$18.06
3"	$25.65
4"	$39.32
6"	$83.35
8"	$163.80
Bulk Service (includes 15,000 gallons)	$75.90
Customer Category	**Volume Rate per 1,000 gallons**
Irrigation	
Block 1 (within budget)	$5.64
Block 2 (over budget)	$8.50
Multifamily	
Block 1 (AWMC)	$2.36
Block 2 (irrigation season budget)	$4.35
Block 3 (over irrigation season budget)	$6.55
Commercial	
Block 1 (AWMC)	$2.36
Block 2 (irrigation season budget)	$4.26
Block 3 (over irrigation season budget)	$6.42
Multifamily Indoor Use Only	
Block 1 (AWMC)	$2.36
Block 2 (Over AWMC)	$3.14
Commercial Indoor Use Only	
Block 1 (AWMC)	$2.36
Block 2 (Over AWMC)	$3.26
Bulk	$4.26 PLUS $0.34 per thousand gallons

Water service changes for 2010 for residential and non-residential customers are as follows:

Residential Water Budget			
Meter Size			**Cost**
¾"			$13.52
1"			$14.33
Water Volume Charge $/1,000 gallons			
Irrigation Season – April 1 through October 31 Consumption			
Class	**Block 1**	**Block 2**	**Block 3**
Residential	$2.16	$4.10	$6.81
Winter Season – November 1 through March 31 Consumption			
Class	**Block 1**	**Block 2**	**Block 3**
Residential	$2.16	$4.10	N/A
A surcharge of $7.04/1,000 over 40,000 gallons/month is also assessed			

Non-Residential Water Budget	
Monthly Service Charge (includes all classes)	**Charge**
¾"	$13.52
1"	$14.33
1.5"	$15.93
2"	$19.15
3"	$27.19
4"	$41.67
6"	$88.35
8"	$173.63
Bulk Service (includes 15,000 gallons)	$80.45
Customer Category	**Volume Rate per 1,000 gallons**
Irrigation	
Block 1 (within budget)	$5.98
Block 2 (over budget)	$9.01
Multifamily	
Block 1 (AWMC)	$2.51
Block 2 (irrigation season budget)	$4.61
Block 3 (over irrigation season budget)	$6.94
Commercial	
Block 1 (AWMC)	$2.51
Block 2 (irrigation season budget)	$4.52
Block 3 (over irrigation season budget)	$6.81
Multifamily Indoor Use Only	
Block 1 (AWMC)	$2.51
Block 2 (Over AWMC)	$3.33
Commercial Indoor Use Only	
Block 1 (AWMC)	$2.51
Block 2 (Over AWMC)	$3.46
Bulk	$4.52 PLUS $0.43 per thousand gallons

Water services charges for 2011 for residential and non-residential customers are as follows:

Meter Size	Cost
¾"	$12.52
1"	$15.16
1.5"	$18.37
2"	$22.94
3"	$32.93
4"	$66.07
6"	$99.71
Bulk Service (up to 15,000 gallons)	$81.37

Water Volume Charge $/1,000 gallons				
Irrigation Season – April 1 through October 31 Consumption				
Class	**Block 1 AWMC**	**Block Irrigation**	**Block 3 Excess**	**Block 4 Surcharge >40kgals**
Residential	$2.51	$4.96	$7.45	$14.90
Multi-family (Indoor use only)	$2.51	n/a	$3.71	n/a
Multi-family w/ Irrigation	$2.51	$4.11	$6.17	n/a
Commercial (Indoor use only)	$2.51	n/a	$3.92	n/a
Commercial w/ Irrigation	$2.51	$4.65	$6.97	n/a
Greenbelt (Irrigation)	n/a	$7.07	$10.60	n/a
Bulk charge for usage > 15,000 gallons	$4.59	n/a	n/a	n/a
Winter Season – November 1 through March 31 Consumption				
Residential	$2.51	n/a	$4.96	$14.90
Multi-family (Indoor use only)	$2.51	n/a	$3.71	n/a
Multi-family w/ Irrigation	$2.51	n/a	$4.11	n/a
Commercial (Indoor use only)	$2.51	n/a	$3.92	n/a
Commercial w/ Irrigation	$2.51	n/a	$4.65	n/a
Greenbelt (Irrigation)	n/a	n/a	$10.60	n/a
Bulk charge for usage > 15,000 gallons	$4.59	n/a	n/a	n/a

Water services charges for 2012 for residential and non-residential customers are as follows:

Meter Size	Cost
¾"	$12.97
1"	$16.07
1.5"	$19.83
2"	$25.18
3"	$36.89
4"	$75.72
6"	$115.15
Bulk Service	$12.97

Water Volume Charge $/1,000 gallons				
Irrigation Season – April 1 through October 31 Consumption				
Class	**Block 1 AWMC**	**Block Irrigation**	**Block 3 Excess**	**Block 4 Surcharge >40kgals**
Residential	$2.65	$5.23	$7.86	$7.86
Multi-family (Indoor use only)	$2.65	n/a	$3.91	n/a
Multi-family w/ Irrigation	$2.65	$4.34	$6.51	n/a
Commercial (Indoor use only)	$2.65	n/a	$4.14	n/a
Commercial w/ Irrigation	$2.65	$4.91	$7.35	n/a
Greenbelt (Irrigation)	n/a	$7.46	$11.18	n/a
Bulk	$4.50	n/a	n/a	n/a
Winter Season – November 1 through March 31 Consumption				
Residential	$2.65	n/a	$5.23	$7.86
Multi-family (Indoor use only)	$2.65	n/a	$3.91	n/a
Multi-family w/ Irrigation	$2.65	n/a	$4.34	n/a
Commercial (Indoor use only)	$2.65	n/a	$4.14	n/a
Commercial w/ Irrigation	$2.65	n/a	$4.91	n/a
Greenbelt (Irrigation)	n/a	n/a	$11.18	n/a
Bulk	$4.50	n/a	n/a	n/a

Water services charges for 2013 for residential and non-residential customers are as follows:

Meter Size	Cost
¾"	$9.67
1"	$13.35
1.5"	$17.80
2"	$24.16
3"	$38.05
4"	$84.13
6"	$130.90
Bulk Service	$9.67

Water Volume Charge $/1,000 gallons				
Irrigation Season – April 1 through October 31 Consumption				
Class	**Block 1 AWMC**	**Block Irrigation**	**Block 3 Excess**	**Block 4 Surcharge >40kgals**
Residential	$2.91	$5.47	$8.21	$8.21
Multi-family (Indoor use only)	$2.91	n/a	$3.62	n/a
Multi-family w/ Irrigation	$2.91	$4.69	$7.03	n/a
Commercial (Indoor use only)	$2.91	n/a	$3.84	n/a
Commercial w/ Irrigation	$2.91	$4.74	$7.11	n/a
Greenbelt (Irrigation)	n/a	$7.41	$11.12	n/a
Bulk	$5.01	n/a	n/a	n/a
Winter Season – November 1 through March 31 Consumption				
Residential	$2.91	n/a	$5.47	$8.21
Multi-family (Indoor use only)	$2.91	n/a	$3.62	n/a
Multi-family w/ Irrigation	$2.91	n/a	$4.69	n/a
Commercial (Indoor use only)	$2.91	n/a	$3.84	n/a
Commercial w/ Irrigation	$2.91	n/a	$4.74	n/a
Greenbelt (Irrigation)	n/a	n/a	$11.12	n/a
Bulk	$5.01	n/a	n/a	n/a

Water services charges for 2014 and 2015 for residential and non-residential customers are as follows:

Meter Size	Cost
5/8”	$9.54
¾”	$9.54
1”	$13.72
1.5”	$18.78
2”	$26.00
3”	$41.78
4”	$94.12
6”	$147.26
Bulk Service	$9.54

Water Volume Charge $/1,000 gallons				
Irrigation Season – April 1 through October 31 Consumption				
Class	**Block 1 AWMC**	**Block Irrigation**	**Block 3 Excess**	**Block 4 Surcharge >40kgals**
Residential	$2.75	$5.39	$8.08	$8.08
Multi-family (Indoor use only)	$2.75	n/a	$3.48	n/a
Multi-family w/ Irrigation	$2.75	$4.58	$6.87	n/a
Commercial (Indoor use only)	$2.75	n/a	$3.71	n/a
Commercial w/ Irrigation	$2.75	$4.63	$6.95	n/a
Greenbelt (Irrigation)	n/a	$7.39	$11.08	n/a
Bulk	$5.07	n/a	n/a	n/a
Winter Season – November 1 through March 31 Consumption				
Residential	$2.75	n/a	$5.39	$8.08
Multi-family (Indoor use only)	$2.75	n/a	$3.48	n/a
Multi-family w/ Irrigation	$2.75	n/a	$4.58	n/a
Commercial (Indoor use only)	$2.75	n/a	$3.71	n/a
Commercial w/ Irrigation	$2.75	n/a	$4.63	n/a
Greenbelt (Irrigation)	n/a	n/a	$11.08	n/a
Bulk	$5.07	n/a	n/a	n/a

These rate structures consist of four (4) inclining tiers.

Tier one is based on the average winter monthly consumption (AWMC) of November – February. It is assumed all water consumed during this period is indoor consumption only, as it is outside the normal irrigation period. If the AWMC does not average to an even thousand gallons, then the average is **rounded up** to the nearest thousand gallons to become tier one and **rounded down** to the nearest thousand gallons to establish the sewer charge until the next AWMC period.

Tier two is the "in budget" outdoor irrigation rate. Each account that has irrigation is assigned a square footage based on the actual irrigable area for that meter. Residential accounts are limited to a maximum of 7,000 square feet.

Tier three is the out of budget or "excess" tier for irrigation. For residential customers, this tier is anything in excess of tier two, up to 40,000 gallons in a single billing cycle.

Tier four (residential only) is the conservation surcharge and only applies to consumption in excess of 40,000 gallons in a single billing cycle.

Appendix C - Castle Rock Municipal Code

Chapter 13.12.070 - Emergency regulation of water.

A. The Town Council shall have the power to regulate water usage during times of drought, shortage, fire or other emergency. This power shall extend to an absolute prohibition of water use or any lesser degree of regulation which shall be necessary in order to preserve and protect the municipal facilities and the water supply of the Town during such emergency.

B. At such time as the Town Council shall undertake to regulate the water service usage in accordance with Subsection A of this Section, it shall pass a resolution setting forth the degree of regulation, its duration and the reasons for the regulatory action.

C. Copies of the resolution passed by the Town Council under this Section shall be published as soon after passage as possible in a newspaper of local publication and distribution, and may also be delivered to the premises of each user affected. Twenty-four hours after delivery of a copy of the resolution to the premises of the user, or forty-eight hours following the publication of the resolution, whichever occurs sooner, shall be determined to be constructive notice of the terms and regulatory effect of the resolution passed by the Town Council to the user of water service. Upon actual or constructive notice of the resolution, every user shall be expected to obey and conform to the resolution. Persons found to knowingly violate the provisions of the resolution shall forfeit their right to further water service and the Town may immediately terminate water service during the pendency of the emergency restrictions.

D. The Town Manager shall have the power to declare a water emergency on the same terms and for the reasons stated in Subsection A. of this Section, provided that no such emergency declaration shall extend beyond seven days after its declaration. The Town Manager shall cause actual and/or constructive notice of the declaration to be made to the affected property owners to the extent feasible; however the giving of such notice shall not be a condition to the validity or enforceability of the emergency declaration.

(Ord. 97-18 § 1(part), 1997; Ord. 93-5 § 2(part), 1993)

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Appendix D – Public Comments

All State approved plans require public review process per Colorado Revised Statute (C.R.S.) 37-60-126 (5). The minimum duration of public review is 60 days. To comply with this requirement, staff made the draft Plan available at www.crgov.com/WEMP and provided a form for comments. The 60-day public comment period began on April 22, 2015, and terminated on June 22, 2015. Staff advertised this public comment period via *Town Talk,* e-mail, and Facebook/Twitter feeds.

The Town received 3 questions and/or comments, which were all from Castle Rock Water customers. Staff followed-up individually with each customer. The questions and/or comments are listed below.

1. QUESTION/COMMENT: *I am glad to see the expansion of incentives for water conservation. However, I am sad that there is no mention in the report of rain collection devices or rain barrels. I believe that there should be incentives for customers whether residential or commercial to collect rain water and use it for their lawns or gardens.*

   ANSWER: The incentive programs that we offer as part of the Conservation program were created to help residents develop more efficient landscaping and irrigation systems. Rain barrels are not currently allowed in Colorado. A rain barrel (if approved by the State legislature) would not help a water user become more efficient with their water usage. A rain barrel may reduce demand during the months when moisture is available to collect but is not a reliable resource when the weather is hot, dry, and demands are highest. During dry times, rain barrel users would have to supplement with Town supplies and the Town needs this water usage to be wise and efficient, which is how we arrived at the incentive programs discussed in the Plan.

2. QUESTION/COMMENT:
   A. Promote devices like toilet fill-valves from Fluidmaster Model # 400LSRP14 which have active leak detection. People are not disciplined to check for leaks. This device is proactive – if there is a leak, the clutch does not let water into the tank. The next flush attempt is "dry" and the consumer must wait for the tank to fill – this is the indicator there is a leak that needs to be repaired.

   B. Implement AMI consumer "above utilization" electronic notification (text / e-mail) which is compatible with the newer electronic water meters. Several of my neighbors had water pipe breaks that could have been detected before receiving their next month's water bill.

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C. Update local building code to reduce hot water runs. The hot water route to my kitchen sink in my home (built in 2000) is 16 feet longer than necessary which consumes between 500 to 750 gallons per year waiting for hot water. I plan to reroute the path.

D. Update local building code to properly insulate pipes in walls when finished basements are retrofitted after home construction. To encourage compliance, impose a fine on the contractor for the violation. At least 30% of my neighbors have had water pipe breaks in two years.

E. Improve the current water billing algorithm (tiered structure) to further promote conservation and discourage high use. An approach could be to aggregate the "Renewable Water Resource Charge", divide by the towns total water consumption, and integrate that charge directly into the per gallon consumption.

*Example: Assume a community of 10 households with a total of 50,000 gallons consumption. The Renewable Water Resource Charge is currently $25.00/month or $250.00 for the community. 50,000 / $250.00 = $5.00 per 1,000 gallons. Two consumers use 2,000 gallons per month and pay $10.00 as their contribution to the Renewable Water Resource Charge – a savings of $15.00 each. The other 8 consumers use 50,000 - 4,000 = 46,000; or, an average of 5,750 gallons per month. 5.75 rounded to 6 * $5.00 = $30.00. $30.00 * 8 consumers = $240 + $20 for the 2,000 gallon consumers = $260. For this month, the aggregate is $10.00 higher due to rounding. However, as you know, rounding will average over time to collect the determined target. The result rewards conservative households and encourages higher users to look into better conservation methods.*

ANSWER: Thank you for your valuable feedback on our draft Water Efficiency Master Plan. I appreciate examples of how each item affected you or your neighbors and friends. The Town is currently evaluating the economic feasibility of AMI because it does have many benefits for both the Town and the customers. We will discuss these other items as a group and incorporate as necessary.

Minor changes in the Plan language have been made to allow flexibility to investigate these conservation related items.

3. QUESTION/COMMENT: *Front lawns use a lot of water but my HOA will not allow it [artificial turf]. They [HOA's] allow back yards to have it [artificial turf]. Parks and schools have it [artificial turf]. Our water wiser program can't do anything about the HOA, but you sure can. I have a gardener who does a great job taking care of my lawn. The cost of artificial*

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turf is not cheap. My math shows that it will take about 7 years to pay for itself. Make it [artificial turf] a choice to home owners for their front lawns. [For example] no builder can get permits unless they offer an option in the front yard for artificial turf. The Town has a lot of ways to influence change. I wanted to do this artificial turf to save water.

ANSWER: Thank you for your feedback on the Water Efficiency Master Plan. HOAs establish rules and regulations to protect the aesthetic value of the neighborhood and the Town supports that function.

Additional correspondence with this customer regarding this issue was made through the Town Mayor and Utilities Director. Staff followed-up with a voicemail to the customer.

Appendix ~~D~~ E – Focus Group Summary

Date of Focus Groups: 8 December 2014

MEMORANDUM

To: Sheri Scott, TOCR Water Resources Program Analyst

From: Victor Mills, Connect Insights

Title: Water Efficiency Focus Groups

Executive Summary

The purpose of this memorandum is to update Town Council on the results of the Water Efficiency Focus Groups conducted on 8 December 2014.

Background

- Two focus groups were conducted at Town Hall in the Town of Castle Rock, CO on December 8, 2014.
    - One group of respondents are age 25-45 and one group are age 45+ and all respondents meet the following specifications:
        - Homeowners in the Town of Castle Rock
        - Mix of male and female heads of household
        - Lived in the Town of Castle Rock at least 1 year
        - Manage and pay bills for their water usage; use the Town of Castle Rock as their water utility
        - Actively manage their water account and are at least interested in learning more about water conservation
        - Annual household income $40,000+
        - High School graduate and above
        - Market representative mix of those with children in the home

Objectives

- Gain a deeper level of insight and understanding of the attitudes and behavior of residents of the Town of Castle Rock, better understanding key decision-makers' tacit and emotional beliefs about water usage and water conservation, now and in the future.
- Evaluate respondent reactions to the Town of Castle Rock's Water Conservation Master Plan to understand overall appeal and interest, identify the most compelling elements, and determine opportunities to optimize overall appeal.
- Identify the most effective and compelling means to educate residents of the Town of Castle Rock on water conservation methods, and any new implications from the new Water Conservation Master Plan.

CONNECT INSIGHTS

MANAGEMENT SUMMARY

- Awareness and interest in water management is mixed; some respondents are actively involved in practicing water conservation at home, and somewhat aware of the Town of Castle Rock's water management practices, whereas other respondents do not really think much about the source of their water, and may only consider limiting water use to decrease their bill.
- The Water Conservation Master Plan is appealing, in part because it is comforting to know that *"someone is thinking about it,"* but also because it addresses key water management goals via a multi-faceted plan that includes landscape regulations, Incentive programs, rate strategies, and public education programs.
    - Respondents unanimously agree that successful Castle Rock water management must involve a combination of water procurement, and water conservation among residential and commercial water users.
    - A major question with which to deal is how these water management efforts can offset the projected growth for the Town, and co-exist with HOA regulations that drive exterior water consumption.
- While respondents understand the Town faces water supply issues, most, especially younger respondents, do not appear to have a grasp on the scope of the problem.
    - Exacerbating the fact is that respondents have almost no understanding of how much water they use, nor how to monitor or control household usage.
- Awareness and use of of consumer-facing education programs and incentive programs is relatively low, except for the Water Wise program; awareness of Town programs to conserve and procure water is almost non-existent, except for the Rueter-Hess project.
    - Some respondents complain that existing water management communications are not easy to comprehend, and that programs that require a significant investment of time have limited appeal, especially for respondents with young children in the home.
- Respondents are comfortable with stricter regulations fro new development, especially given the frustration of the prospect of the Town doubling in size when water concerns already exist, however, they feel it would be unfair to enact strict regulations for existing homeowners,
    - For example, home water regulations, both interior and exterior, are expected for new development; however, respondents feel behavior change needs to be incentivized, not regulated, for existing homes.

Recommendations & Implications

- Communicate the Castle Rock water issue via visual messaging to help consumers understand the size and scope of the problem; younger respondents especially need to understand the issue to be motivated to change behavior.
- Find opportunities to drive insight to homeowners on how to monitor and control water usage, as it is difficult to drive accountability without measurable information.
    - Smart Metering and consumer water measurement devices may be keys to this.
- Provide information via bills regarding comparative usage that allows consumers to assess their usage versus similar consumers in similar homes.
- Use regulations to affect change for new development, and incentive programs and education to drive behavior change for existing homeowners.
- Provide greater access to education programs, with 24/7 online access via interactive training modules that 'test' users after training.
- Use a variety of vehicles to educate and inform consumers, including alerts; seasonal water conservation tips/reminders and updates on Town efforts.
    - Potential vehicles include restaurant tent cards, school programs, home store learning centers, and online resources such as CRconserve and an App.

DETAILED SUMMARY & OBSERVATIONS

Water Awareness

- The majority of respondents understand the importance of water and that water conservation is a significant issue in the Town of Castle Rock, as well as most other areas in the state of Colorado.
- Awareness of this particular concern comes from a variety of sources:
    - Word of mouth
    - Town of Castle Rock information (flyers, bill inserts, etc.)
    - Local newspaper and television reporting
    - HOA associations
    - Realtors when moving in Town
        - *"When we first considered moving here we liked the fact that we had our own aquifers; but that's changed over time and it's become more of an issue."*
- On the other hand, a few respondents do not think about water much.

- *"I haven't really given it much thought; the water turns on and it tastes good, so I'm not really concerned about it."*

- While some respondents are concerned about water from an environmental point of view, a key driver of water awareness for many respondents is the price of water.
    - *"I was told by my friends when we were considering moving to Castle Rock that the water was going to be expensive because it is scarce, and they have to rely on the City of Denver for water."*
    - *"I've called in about my bill several times and tried to figure out why it costs so much."*
    - One of the areas of confusion for the price of water in Castle Rock is the monthly fixed fees.
        - Judgmentally, respondents interpret the fee as a 'hookup fee' and feel they are charged this fee simply for the *"privilege of having water,"* without considering for how water is handled after it is used.
        - Some feel it is a means to spread out the fee over the year to minimize the impact from high summer usage months.
- Of note, respondents who have moved in to Castle Rock from other areas in Colorado, as opposed to moving in from other areas in the country, appear to be less shocked by the price of water in Castle Rock.

Water Usage Drivers

- Total home water usage is impacted by household needs that drive water usage up, balanced out by water reduction efforts driven by environmental consciousness and/or high water bills that may cause families to use less water.
- Water usage may also change over time:
    - Higher water use due to household needs:
        - New family members come into the home
        - Kids age and they use more water for showers and grooming
        - HOAs demand members keep up the appearance of their lawns, especially in high heat/low precipitation summers
    - Lower water usage due to conservation:
        - Conservation due to environmental consciousness is largely driven by kids becoming aware of the issue in school, but may also be a result of feeling peer pressure form neighbors
        - Conservation due to financial reasons, as users try to lower their bills

Water Consumption

- Several respondents feel they have little information or feedback to understand or control their water consumption.
    - Unlike other utilities, such as electricity and mobile phone usage where they can track monthly usage and have a sense of how their usage impacts their monthly bill, the majority of respondents do not have a sense for how their water consumption and/or conservation efforts, impact their water bill.
    - Even those who know how to check their home's water meter do not have a good sense for how their water usage, or conservation, translates to the money they will spend or save each month on water.
        - *"I can track my phone minutes each month to know where I am and I know if I go over there's a penalty I pay, or if I find I don't need so many minutes I can go to a lower cost plan. But I have no idea how much a load of laundry costs, or what I can save if I don't wash my car."*

- Respondents have no idea regarding the amount of water used inside the home as compared to outside the home.
    - When they learned the average household in Castle Rock uses 48% of their water for exterior uses they were very surprised.
        - *"That's shocking because the lots are so small!"*
    - They rationalized the high level of exterior water usage is that *"some people"* do not know how to water their lawns in that they water their lawns during the middle of the day, when it's raining, and/or so much that water runs down the gutter.
- Similarly, respondents have no idea how much a bottle of water cost when they fill it up from the tap, as compared to the $1-2 sixteen-ounce bottles of water they purchase at convenience stores.
    - Again, they were shocked that they could purchase 1,000 gallons of water for $2.75.

Common Water Conservation Activities

- Respondents identified some of their common water conservation activities; adherence to these policies is mixed (i.e., some do many/most, and others do a few):
    - Turn off water when brushing teeth
    - Limit length of showers
    - Only run dishes and laundry when the load is full
    - Use low flow shower heads
    - Use low flow toilets

- Use sprinkler timers
- More conscious watering of plants
- Only go to commercial car washes (certain HOAs)
- Xeriscaping

- Interestingly, respondents are interested in the Town's conservation activities.
    - *"What happens with good water when it runs down the drain? Is there a recollection process?"*

Concept Review

- Respondents reviewed the Town's Water Conservation Master Plan concept for overall appeal and interest.
    - Respondents reviewed the written concept and rated it individually on a 5-point scale prior to group discussion.
    - Concept is in Attachment I.

- Overall, after reviewing the written concept, respondents almost unanimously rated this as 'extremely appealing' or 'somewhat appealing.'

- They especially appreciate that the Town is engaged in the water issue and has plans to address the issue, now and in the future.
    - *"I'm glad to know someone is thinking about this."*

- However, respondents had very little interest in personally reviewing the entire Water Conservation Master Plan, citing lack of time to review what they perceived would be a lengthy document, and perceived inability to understand the technical information they would likely find in the document.
    - *"If I were going to read something it would have to be about this short… two pages or less."*

MISSION STATEMENT

- Respondents almost unanimously appreciate the mission statement.
    - They like the way the program appears to address many areas:
        - Education
        - Incentives
        - Application of best practices
    - However, while Education and Incentives are self-explanatory, some respondents are a bit confused regarding 'Best Practices.'
        - *"I'm not quite sure what they mean here – what are the best practices, and are they intended for me, the town utility, or commercial users?"*

- Of note, respondents also find it helpful to have the frame of reference information (size of the town, population, elevation, days of sunshine, precipitation) to give the document a reason for being.

GOALS & OBJECTIVES

- Goals and objectives are also appealing; however, respondents had a difficult time differentiating goals from objectives.
    - *"They kind of seem like the same thing to me."*
- Nevertheless, the topics as part of these statements are appealing, particularly:
    - Creating a community culture that embraces water conservation
    - Ensuring financial stability
    - Reducing average water consumption per person per day
    - Preserving/enhancing Castle Rock's landscape architecture
- While the intentions behind the statements are largely appealing, a few respondents feel they are somewhat subjective, and need measurable targets to help determine whether the Town is meeting its targets.
- Of note, a few respondents dislike the use of terms such as 'regulate' and 'reduce' because of the negative connotations of *"forced regulation"* and *"government control"* these terms carry.

STRATEGIES

- The strategies outlined in the document are particularly appealing and respondents feel the four 'pillars' of the plan appropriately address key tactics the Town can take to meet its water usage targets.
    - **Landscape Regulations**
    - **Incentive Programs**
    - **Rate Strategies**
    - **Public Education Programs**
        - *"These seem to be the right things to think about for the town, and I like the way it's set up."*

STRATEGIES – Landscape Regulations

- Respondents like the idea that all new development meets Town planning targets, while continuing to be aesthetically pleasing.
    - They like the idea of controlling water usage, but also want to ensure the Town of Castle Rock maintains its attractive appeal to protect their property investment and maintain the pleasant atmosphere they expect in Castle Rock.
- Interestingly, respondents were also very interested that landscape regulations would exist for existing commercial and residential development as well.
    - Some respondents feel the embedded base of Castle Rock residents should also be involved with the plans, and in fact, must

be involved to meet goals, given the large number of existing homes in the market.

- Other respondents, however, pointed out that it would be difficult to drive behavior change, especially when many HOAs force them to keep a certain percentage of their lawn covered in green grass.
    - *"A neighbor of mine xeriscaped his lawn, but the HOA made him tear it up and add grass back in."*

STRATEGIES – Incentive Programs

- Respondents are very interested in incentive programs as part of the plan to get consumers involved.
    - They know some people will simply get involved because they are personally interested in conserving natural resources, yet many acknowledge they need something to motivate them to act with a low involvements category like water.
- As part of the residential incentives and programs reviewed, certain parameters need to be in place to make them appealing:
    - Easy to Activate – respondents will not *"jump through hoops"* to be part of any program
    - Meaningful – incentives must contribute a significant portion of the costs; for example, $5 toward a $7-8 nozzle is appealing, but not if nozzles are $50 each.
    - Plentiful -- one respondent complained that when he applied for an incentive he discovered they were 'sold out'
        - *"I called about one of these rebates and it seemed like there were only 10 rebates available."*

STRATEGIES – Rate Strategies

- Respondents had very low awareness regarding the rate plan structure, yet felt that it delivers on the objective of 'rewarding efficient use and discouraging water waste.'
    - However, there were significant questions as to why the plan only measures their 'Average Winter Monthly Consumption' to establish a baseline water usage level.
        - Judgmentally, it was not so much that respondents disagreed with the idea, but more of the fact that they did not fully comprehend the explanation.
            - *"If I did it online, I would have my kids sit with me so we could make it a priority. I'd never be able to get them to sit through a class with me."*
- A few respondents are interested in implementing harsher penalties for those who use more than their fair share of water, yet they wanted to make sure it was fair to those with larger families (i.e., factor in the number of people in the home to determine maximum usage prior to hitting the next rate tier).

- *"Can we start educating the chronic abusers first? If they don't care, then maybe you can make the Tier 4 and maybe even a Tier 5 rate schedule more punitive."*

STRATEGIES – Public Education Programs

- Respondents like the idea of public education programs, but they feel the effectiveness of these programs largely depends on how they are executed.
  - For example, respondents are mixed regarding their ability to attend lengthy classes that are offered on Saturday.
  - Some of the older respondents without children in the home acknowledged they would be able to attend, but younger respondents claimed they would not do it.
    - *"When you think about public education, how are you going to get people to come. Water Wise is several hours on a Saturday and we have football, so we can't ever make it."*
- Ideally, respondents would like to see many classes offered online, with a 'Q & A' section at the end of the program to assess the participant's comprehension of the subject matter.
  - Importantly, they expect an incentive for successfully completing a public education program, and even a very small device would do, such as a water bottle, shower minder, or other water-related device.
  - Rebates on their bill are also appealing.

Program Review

- Awareness and experience with Town-sponsored water conservation efforts is mixed, yet all respondents are encouraged that the Town is involved and promoting these efforts.
    - *"I'm impressed with Castle Rock for taking steps to educate residents about water conservation, and rewarding people who took steps to do it."*
- The most well-known program is Water Wiser, where many respondents are aware of the program, and several had actually participated.
  - The irrigation controller, rotary nozzle retrofit, Smartscape landscape renovation and irrigation audit programs were only known by one or two people per group.
- Parents of young children are also aware of and appreciative of efforts to promote conservation at schools.
  - They like that the younger generation will grow up aware of the need for water conservation, and joke their children are very effective at bringing the message home.

- Additionally, a few respondents claim they have seen water conservation booths at fairs and Town events, although they could not recall the information shared.

- While the Water Wise program is appealing for learning conservation techniques and the incentive of being able to water on your own schedule, there is some confusion that the 'water any time you want' policy is counter-intuitive.
    - Some respondents feel the Town educates people on how to conserve water, but gives them an incentive to water any time they want, which is counter-intuitive.
        - Some respondents note that they understand the intention is that water-educated residents would not take advantage of the system, but claim they know people who took the class simply to allow them to water their lawns more.
        - One respondent claimed the policy had changed to minimize abuse, however, others questioned this claim.
- As noted before, the Saturday morning requirement is off-putting for many respondents.

- Conservation programs, such as Water Wise, should include a follow-up process to understand the benefit of the programs.
    - Respondents want to be able to measure the effectiveness of their efforts, to ensure that what they are doing is really making a difference.
        - *"What good is it to read my usage after the fact? Is there any way to monitor my usage while it's going on?"*

- Other incentive programs have limited awareness and interest.
    - The evapotranspiration-based irrigation controller, with an incentive of $300 is somewhat appealing for the large incentive, but that also gives respondents the impression that it may cost them a lot more to get the $300.
        - Others are not aware of or do not understand the benefits over using a sprinkler timer.
    - The rotary nozzle retrofit is appealing, as long as it covers a significant portion of the materials cost.
        - However, some respondents are concerned about their ability to install this themselves, or how much it would cost to have them installed.
    - The Smartscape landscape renovation program also sounds appealing, yet many respondents questioned how this program would sync with their HOA requirements.

- While awareness of the irrigation audit was low, interest was very high. Several respondents like this idea, for the relatively low cost, to learn about how to optimize their irrigation system.
    - Importantly, they also want this program to include access to qualified irrigation professionals to make changes to their system.

- Other education programs have limited awareness.
    - CRconserve.com had almost no awareness, although a few respondents claimed to have interest in an easy to use online tool.
        - Some have been on the Town of Castle Rock's website (CRgov.com) to learn about community events, none have gone to the site for water conservation tips.
    - Bill inserts have limited awareness; although some respondents claim they occasionally read the information in the bill, others, especially those who pay electronically, do not view this information.
        - Of note, a few respondents who have read information in the bill find the information difficult to follow and comprehend.
    - The Water Ambassador program from the SMWSA (South Metro Water Supply Authority) is also relatively unknown.

- Respondents also appreciate programs that are geared toward commercial entities, especially when it involves new building construction, especially given the high projected growth rates for Castle Rock.
    - They envision regulations/requirements for new home builders to install water efficient devices in each new/remodeled home, for interior and exterior water devices.
- While they expect new development to especially adhere to landscape regulations, most respondents are also comfortable that existing homes also have *"targets"* to hit.
    - Importantly, however, these respondents feel targets for any existing structures should be incentivized, and not regulated.
        - *"If you moved here and went into a home with one set of expectations, and then change the rules, it won't go over that well. But you could offer incentives to make people change."*
- Similarly, respondents are comfortable that commercial landscapers must be certified, and they are comfortable that this regulation be extended to residential landscapers, but more in the form of a 'seal of approval' than an enforced regulation.

- Respondents have a desire to learn about conservation practices that builders, and business owners, are asked to follow; judgmentally, this is either to satisfy their curiosity or interest, or simply to learn that

homeowners are not the only ones who bear the brunt of the water conservation responsibility.

- *"What are business owners doing to contribute to this?"*
- *"It makes a whole lot of sense to me that new homes and buildings going up follow good water management practices. It's probably cheaper to install it in the first place, instead of having to go back and retrofit later, so I want to know they're doing that."*

Town Conservation Approaches

- Other than a few respondents who are aware of the Rueter-Hess project, there was almost no awareness of the Town's regional water projects.
  - Respondents aware of the Rueter-Hess project appeared to have limited, if not contradictory understanding of the project, and had no idea of the scale of the project as compared to other regional water projects, such as the Chatfield Reservoir Reallocation, Box Elder Well Field, or WISE projects, which have almost no awareness.
    - Judgmentally, the only relevant information regarding the size and scope of the projects is the number of homes served, and the cost of the projects, but many respondents are concerned this water will go to new homes, and not existing residents.
- As part of this conversation, respondents were told that an average single family home uses 0.45 acre-feet of water annually, which is essentially irrelevant to them.
  - On the other hand, when told this volume equates to about the same amount of water in the lap pool at Castle Rock Recreation Center, the visual image was much more compelling.
    - Of note, for those unfamiliar with the pool, it helps to share the dimensions of the pool (e.g., 25-meter pool with 8 lanes).

- Park irrigation appears to be misunderstood, and sometimes confused with parks managed by HOAs.
  - In general, respondents are comfortable with the way the Town of Castle Rock manages park irrigation; however, a few respondents noted times when they viewed parks being watered during or just after rain showers, and they felt the water usage was wasteful.
  - When told the Town uses a 'centrally controlled computer-based irrigation system,' respondents like the idea, but again, they have a difficult time knowing which parks are managed by this system versus another means.
    - They like the idea of having access to notify the Town of occasions when it appears a park is being watered

unnecessarily, or if sprinkler heads are broken, similar to the way other municipalities have a system to report potholes in the road.

- Extending peak watering times from 9:00am to 7:00pm to 8:00am to 8:00pm is unanimously acceptable to respondents.
    - They do not feel the extra hour added on to the beginning and end of the peak watering window from June to August will cause any major lifestyle change.
    - The popularity of water timers appears to make this a non-issue, as people will simply change their timers to water at an appropriate time.
        - Judgmentally, however, it may be helpful to drive compliance if communications regarding the new policy are accompanied by instructions on how to change the timer settings for most major brands of irrigation timers.

- Respondents are comfortable with the Town of Castle Rock using xeriscaping for the Town's landscaping.
    - They understand using non-native grasses in medians is wasteful, and instead, like the idea of using a combination of native grasses, plants and flowers to adorn common spaces.
    - However, several respondents feel there are relatively few Town-managed areas, as compared to HOA-managed areas, therefore they do not believe any change will make a big difference in the look of Castle Rock.
    - Of note, respondents are mixed regarding the planter boxes used on Wilcox Street; some like the presence of the flowers in a controlled setting that they perceive uses water wisely by containing watering to certain areas, and others think the boxes look out of place in the street.

- Severe water violation penalties for those who do not have an irrigation system did not go over well with respondents; they do not like the idea of penalizing homeowners for items that require a large out of pocket expense to get them into compliance, as long as these homeowners follow water utility guidelines when watering their lawns.
    - While they are comfortable with this policy for new development, they prefer incentives to get existing homeowners up to date with any water-saving device.
    - For homeowners who do not have irrigation systems who do not comply with water utility policies, respondents prefer first warnings accompanied by education, followed by sanctions.

- Respondents are open to the idea of AMI (Advanced Metering Infrastructure), however are concerned about the cost-benefit analysis to taxpayers.
    - Some respondents are familiar with the idea of smart meters for electricity and like the idea that this could be applied to water as well.
        - Judgmentally, if the AMI could also allow them to take more proactive control of their water consumption, it would increase overall appeal.
            - *"I'd like to be billed for what I'm actually using instead of what they think I'm using."*

- While respondents feel good about the steps the Town of Castle Rock is taking to procure additional renewable water and educate consumers and business about water conservation, they unanimously believe it will involve a combination of the two efforts to address the Town's water needs.
    - When respondents were asked about the tradeoff of the two alternatives, after learning that a $10 million investment is equivalent to a 10% reduction in water consumption, they essentially stated 'we cannot save our way to meet the water needs of the growing community.'
        - *"Castle Rock is projected to double in size from 50,000 to 100,000 people. A mere savings of 10% won't give us enough water to spread over an additional 50,000 people."*

- Respondents assume the Town of Castle Rock funds procurement programs and incentive and education programs, however, they acknowledge they do not know this for a fact.
    - Assumptions are that the Town pays for programs via taxes and/or water profits.
- Although there is little understanding of the process, respondents have little to no interest in participating in Utilities Commission or Town Council meetings dealing with water management.
    - Respondents feel these events would simply take more time than the benefit they would deliver.
        - Judgmentally, however, if a large, controversial issue that could impact their lifestyle arose, potentially effected consumers would get more involved.

Community Culture of Conservation

- Respondents love the idea of creating a community culture that involves water conservation.

- *"It's the right thing to do."*
- *"We already know we have to do it, so let's do it, and involve the younger generation so it becomes a habit to them."*

- In addition to it being the *"right thing to do,"* most respondents acknowledge it is a necessary thing to do in order to meet the demands of the growing Town, in order to keep water costs reasonable.

- Interesting ideas to grow awareness and create interest include:
  - School Programs – to engage children at an early age
  - Fairs – to promote the vision to a wide range of people in a fun atmosphere
  - Water Conservation Day – tie in to Duck Derby, Creek Clean, etc.
  - Bill Inserts – more user-friendly; personalized; compare usage to previous usage and/or average home; examples Black Hills Energy
  - Restaurant Tent Cards – to educate a captive audience
  - Information at Town Parks – setting-appropriate information
  - Direct Mail – appealing to younger respondents
  - Webinars – for topics such as Water Wise; information available 24/7
  - Partner with HOAs – influence conservation; newsletter/e-newsletter
  - Links to CRconserve.com – via Recreation Center and/or Outlet Malls websites
  - Castle Rock Magazine – e.g., 'The Hub'
  - Home Center – setup in a Home Depot/Lowes, instead of a builder's model home, is very appealing to learn about conservation devices/methods in a more appropriate setting for existing homeowners

- In addition to interest in online webinars for education, respondents also appreciate additional online/mobile solutions; younger respondents are especially interested in mobile solutions/Apps.
  - They like the idea of accessing Town information via an App; importantly, they expect a variety of information to be available at one site and not simply water conservation tips; examples of information include events, weather, news, police and emergency group information, road information (e.g., construction, closings, traffic), and water management information
  - CRconserve.com – while this information is appealing, it does not appear compelling enough to be a stand alone service that would drive site visits; however, when linked via other more popular sites, such as CRgov.com, or even other sites such as the Outlet Malls and/or Recreation Center, respondents may be more willing to visit

- A potential traffic driver to the CRconserve.com site would be an online calculator that would help users better understand water consumption and conservation tradeoffs; inputs such as number of people in the home, square footage of lawn, percent of lawn with xeriscaping, sprinkler types, watering schedule, etc., would allow users to determine how water consumption is impacted by a variety of factors.

- Although respondents expressed interest in several online opportunities, there is mixed awareness and use of other Castle Rock services, such as Facebook and Twitter.
    - Facebook is generally the more popular of the two alternatives; respondents who use Facebook like the idea of learning about Town events on the service.
- A few younger respondents use H2O Access to pay their bills.
    - These users appreciate the convenience of the service.

- As with any behavior change, consumers require a motivator or driver to affect change.
- For many respondents, conserving water because 'it is the right thing to do' appears compelling enough, when linked to the frame of reference of Castle Rock's statistics depicted in the Water Conservation Master Plan.
    - These respondents feel a sense of responsibility to their community to conserve water for their neighbors and for the next generation of Castle Rock residents.
        - Judgmentally, this appears to largely be a message that is compelling to older respondents, and those with kids.
- On the other hand, some consumers need a bit more of a fact-based message, which could involve a FUD (fear, uncertainty and doubt) message that highlights what could happen if appropriate conservation practices are not adopted.
        - Judgmentally, this is especially important for those without children who are not necessarily as concerned with the future, and/or modeling good conservation behavior.

- Judgmentally, for many consumers, the message that they should conserve water because it is the 'right thing to do' may not always be compelling; however, the positioning of water conservation as a savings opportunity may drive behavior change.
    - For several respondents, the message that 'you can get one month's water for free' if you follow water conservation prescriptions is compelling.

- Importantly, these respondents need clear direction on the ways to most effectively reduce water consumption, and how to address common water usage dilemmas.
    - *"I don't know what saves more money…should I wash dishes in the sink, or should I run the dishwasher? They say the dishwasher is energy and water efficient, but how do I know?"*

Appendix ~~E~~ F – Online Survey Summary

Town of Castle Rock
Water Conservation Survey

February 2015

CONNECT INSIGHTS

Methodology

- Research consisted of a 20 minute online survey conducted among 660 respondents who receive monthly water bills from the Town of Castle Rock Water Utility.
- The objectives of the research project were to:
  - Gain a deeper level of insight and understanding of the attitudes and behavior of Castle Rock residents, and a better understanding of residents' beliefs about water usage and water conservation, now and in the future.
  - Evaluate respondent reactions to the Town of Castle Rock's Water Conservation alternatives, and identify the most compelling elements to offer to the community.
  - Identify the most effective and compelling means to educate residents of the Town of Castle Rock on water conservation methods, and any new implications from the new water conservation plan.

CONNECT INSIGHTS

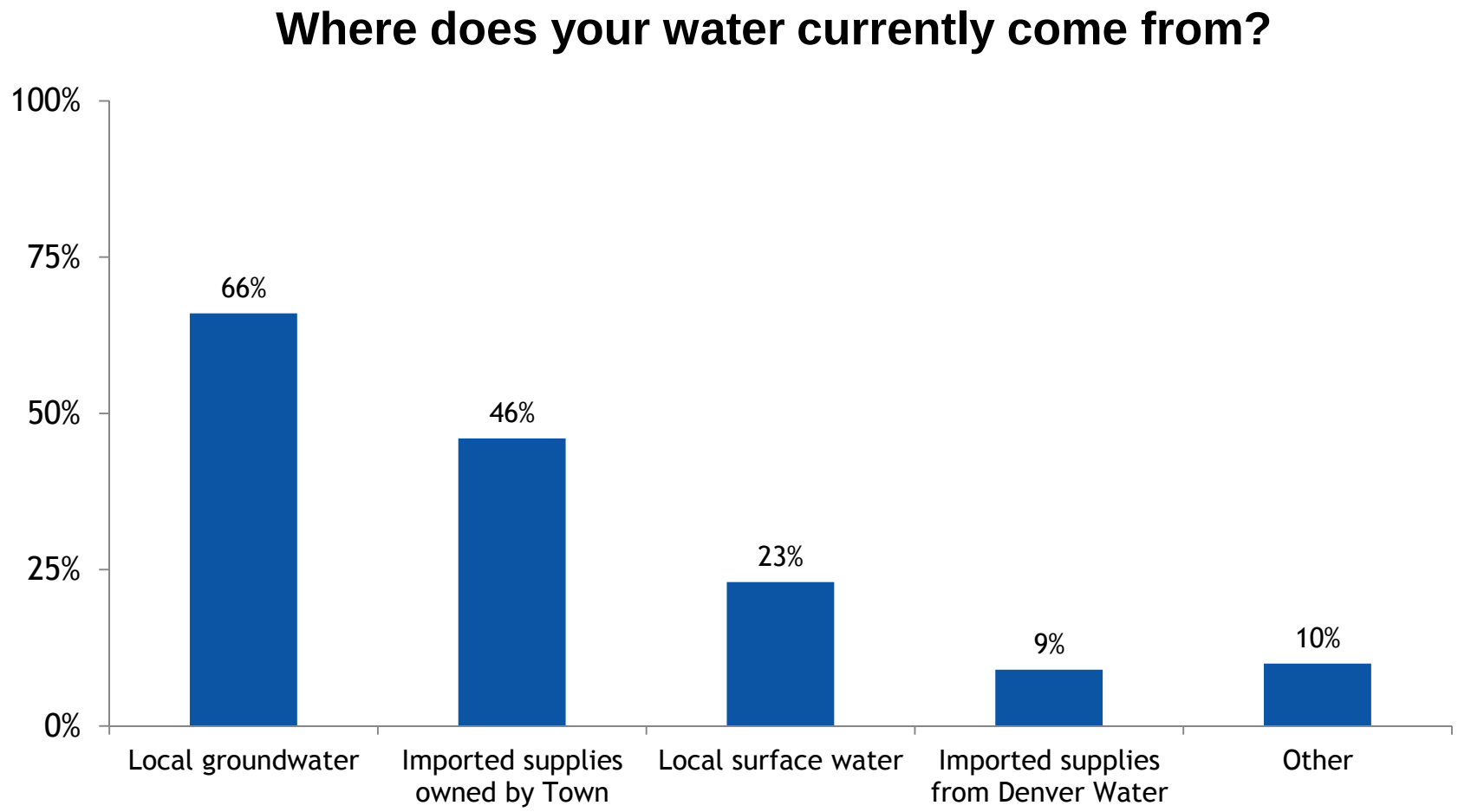
Executive Summary

- Most respondents are interested in learning about water conservation.
  - Bills/inserts, e-mail and websites are preferred communications methods.
- Awareness of many TOCR programs and tools is low, but interest is high.
  - Roughly two-thirds are unaware of rebate/incentive programs (e.g. Smart irrigation, Rotary nozzle, etc.), and the CRConserve.com website.
- Water Wiser is the TOCR's most popular program.
  - 85% of respondents are aware, and 97% of participants find it appealing.
- There is very strong support for additional conservation efforts:
  - 85% approve of extending the 'no watering' period to 8:00am-8:00pm.
  - 69% are very interested in a $25 sprinkler inspection program that could save up to 5,000 gallons of water over the sprinkling season.
  - 70% percent are interested in indoor rebate programs for high efficiency toilets and shower heads
- Lack of interest in water conservation in general correlates to lack of water conservation activity.
  - Judgmentally, there is a small subset of people who simply are not concerned with water conservation or conservation activities.

CONNECT INSIGHTS

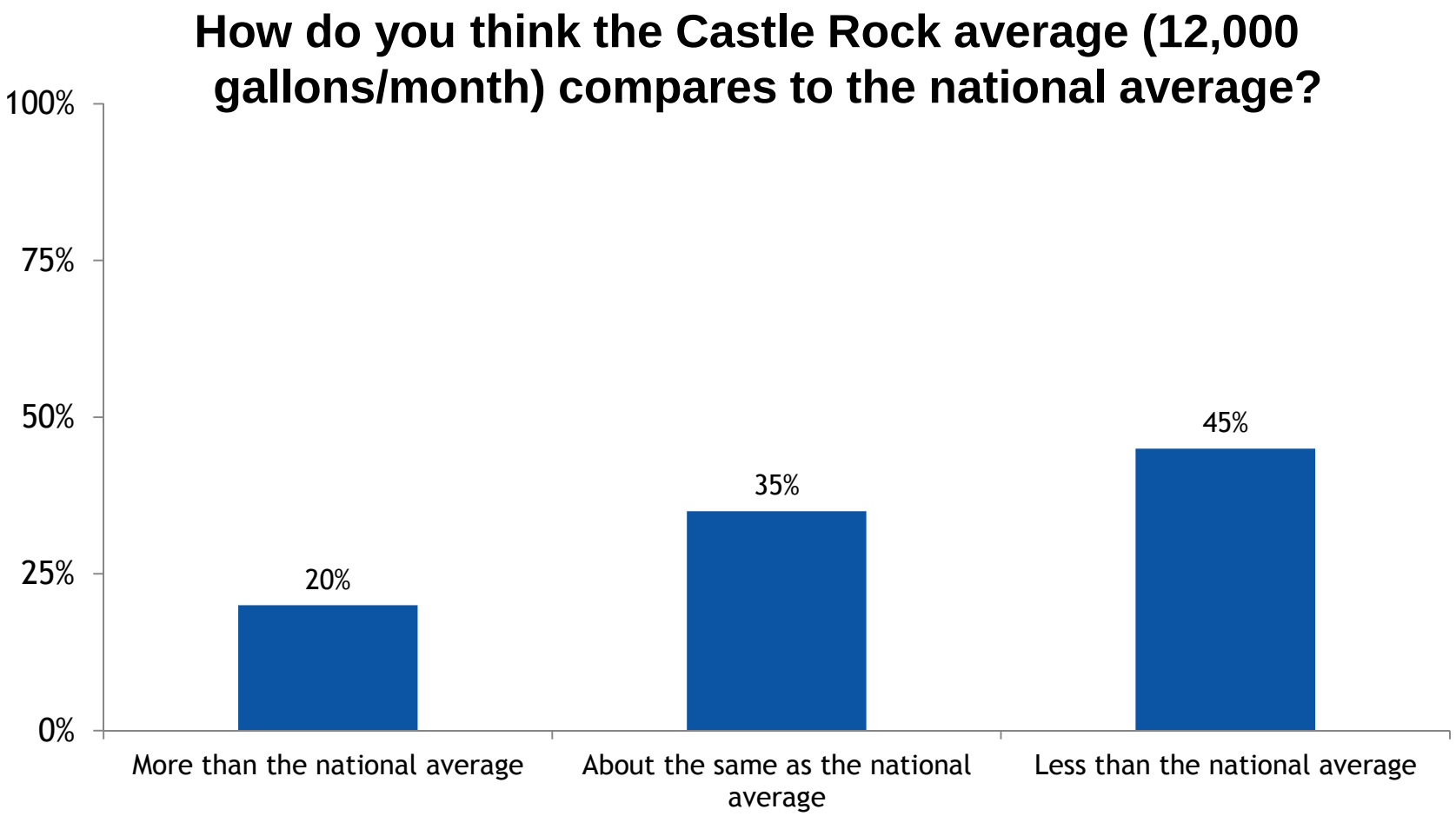
Primary Findings

By far the most commonly identified source for customers' water is 'local groundwater' yet a significant amount feel the Town imports water.



CONNECT INSIGHTS

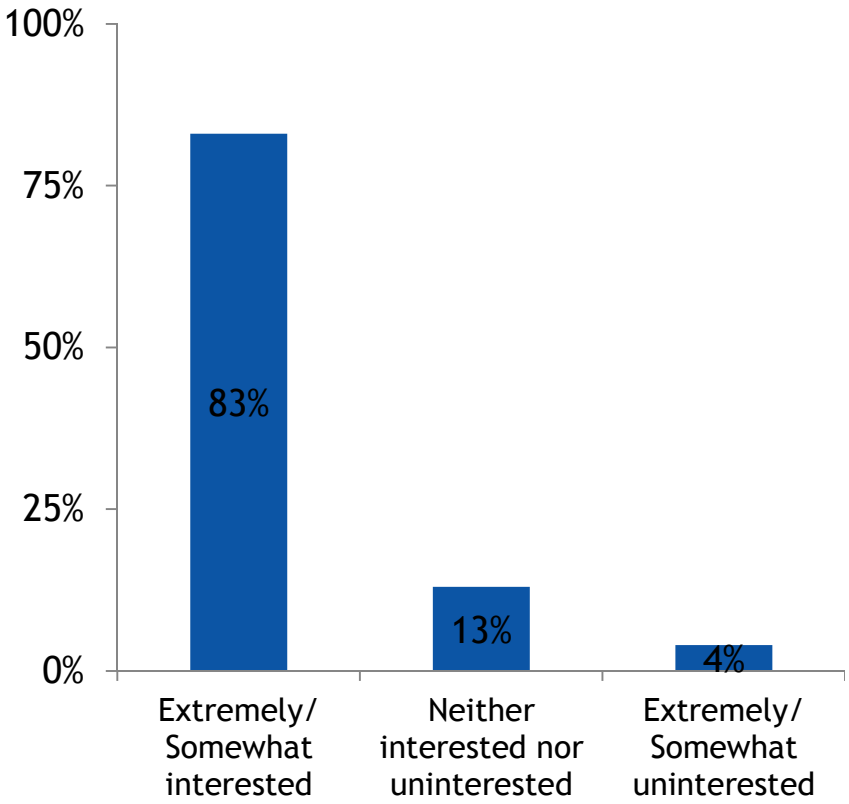
Almost half of respondents believe Town of Castle Rock residents use less than the national average, with about a third seeing it as about the same.



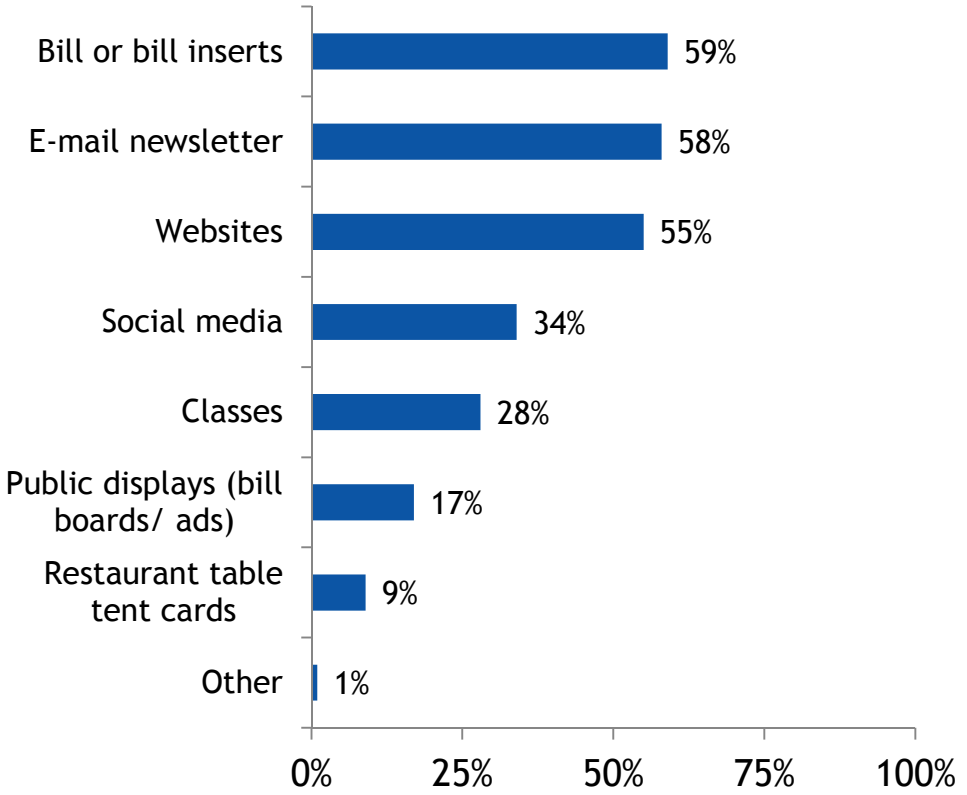
CONNECT INSIGHTS

The large majority of respondents are interested in learning about water conservation. The preferred means of learning are bills/inserts, e-mail and websites.

How interested are you in learning more about conservation and using water more efficiently?



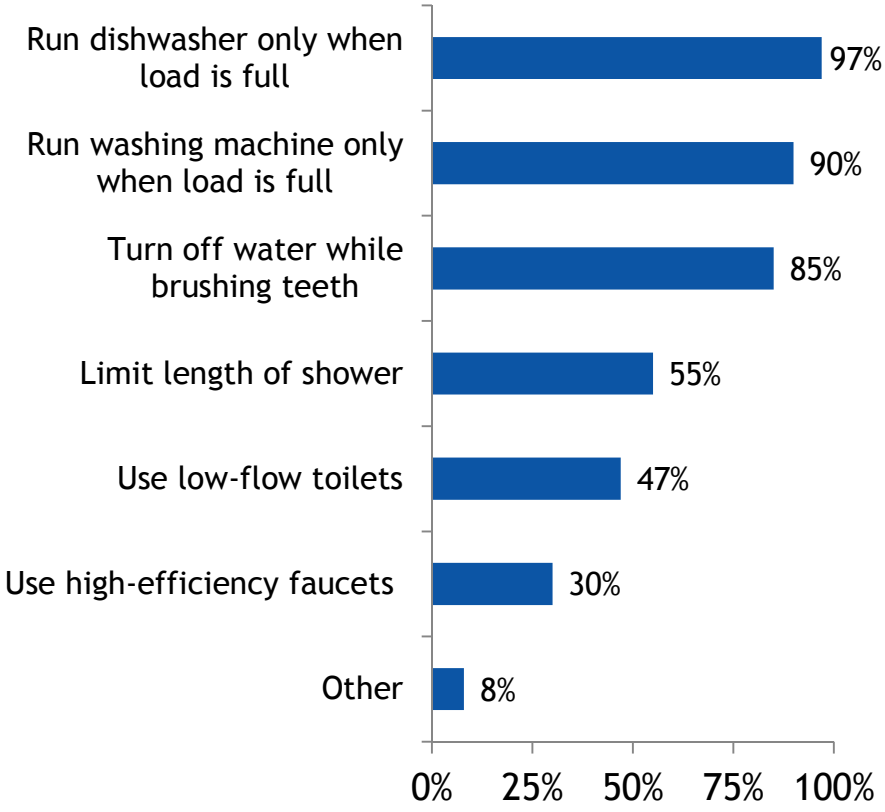
In what ways would you prefer to learn about conservation?



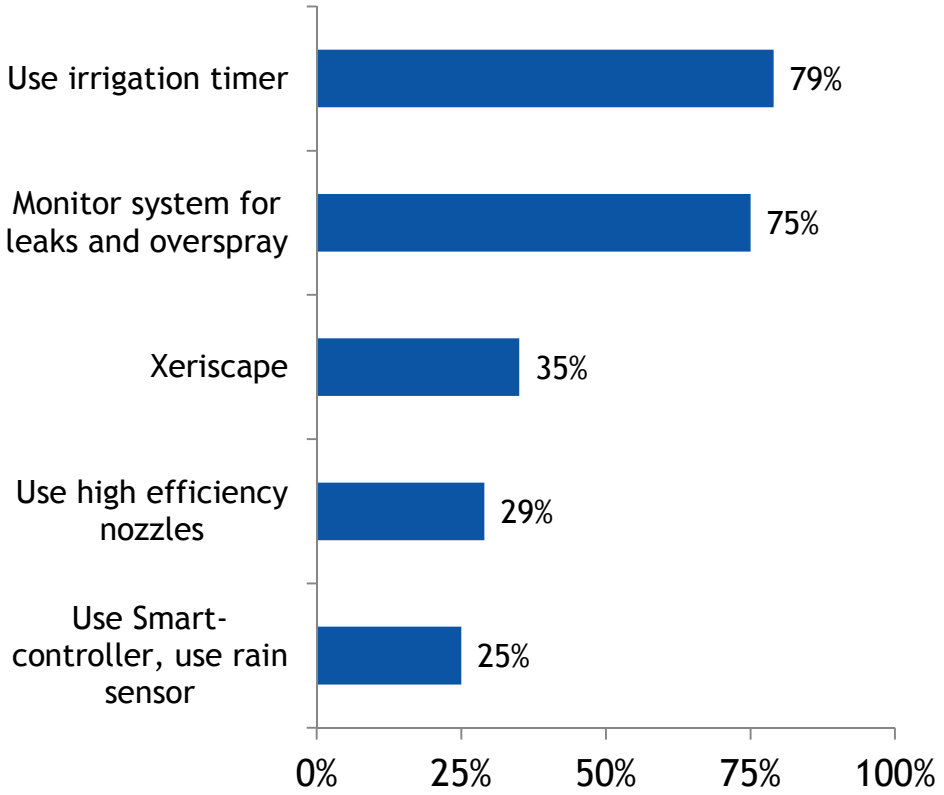
CONNECT INSIGHTS

On average, respondents indicate they are practicing at least four of the indoor water conservation activities, with the primary ones being only running washers that are full. 'Other' is largely efficient shower heads and water heaters, and recycling. Outdoor conservation activities are primarily irrigation timers and monitoring for leaks.

What indoor water conservation activities do you currently practice?



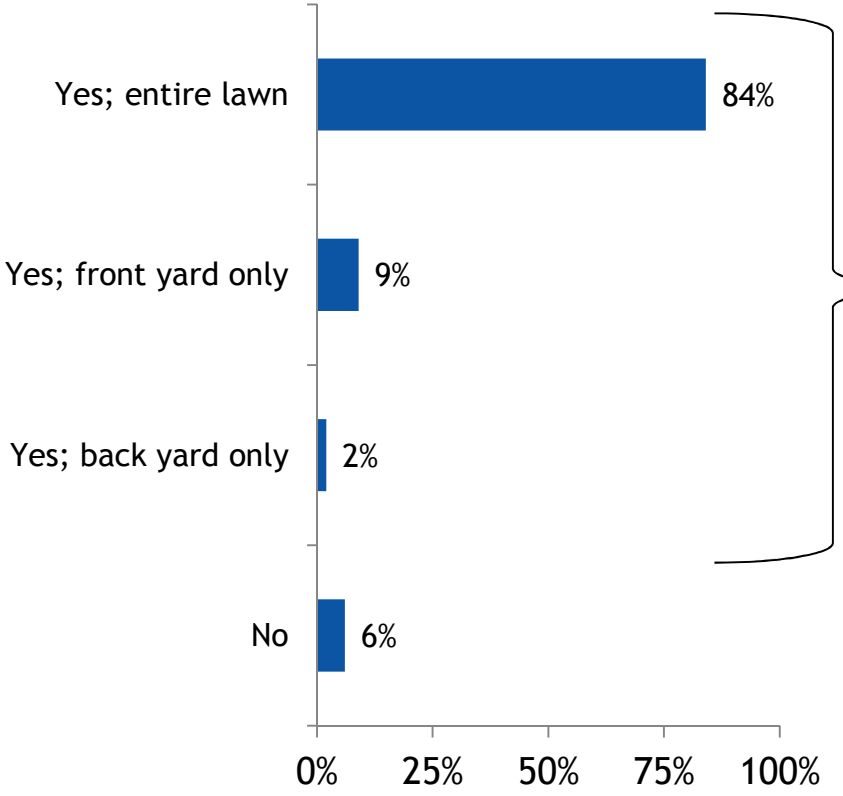
What outdoor water conservation activities do you currently practice?



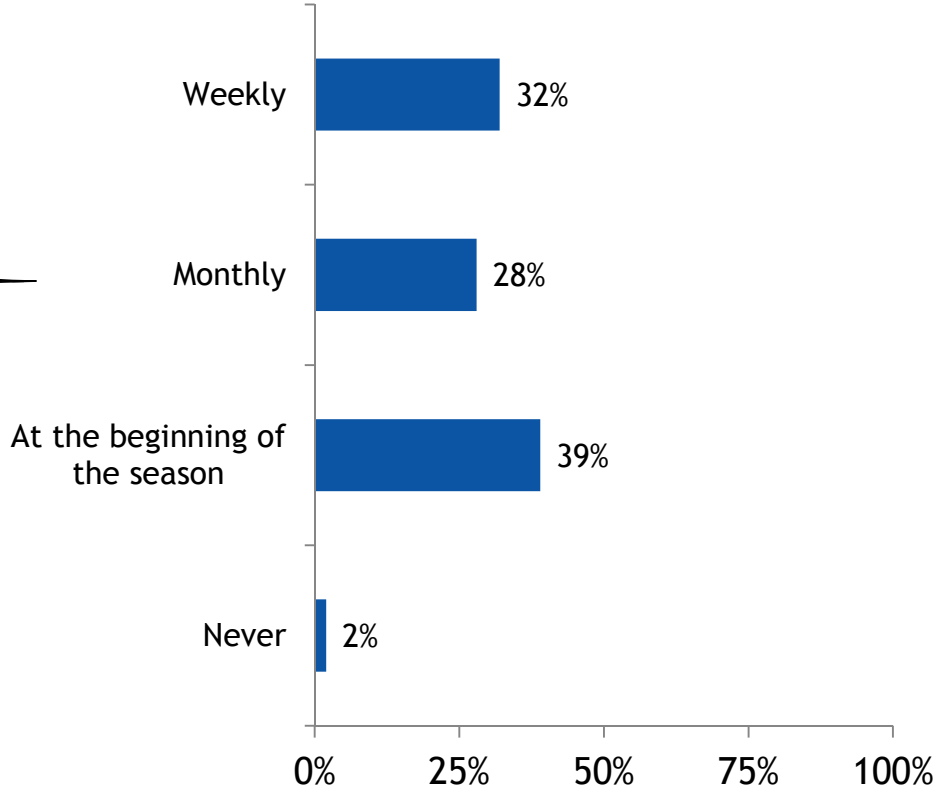
CONNECT INSIGHTS

Almost all respondents have an automatic sprinkler system. The most common frequency for checking it is at the beginning of the season, but 60% of respondents claim they check weekly or monthly.

Do you have an automatic sprinkler system?

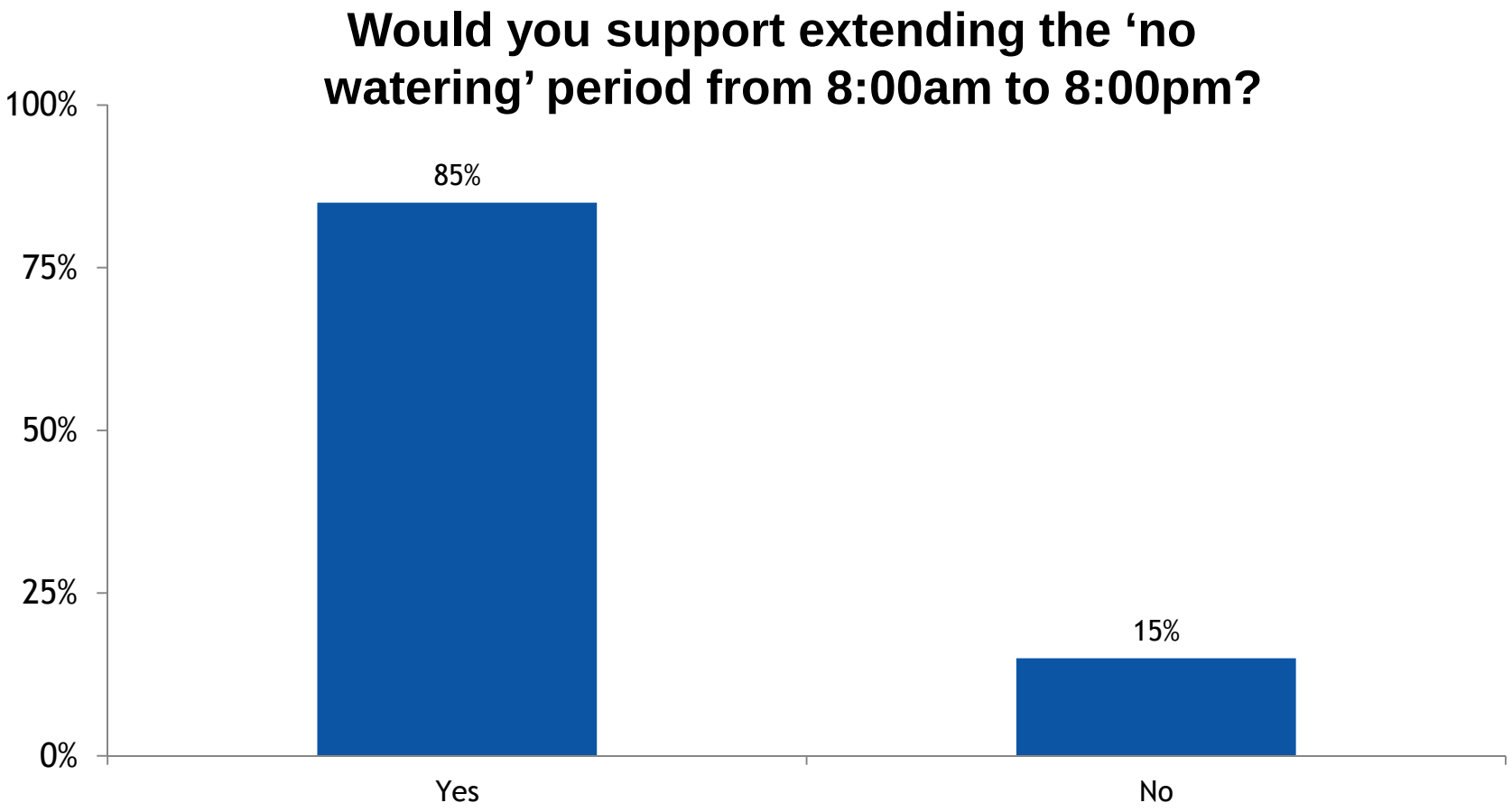


How often do you check your automatic sprinkler system for leaks and overspray?



CONNECT INSIGHTS

There is very strong support for extending the ‘no watering’ period. Those who do not support extending the period typically see it as too restrictive or counter to their patterns.



Interestingly, those who are less likely to explore the site or to be interested in water conservation or to have an automatic sprinkler system are the ones who tend to think Castle Rock water usage is higher than the national average. Those that are unlikely to use the rebate program, or explore the site or have a sprinkler system are also less likely to support extending the no watering period.

		Likely to take adv. of rebate program		Likely to explore Site			Interest in learning about water convservation			Automatic sprinkler system				Gender	
Q5. How do you think this amount compares to the national average?	Total	Ext/ SW likely	Ext/ SW unlikely	Ext/ SW likely	Neither likely nor unlikely	Ext/ SW unlikely	Ext/ SW interest	Neither interest nor uninterest	Ext/ SW uninterest	Yes; entire lawn	Yes; front yard only	Yes; back yard only	No	Male	Female
More than the national average	20%	19%	24%	17%	26%	31%	20%	19%	32%	20%	22%	11%	29%	17%	22%
About the same as the national average	35%	36%	31%	36%	36%	24%	35%	30%	24%	34%	35%	33%	32%	26%	39%
Less than the national average	45%	46%	44%	47%	38%	45%	45%	51%	44%	46%	44%	56%	38%	57%	39%
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

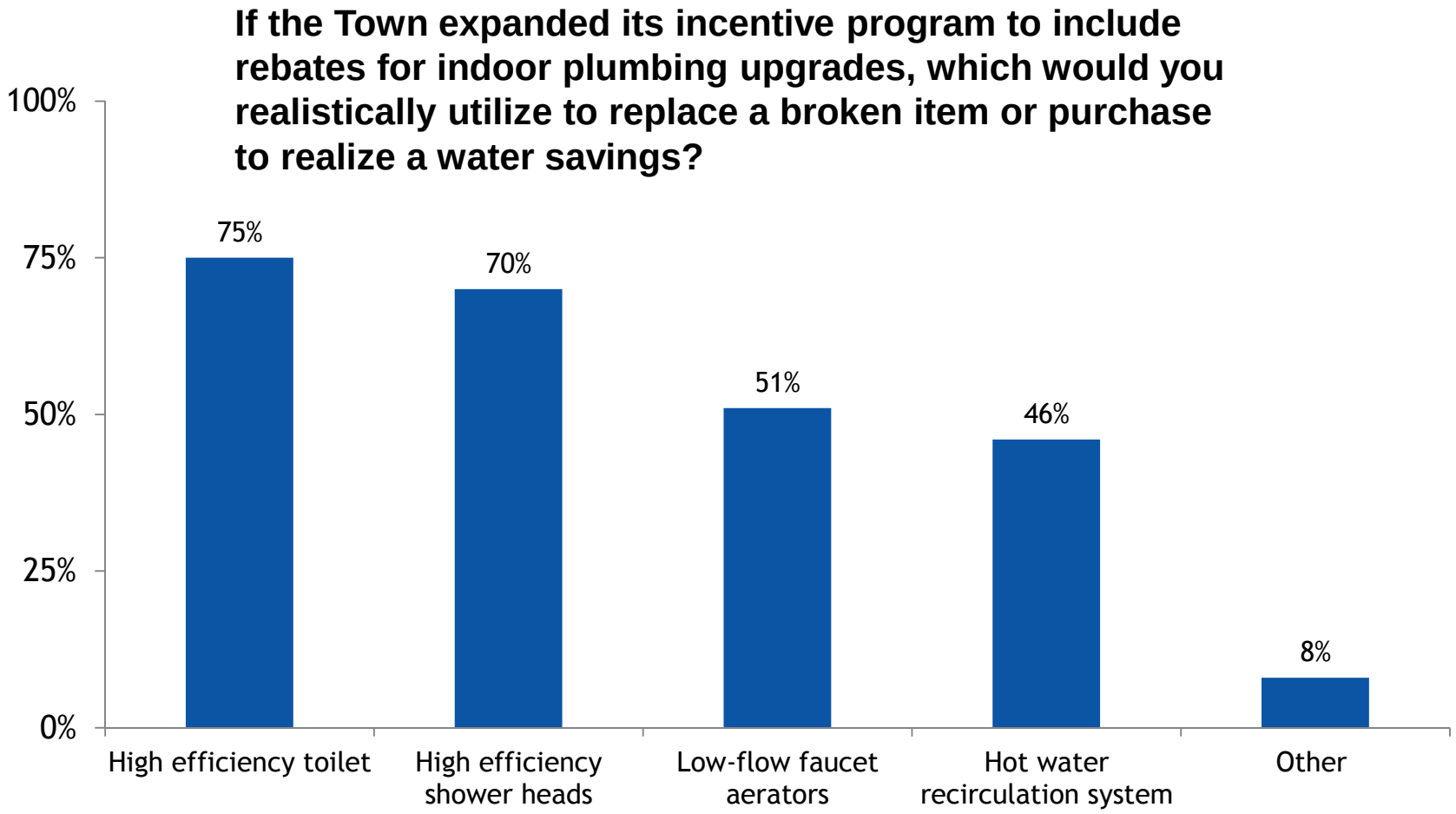
**To clarify, 29% of people who do not have an automatic sprinkler system, feel that the Town uses more water than the national average.

		Likely to take adv. of rebate program		Likely to explore Site			Interest in learning about water convservation			Automatic sprinkler system				Gender	
Q6. Would you support extending this no watering period from 8:00 am to 8:00 pm?	Total	Ext/ SW likely	Ext/ SW unlikely	Ext/ SW likely	Neither likely nor unlikely	Ext/ SW unlikely	Ext/ SW interest	Neither interest nor uninterest	Ext/ SW uninterest	Yes; entire lawn	Yes; front yard only	Yes; back yard only	No	Male	Female
Yes	85%	89%	75%	86%	87%	77%	87%	78%	80%	86%	83%	89%	71%	85%	85%
No	15%	11%	25%	14%	13%	23%	13%	22%	20%	14%	17%	11%	29%	15%	15%

Color code means group is over 5% greater than Total

Color code means group is over 5% less than Total

High efficiency toilets and shower heads rebates are appealing to three-quarters of respondents. Low-flow aerators and hot water recirculation systems are appealing to about half of respondents. 'Other' responses include water heaters, washing machines, dishwashers and grey water repurposing.



CONNECT INSIGHTS

For all of the rebate programs presented, customers' primary position is that they are unaware, but interested.

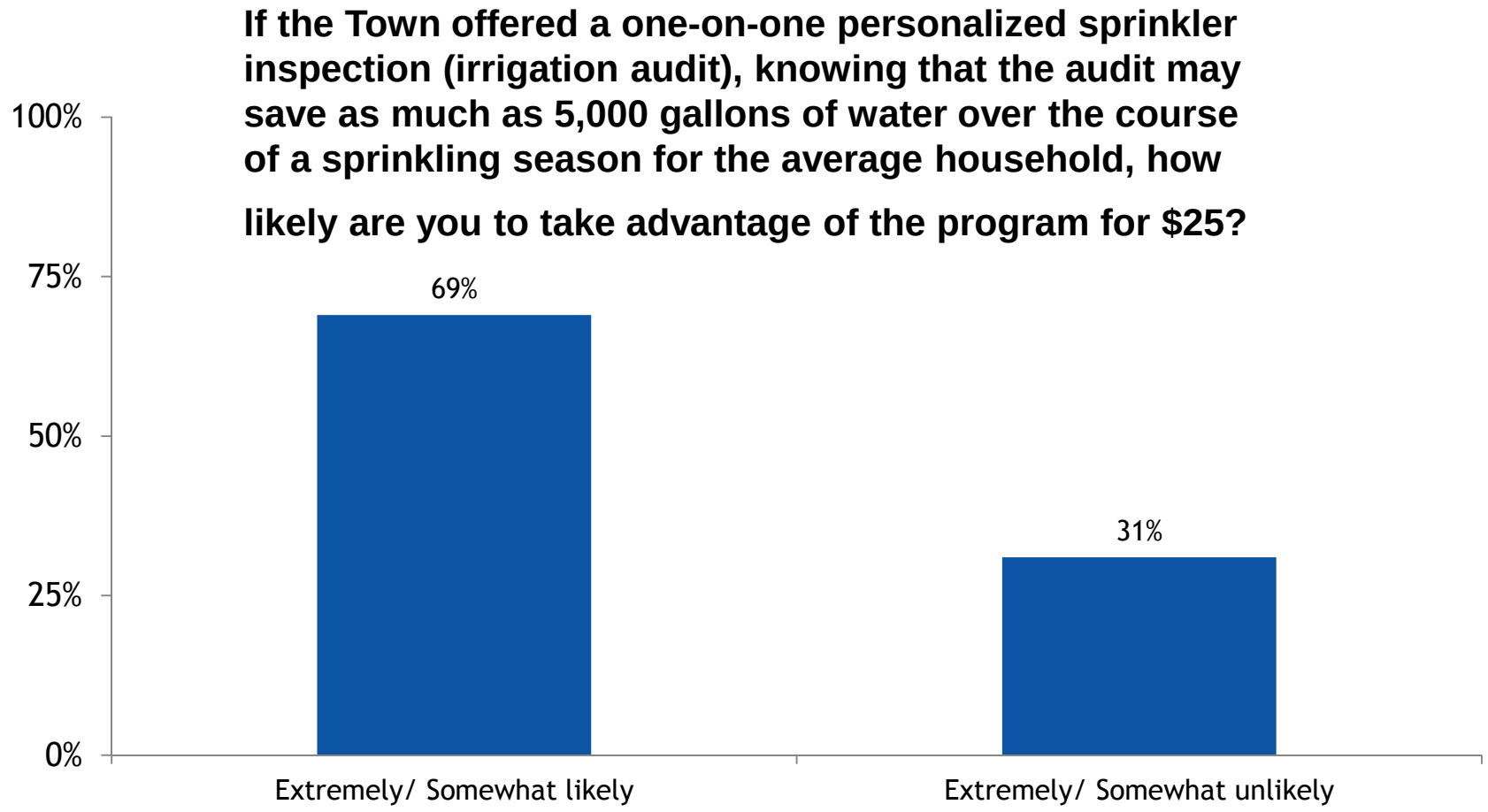
Please select the answer that best reflects your position on each of the residential outdoor water savings rebate programs.

	Aware/ Used	Aware/ Interested	Aware/ Not Interested	Unaware/ Interested	Unaware/ Not Interested
Smart Irrigation Controller	7%	23%	5%	52%	14%
Rotary Nozzle	13%	17%	4%	56%	10%
Rain Sensor Installation	11%	23%	4%	51%	11%
SmartScape Landscape Renovation	7%	26%	10%	36%	20%

Color code means group is highest in row

Color code means group is lowest in row

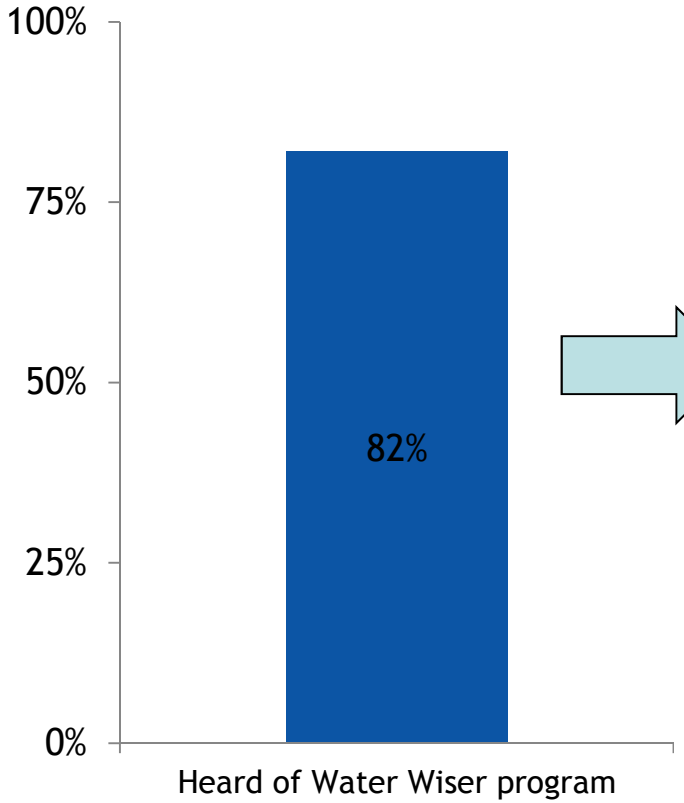
Respondents are very interested in a sprinkler program that would save them as much as 5,000 gallons of water over the sprinkling season.



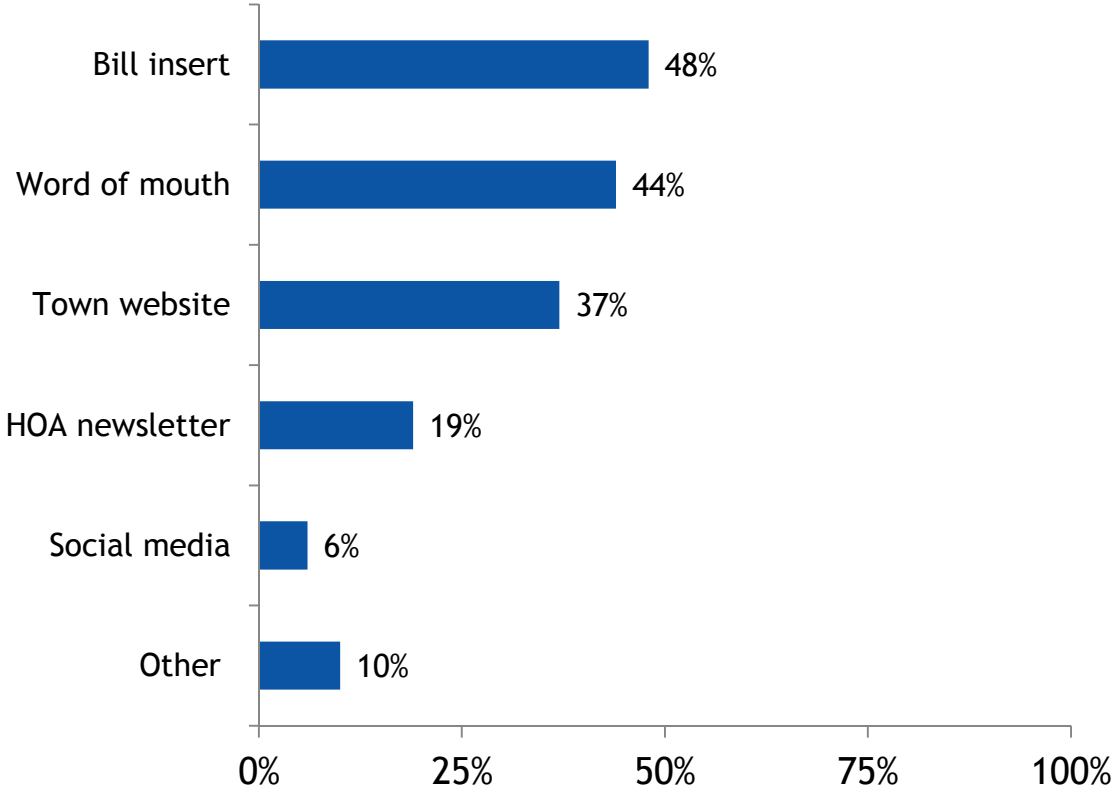
CONNECT INSIGHTS

The large majority of respondents have heard of the Water Wiser program. Of those who have, their primary sources of information are bill inserts, word of mouth and the town website. 'Other' is primarily neighbors, window stickers and signs.

Have you heard of the Water Wiser program?



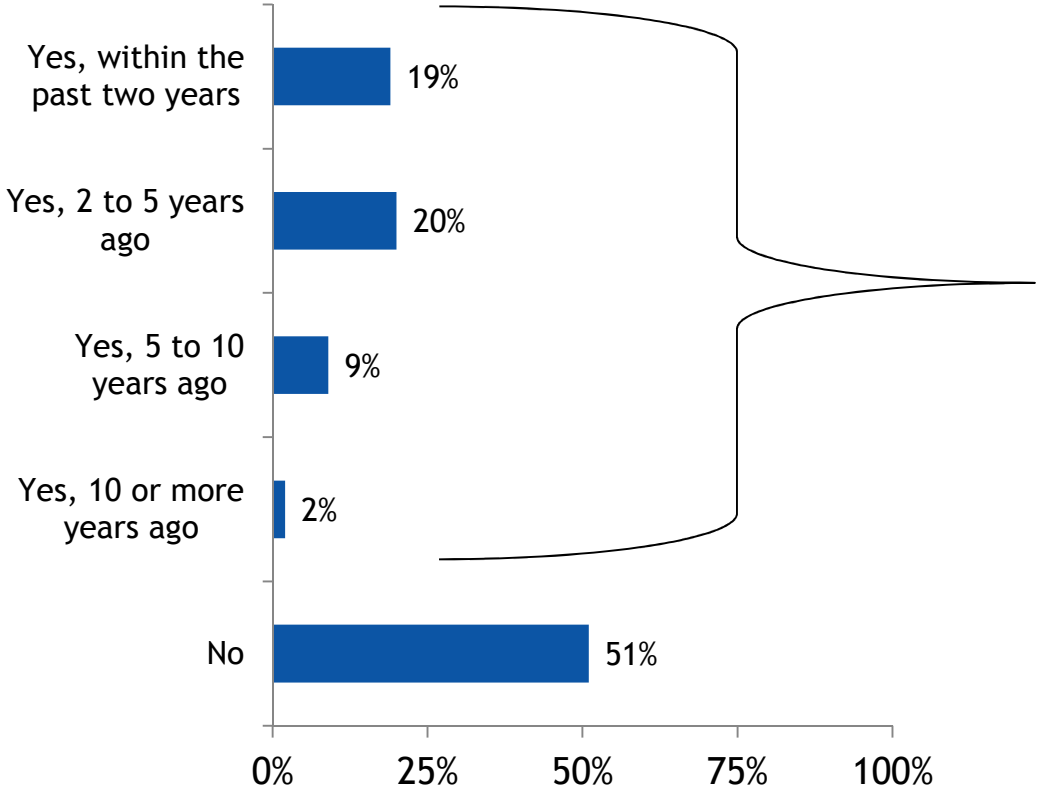
How did you hear about the Water Wiser program?



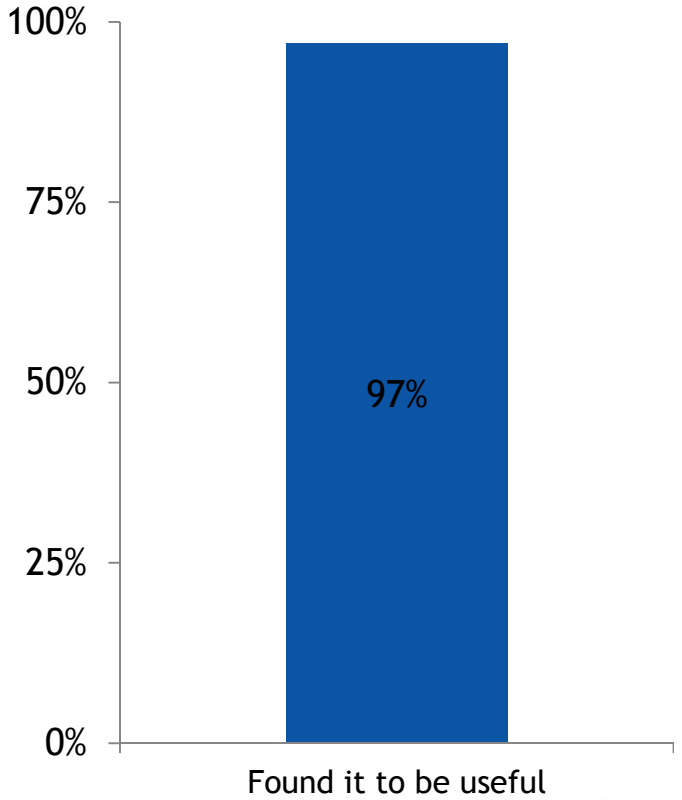
CONNECT INSIGHTS

While only about half the respondents have completed the Water Wiser program, almost all of those who have used it find it to be useful.

Have you completed the Water Wiser program?



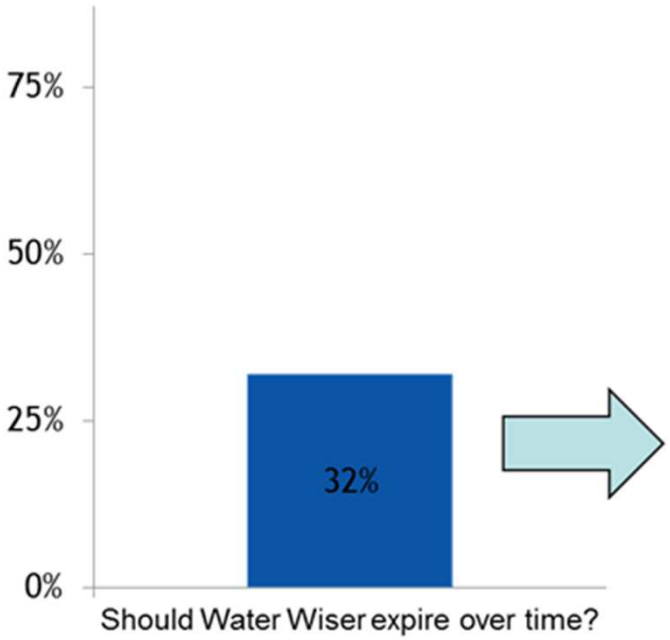
Did you find the Water Wiser program to be useful?



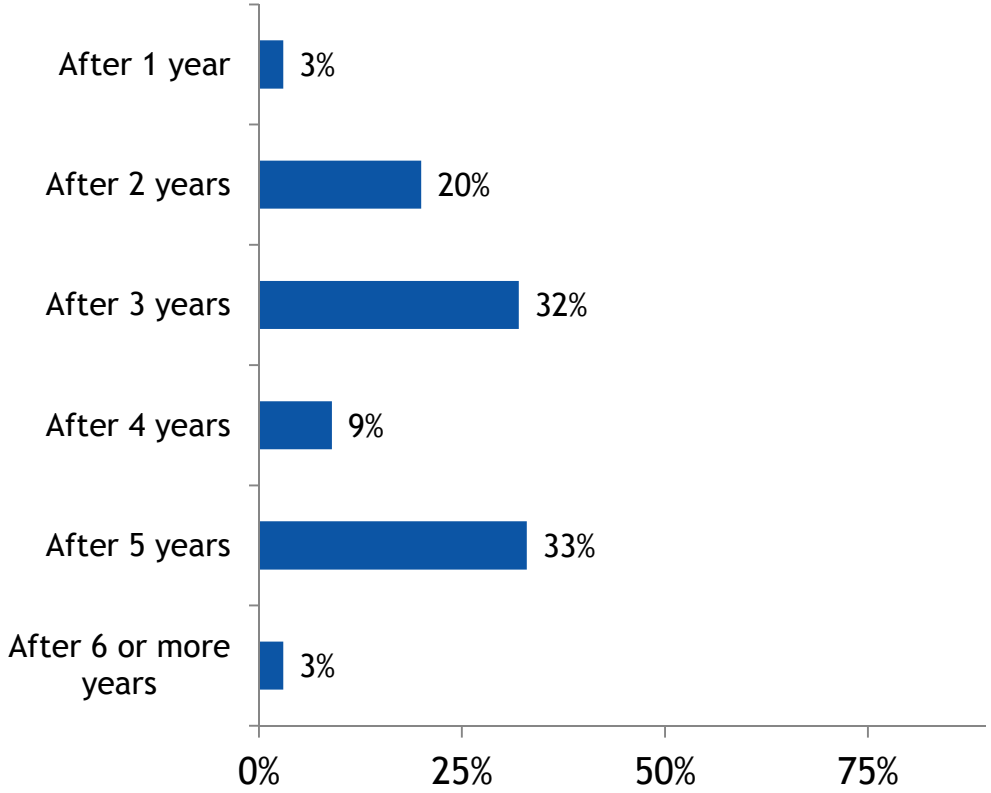
CONNECT INSIGHTS

Only about one-third of respondents believe the Water Wiser program should expire after a period of time. Among those that do, requiring the Water Wiser course to be retaken after 5 years is acceptable to almost all respondents.

Once a resident has completed the Water Wiser workshop and earned the Water Wiser designation, should the program expire after a period of time?



When should the Water Wiser course have to be retaken?



CONNECT INSIGHTS

Those who are less-likely to explore the site or to be interested in water conservation or to have an automatic sprinkler system or only have it in the front yard are the ones who are least likely to have completed the Water Wiser program.

		Likely to take adv. of sprinkler program		Likely to explore Site			Interest in learning about water convservation			Automatic sprinkler system				Gender	
Have you completed the Water Wiser program?	Total	Ext/ SW likely	Ext/ SW unlikely	Ext/ SW likely	Neither likely nor unlikely	Ext/ SW unlikely	Ext/ SW interest	Neither interest nor uninterest	Ext/ SW uninterest	Yes; entire lawn	Yes; front yard only	Yes; back yard only	No	Male	Female
Yes, within the past two years	19%	21%	15%	15%	16%	20%	19%	20%	11%	19%	21%	25%	7%	21%	16%
Yes, 2 to 5 years ago	20%	20%	21%	21%	23%	14%	22%	15%	11%	23%	15%	0%	7%	21%	21%
Yes, 5 to 10 years ago	9%	10%	6%	8%	16%	3%	10%	6%	0%	9%	3%	25%	4%	10%	7%
Yes, 10 or more years ago	2%	1%	2%	2%	0%	6%	1%	3%	6%	1%	3%	0%	4%	2%	1%
No	51%	48%	56%	56%	46%	57%	48%	55%	72%	48%	59%	50%	78%	45%	56%

Color code means group is over 5% greater than Total

Color code means group is over 5% less than Total

There are some differences in expectations on when the Water Wiser course should be re-taken based on the different respondent types. For example, those who are less interested in learning about water conservation tend to be much more likely to say the course should be re-taken after one year (which may just be an expression of their dislike of the entire effort).

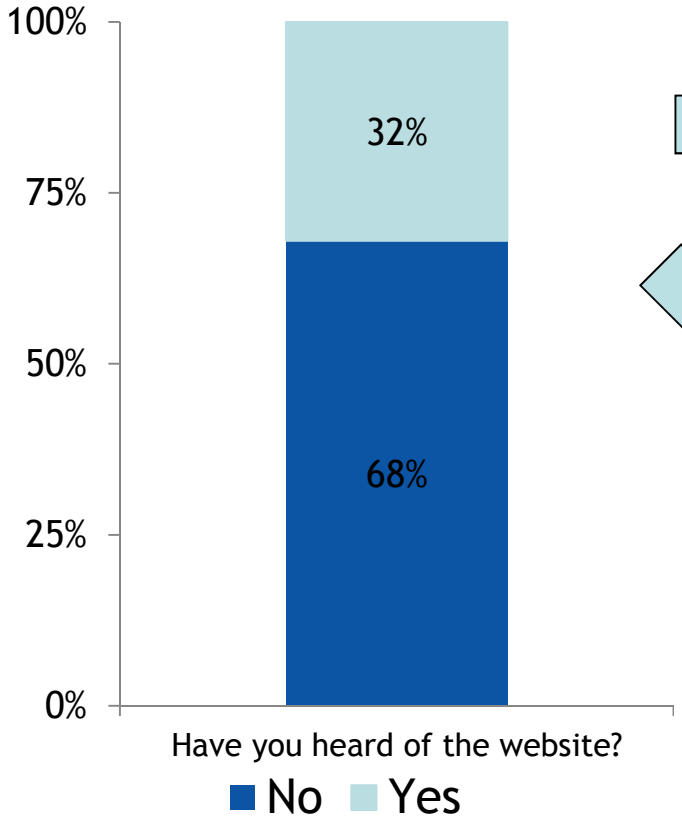
		Likely to take adv. of sprinkler program		Likely to explore Site			Interest in learning about water convservation			Automatic sprinkler system				Gender	
When should the Water Wiser course have to be re-taken?	Total	Ext/ SW likely	Ext/ SW unlikely	Ext/ SW likely	Neither likely nor unlikely	Ext/ SW unlikely	Ext/ SW interest	Neither interest nor uninterest	Ext/ SW uninterest	Yes; entire lawn	Yes; front yard only	Yes; back yard only	No	Male	Female
After 1 year	3%	4%	2%	2%	8%	0%	2%	13%	13%	4%	7%	0%	0%	3%	4%
After 2 years	20%	23%	12%	15%	42%	6%	20%	25%	25%	22%	13%	0%	21%	20%	20%
After 3 years	32%	33%	31%	34%	25%	56%	32%	38%	13%	29%	47%	25%	36%	31%	31%
After 4 years	9%	6%	15%	10%	13%	13%	9%	6%	13%	9%	0%	0%	14%	11%	7%
After 5 years	33%	32%	35%	38%	13%	13%	35%	19%	25%	33%	27%	75%	29%	32%	36%
After 6 or more years	3%	2%	6%	2%	0%	13%	3%	0%	13%	3%	7%	0%	0%	3%	2%

Color code means group is over 5% greater than Total

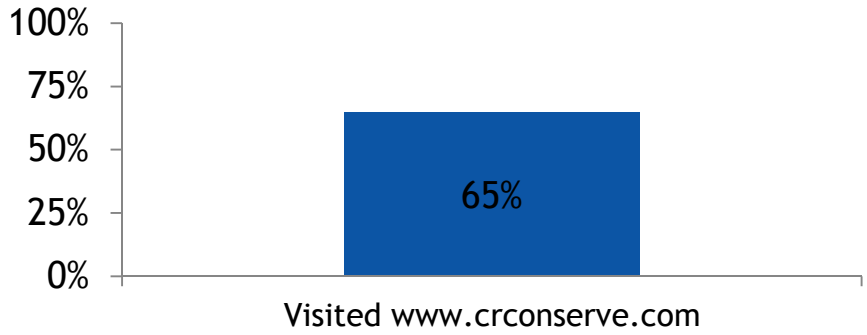
Color code means group is over 5% less than Total

Only about one-third of respondents have heard of CRConserve.com, but of those that have, two-thirds have visited it. Of those who have not heard of it, the primary reason is that it feels redundant to other websites. 'Other' is primarily that they are too busy or have just not taken the time to do so.

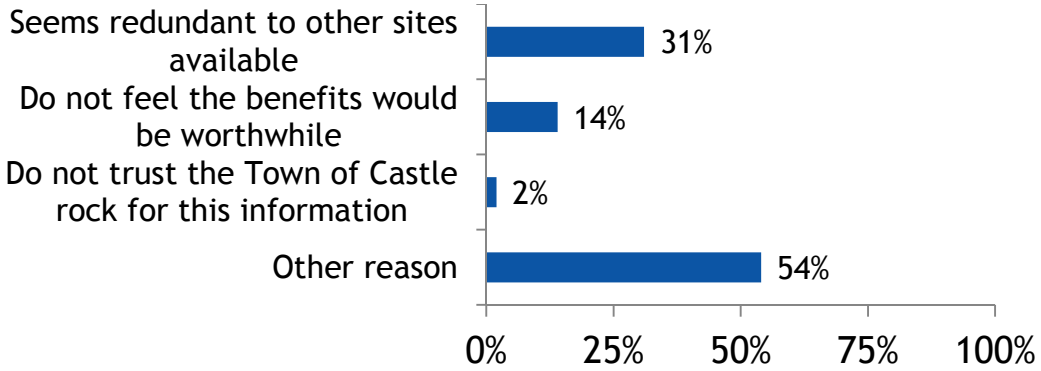
Have you ever heard of the Town's water conservation website at www.CRConserve.com?



Have you ever visited the Town's water conservation website at www.CRConserve.com?



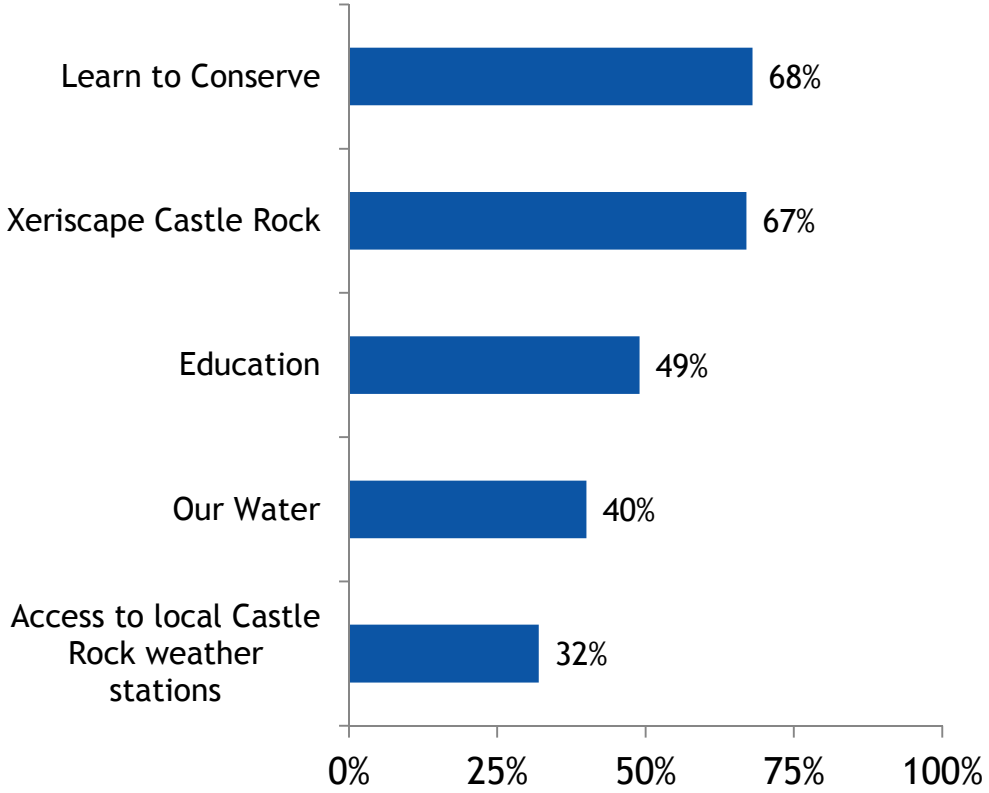
Why not?



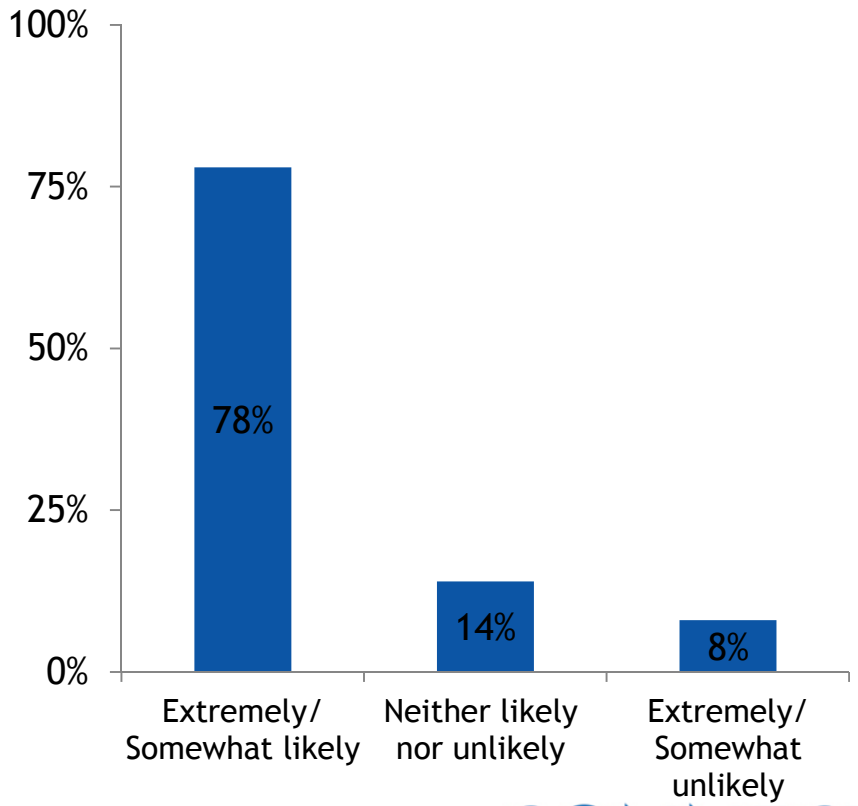
CONNECT INSIGHTS

‘Learn to Conserve’ and ‘Xeriscape’ are the most useful parts of the website to those who have visited it. Among those who have not, there appears to be a strong likelihood for them to do so in the future now that they are aware of it.

What part(s) of the www.CRConserve.com website do you find useful? (among those who visited)



Now that you know about the website, how likely are you to visit and explore the site?



CONNECT INSIGHTS

There are some differences in awareness and usage of the website based on respondent types. For example, those who are less interested in learning about water conservation tend to be much more likely to have not visited CRConserve.com.

		Likely to take adv. of sprinkler program		Interest in learning about water conservation			Automatic sprinkler system				Gender	
Have you ever heard of the Town's water conservation website at www.CRConserve.com?	Total	Ext/ SW likely	Ext/ SW unlikely	Ext/ SW interest	Neither interest nor uninterest	Ext/ SW uninterest	Yes; entire lawn	Yes; front yard only	Yes; back yard only	No	Male	Female
Yes	32%	32%	32%	30%	42%	40%	32%	26%	44%	40%	36%	29%
No	68%	68%	68%	71%	58%	60%	69%	75%	56%	60%	64%	71%

		Likely to take adv. of sprinkler program		Interest in learning about water conservation			Automatic sprinkler system				Gender	
Have you ever visited the Town's water conservation website at www.CRConserve.com?	Total	Ext/ SW likely	Ext/ SW unlikely	Ext/ SW interest	Neither interest nor uninterest	Ext/ SW uninterest	Yes; entire lawn	Yes; front yard only	Yes; back yard only	No	Male	Female
Yes	65%	63%	66%	61%	81%	40%	64%	83%	50%	50%	70%	59%
No	35%	38%	35%	39%	19%	60%	36%	17%	50%	50%	30%	41%

		Likely to take adv. of sprinkler program		Likely to explore Site			Interest in learning about water convservation			Automatic sprinkler system				Gender	
Why not?	Total	Ext/ SW likely	Ext/ SW unlikely	Ext/ SW likely	Neither likely nor unlikely	Ext/ SW unlikely	Ext/ SW interest	Neither interest nor uninterest	Ext/ SW uninterest	Yes; entire lawn	Yes; front yard only	Yes; back yard only	No	Male	Female
Do not feel the benefits would be worthwhile	14%	13%	16%	6%	24%	25%	15%	0%	17%	14%	-	-	14%	13%	14%
Seems redundant to other sites available	31%	28%	37%	19%	59%	25%	27%	33%	67%	35%	-	-	14%	39%	24%
Do not trust the Town of Castle rock for this information	2%	0%	5%	0%	0%	8%	2%	0%	0%	2%	-	-	0%	4%	0%
Other reason	54%	59%	42%	75%	18%	42%	56%	67%	17%	50%	-	-	71%	44%	62%

Color code means group is over 5% greater than Total

Color code means group is over 5% less than Total

Those who are less likely to explore the website tend to check their automatic sprinklers less frequently as well.

		Likely to take adv. of sprinkler program		Likely to explore Site			Interest in learning about water convservation			Automatic sprinkler system				Gender	
How often do you check your automatic sprinkler system for leaks and overspray?	Total	Ext/ SW likely	Ext/ SW unlikely	Ext/ SW likely	Neither likely nor unlikely	Ext/ SW unlikely	Ext/ SW interest	Neither interest nor uninterest	Ext/ SW uninterest	Yes; entire lawn	Yes; front yard only	Yes; back yard only	No	Male	Female
Weekly	32%	31%	35%	30%	26%	24%	34%	18%	27%	31%	30%	56%	-	37%	28%
Monthly	28%	28%	27%	28%	29%	19%	28%	29%	14%	30%	11%	11%	-	30%	26%
At the beginning of the season	39%	41%	35%	41%	45%	49%	37%	50%	50%	38%	49%	33%	-	31%	45%
Never	2%	1%	3%	2%	0%	8%	1%	3%	9%	1%	11%	0%	-	2%	2%

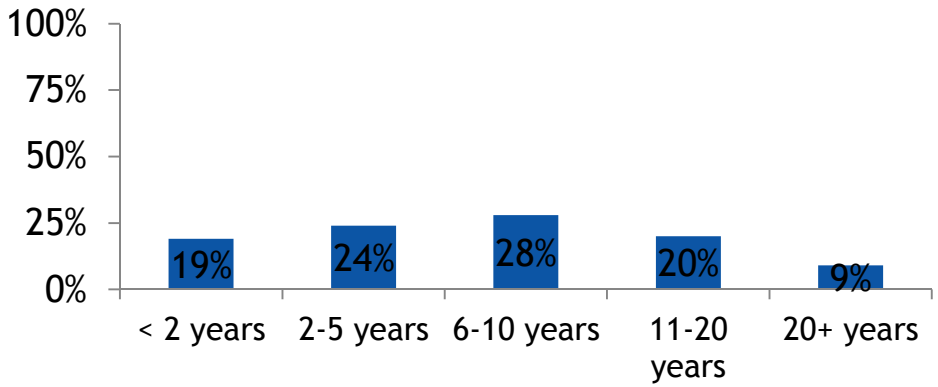
Color code means group is over 5% greater than Total

Color code means group is over 5% less than Total

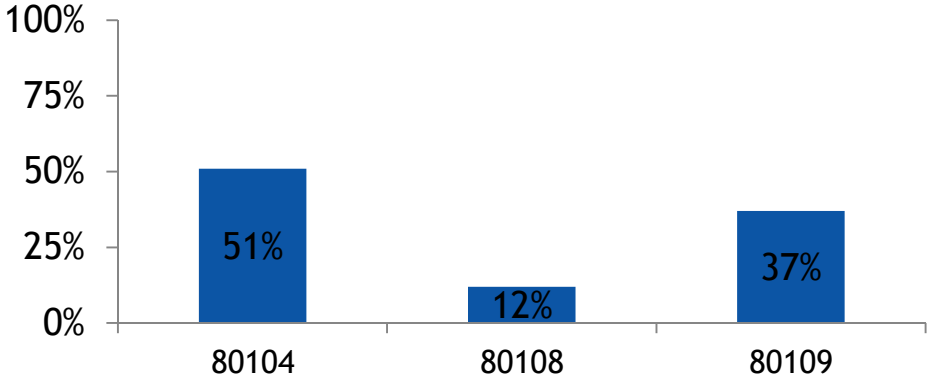
Appendix - Demographics

Demographics

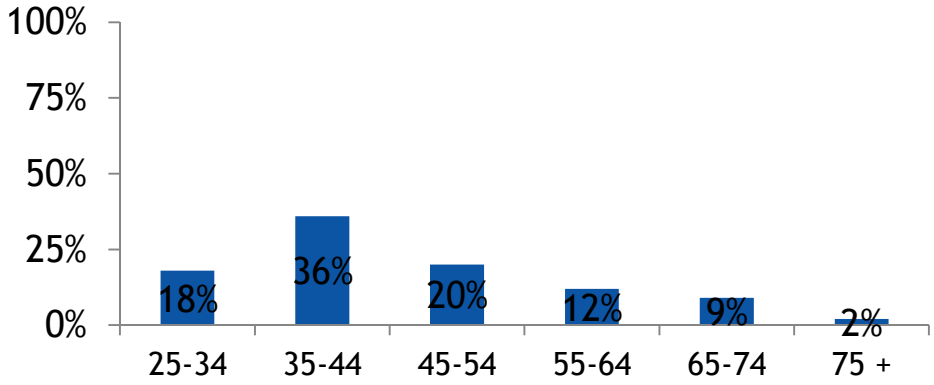
How long have you lived in the Town of Castle Rock?



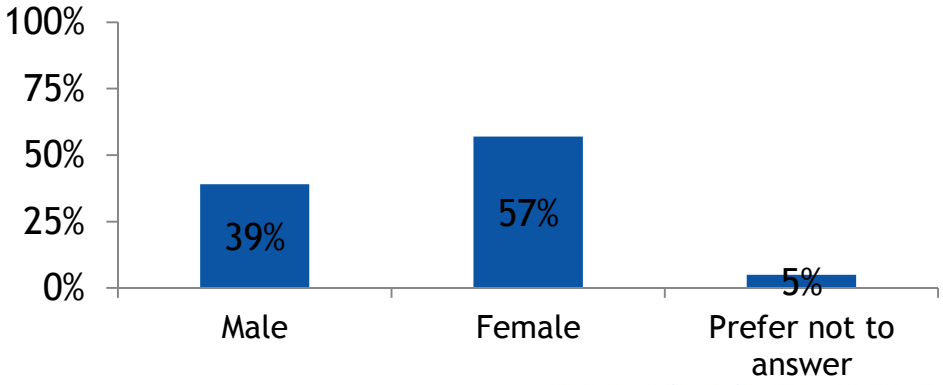
In what zip code do you currently live?



What is your current age?



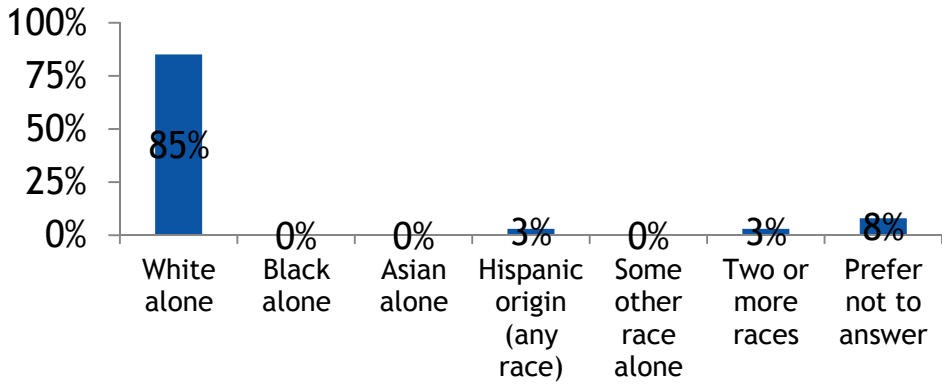
What is your gender?



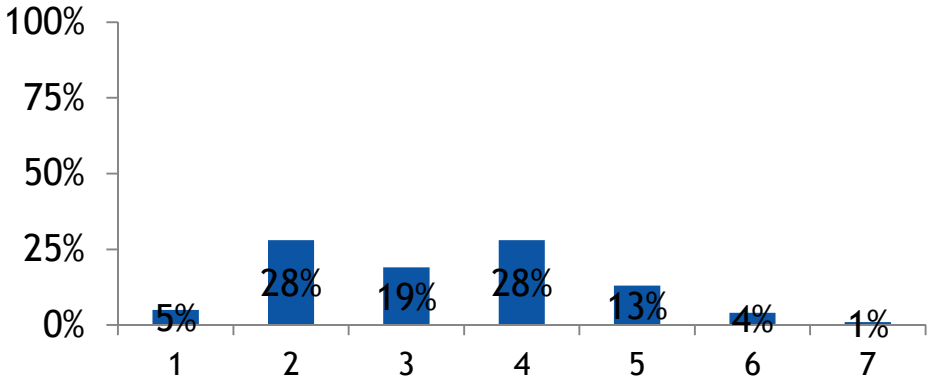
CONNECT INSIGHTS

Demographics

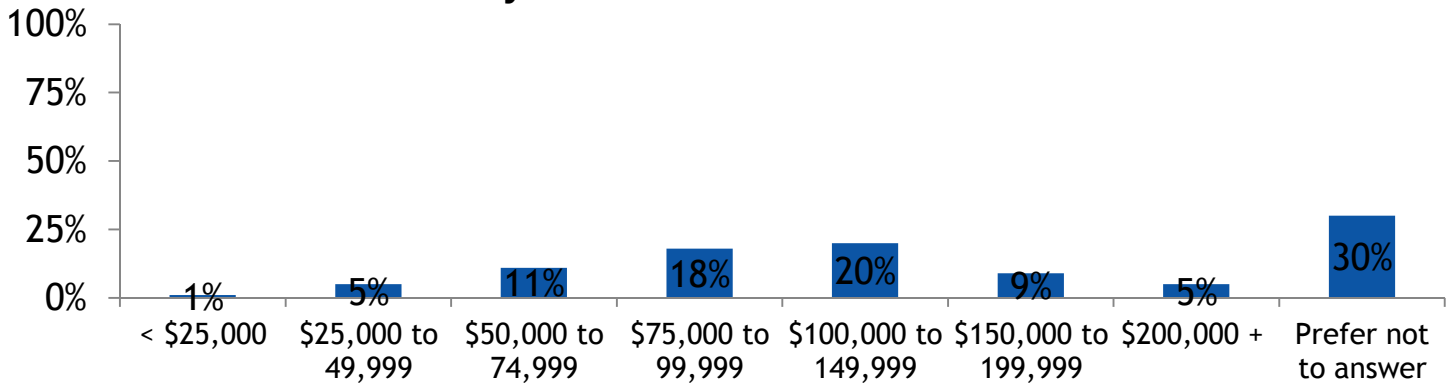
What is your ethnic background?



How many people live in your current household full time?



What is your household's annual income?



CONNECT INSIGHTS