WATER AND SEWER BOARD REGULAR MEETING

November 13, 2024 - 6:30 AM

1st Floor Conference Room, 301 Walnut Street, Windsor, CO 80550

AGENDA

A. CALL TO ORDER

1. Roll Call
2. Review of Agenda by the Board and Addition of Items of New Business to the Agenda for Consideration
3. Public Invited to be Heard

B. BOARD ACTION

1. Approval of October 23, 2024 Water and Sewer Board Minutes, K. Haley
2. Water Efficency Plan Update Public Comment Period

   Water Efficiency Plan Update

C. COMMUNICATIONS

1. Water Resource Update
2. Town Board Update

D. ADJOURN

The Town of Windsor will make reasonable accommodations for access to Town services, programs, and activities and will make special communication arrangements for persons with disabilities. Please call (970) 674-2400 by noon on the Thursday prior to the meeting to make arrangements.

MEMORANDUM

Date: November 13, 2024
To: Water and Sewer Board Members
From: Katrina Haley, Administrative Analyst
Re: Approval of October 23, 2024 Water and Sewer Board Regular Meeting Minutes - K. Haley
Item #: B.1.

Background / Discussion:

Financial Impact:

Relationship to Strategic Plan:

Recommendation:

CC:

Attachments:
1. 10.23.24 Water & Sewer Board Regular Meeting Minutes - DRAFT

Water and Sewer Board Regular Meeting

October 23, 2024 - 6:30 AM
1st Floor Conference Room,
301 Walnut Street, Windsor, CO 80550

MINUTES

A. CALL TO ORDER

CHAIRPERSON GREG BIELAWSKI CALLED THE MEETING TO ORDER AT 6:30 AM.

1. Roll Call

Present:	Greg Bielawski, Chairperson Janene Willey, Secretary Milt Tokunaga Gale McGaha Miller Milton Geiger Darell Zimbelman Alan MacGregor, Alternate
Absent:	Carlos Medina, Vice Chairperson Alan Overton, Alternate
Also Present:	Rick Klimek, Town Board Liaison Shane Hale, Town Manager Eric Lucas, Deputy Town Manager Jessica Humphries, Information Services Director Dean Moyer, Director of Finance Karl Gannon, Budget Analyst Leif Lesoing, Water Resource Administrator Katrina Haley, Administrative Analyst

2. Review of Agenda by the Board and Addition of Items of New Business to the Agenda for Consideration

   The Board took a moment to review the October 23, 2024 Water and Sewer Board Regular Meeting Agenda. No modifications to the Agenda were requested.

3. Public Invited to be Heard

   No public in attendance.

B. BOARD ACTION

1. Approval of the 09.11.2024 Water and Sewer Board Minutes; K. Haley

   The Board took a moment to review the draft September 11, 2024 Water and Sewer Board Regular Meeting Minutes. No modifications to the Minutes were requested.

   Water and Sewer Board Member McGaha Miller Moved to Approve the Review and Approval of the September 11, 2024 Water and Sewer Board Regular Meeting Minutes, Water and Sewer Board Member Bielawski Seconded the Motion. Roll Call on the Vote Resulted as Follows; Yeas - Gregory Bielawski, Janene Willey, Darell Zimbelman, Gale McGaha Miller, Milt Tokunaga, Milton Geiger; Nays - None; Motion Passed.

2. 2025 Water, Sewer, and Stormwater Rates; J. Humphries, Information Services Director

   Information Services Director J. Humphries, with the assistance of Budget Analyst K. Gannon, as well as Kyle Stephens and Logan Standard, of consulting firm, Stantec, presented information regarding the 2025 Rate Study Update and the proposed Utility Rate Model. Data regarding the annual analysis conducted and the resulting Utility Rate Model proposals was presented in the format of four categories; Water Fund, Sewer Fund, Storm Drainage Fund, and Plant Investment Fees.

   Throughout the presentation by Stantec and Town staff, Chairperson G. Bielawski and Board members took time to discuss various aspects of the presentation, including, but not limited to; factors impacting rate changes, status of existing utility infrastructure and proposed Capital Improvement Projects (CIPs), the status of Town Water, Sewer, and Storm Drainage Funds, navigating growth in Windsor, Windsor's involvement in the Northern Integrated Supply Project (NISP), current and future treatment capacity needs, Windsor's storm drainage system, consumption data, and Windsor’s water efficiency efforts.

   Please reference pages 6-36 of the October 23, 2024 Water and Sewer Board Regular Meeting Packet for a copy of the 2025 Rate Study Update presentation for further details regarding proposed rate changes.

   Water and Sewer Board Member McGaha Miller moved to Forward a Recommendation of Approval to the Town Board Regarding the 2025 Utility Rate Model, as Presented, Water and Sewer Board Gieger seconded the motion. Roll call on the vote resulted as follows; Yeas - Gregory Bielawski, Janene Willey, Darell Zimbelman, Gale McGaha Miller, Milt Tokunaga, Milton Geiger; Nays - None; Motion Passed.

C. COMMUNICATIONS

1. 2025 Budgets Water, Sewer, Stormwater; K. Gannon, Budget Analyst

   Budget Analyst, K. Gannon led a review and discussion of the 2025 Budget for Water, Sewer, and Stormwater Funds. Various aspects of the 2025 Budget were discussed, as well as data from years prior. Topics included operational costs, existing and projected fund balances, growth projections, CIP projects, water treatment costs, and staffing changes.

D. ADJOURN

Water And Sewer Board Member Tokunaga Moved to Adjourn, Water And Sewer Board Member Zimbelman Seconded the Motion. Roll Call on the Vote Resulted as Follows; Yeas - Gregory Bielawski, Janene Willey, Darell Zimbelman, Gale McGaha Miller, Milt Tokunaga, Milton Geiger; Nays - None; Motion Passed.

UPON A MOTION DULY MADE, THE MEETING WAS ADJOURNED BY CHAIRPERSON G. BIELAWSKI AT 08:30 AM.

_____

Katrina Haley
Administrative Analyst

MEMORANDUM

Date: November 13, 2024
To: Water and Sewer Board Members
From: Leif Lesoing, Water Resource Admin
Re: Water Efficency Plan Update Public Comment Period
Item #: B.2.

Background / Discussion:
This is the update to the Town's Water Efficiency Plan. The public has 60 days to comment on the Plan and staff would like to open up that process. This will go to Town Board in December.

Financial Impact:

Relationship to Strategic Plan:

Recommendation:
Recommend Public Comment Period to Town Board

CC:

Attachments:
1. Windsor 2024 WEP Update Draft 11-8-2024

TOWN OF WINDSOR

2024 MUNICIPAL WATER EFFICIENCY PLAN UPDATE

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EXECUTIVE SUMMARY

The Town of Windsor, Colorado, (Town *or* Windsor) is a growing Northern Colorado community located a little over 50 miles north of Denver. The town limits of Windsor cover an area of approximately 27 square miles. The footprint of Windsor's Water Service Area, however, is a slightly different area as shown in **Figure 1, Section 1.0**. In 2023, the Town provided water to approximately 25,002 people. Future resident population for the Water Service Area is estimated to grow to 56,210 by the year 2033.

Windsor has developed a Municipal Water Efficiency Plan (Plan) update in accordance with the Water Conservation Act of 2004 and to meet the provisions of Colorado Revised Statute section 37-60-126. As part of CRS 37-60-126, a State-approved Plan will qualify Windsor for funding from the Colorado Water Conservation Board (CWCB) and the Colorado Water Resources and Power Development Authority for water supply and delivery projects.

The Town primarily receives its treated water from Fort Collins-Loveland Water District (FCLWD), North Weld County Water District (NWCWD), and the City of Greeley (Greeley). Windsor is responsible for acquiring its own raw water supplies, which it transfers to the water suppliers on an annual basis for treatment and delivery. For the water supplies that are transferred, the Town owns units of water of the Colorado-Big Thompson (C-BT) Project and shares in the North Poudre Irrigation Company. The treated water that Windsor receives at the master meters from FCLWD, NWCWD, and Greeley is then distributed to the Town's customers through over 125 miles of pipelines. Windsor also owns shares in several ditch companies which the Town uses for non-potable irrigation of several of the Town parks and open spaces. The irrigation system is separate from the treated water system.

In 2023, Windsor's customers utilized approximately 2,208 acre-feet (AF) of treated water. The Town is expected to increase its annual water demand through new growth to approximately 3,565 AF of treated water over the planning period which extends to 2033. Water savings from this water conservation planning effort is estimated to save a possible 5,890 AF over the planning period. The savings from this planning effort will make a considerable contribution toward the water supplies needed to serve the 2033 demand.

This report documents Town's water system, past and future water use, and the water efficiency planning process used in accordance with CWCB's Municipal Water Efficiency Plan Guidance Document.

Past and Current Water Efficiency Activities

Windsor has implemented a variety of water efficiency activities since 2003, The water efficiency activities that have been historically implemented are shown in **Table ES-1**.

Table ES-1: Windsor's Existing and On-going Water Efficiency Activities

Selected Water Efficiency Activities	Approximate Date of Implementation [a]
Foundational Activities	
Water Efficient Rate Structure/Water Budgets with Regular Updates	*2015*
Automatic Water Meter Reading Installation and Operations	*Unknown*
Control of Apparent Losses (with Metering)	*2015*
Meter Testing and Replacement	*2009*
Meter Upgrades [b]	*2009*
Frequency of Meter Reading [c]	*2007*
Tracking Water Use by Customer Type [c]	*2007*
Volumetric Billing [c]	*2007*
Water Rate Adjustments [c]	*2007*
Frequency of Billing [c]	*2007*
Inclining/Tiered Rates [d]	*2003*
System Wide Water Audits	*2008*
Upgrade Billing System to Track Use by Sufficient Customer Types	*2007*
Leak Detection and Repair [d]	*2003*
Water Line Replacement Program	*Unknown*
Integrated Water Resources Plans [c]	*2007*
Master Plans/Water Supply Plans	*2008*
Capital Improvement Plans	*2007*
Parks and Open Space Meters	*2008*
Targeted Technical Assistance and Incentives	
High Efficiency Clothes Washer Rebate	*2015*
Rebate for Evapotranspiration (ET) Irrigation System Controllers	*2022*
Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program	*2015*
Pre-Rinse Spray Valve Upgrades, Commercial Rebates/Retrofits	*2015*
Indoor Residential Water Audits	*2015*
Residential Irrigation Audits	*2015*
Landscape Water Budget Info. And Customer Feedback	*2022*
Indoor Audits [e]	*Unknown*
Xeriscape [d]	*2003*
Turf Replacement Programs	*2024*
Parks and Open Space Rain and ET Sensors	*2009*

Selected Water Efficiency Activities *(cont.)*	Approximate Date of Implementation [a]
Targeted Technical Assistance and Incentives *(cont.)*	
Give-aways	*2013*
Ordinances and Regulations	
Town Facility Requirements	*2015*
Landscape Design Ordinances and Restrictions	*2015*
Water Waste Ordinance [d]	*2003*
Time of Day Watering Restriction	*2007*
Education Activities	
Combined Educational Activities (Bill Stuffers, Newsletters, Newspaper Articles, Mass Mailings, Website, Social Networking, Message Development) [d]	*2003*
K-12 Teacher and Classroom Education Programs [d]	*2003*
Interactive Websites	*2013*
Citizen Advisory Boards	*1978*
Landscape Design (Xeriscape) and Maintenance Classes	*2015*
Xeriscape Demonstration Garden [d]	*2003*
Garden in a Box	*2015*
Water Conservation Expert Available	*2022*

[a] Implemented activities have continued through the present day unless otherwise noted.
[b] No additional upgrades since upgrading to Orion.
[c] These activities were mentioned in the 2008 WCP as already existing, so they were likely started prior to 2007 when the planning process began.
[d] Implemented as a result of the 2002 Drought
[e] Audits are currently conducted for Town facilities only.

Despite the resources available to estimate water savings, the savings of some activities, such as those that are highly dependent on human behavior (e.g. public education programs) are much more difficult to quantify and, in many cases, cannot be estimated with reasonable accuracy. Additionally, data was not collected for many activities. For the activities that we were unable to quantify, demand data was used to estimate savings. The water savings from the Town's efforts since the 2015 WEP are presented in **Table ES-2**. This table shows a savings over the projected overall water use as well as savings evident on a per tap basis. The Town has saved an average of over 18.75% on a per tap basis.

Related to the activities listed previously in **Table ES-1** and the savings evident in **Table ES-2**, **Figure ES-1** further illustrates an overall water efficiency trend. The population of Windsor has had a steady and high increase over the past 16 years of over six percent. Although the gallons per capita per day (GPCD) water usage has varied considerably year to year, the per capita usage has had a downward trend. Much of the variability in the water usage can easily be linked to the yearly fluctuations in temperature and precipitation. The downward trend in usage, however, is a clear indication of the water savings that has likely occurred because of the various water efficiency activities

incorporated by the Town. The total usage of water has experienced a much smaller increase (less than three percent) versus the overall six percent in population increase.

Table ES-2: Water Savings Estimates

Year	Estimated Total Number of Taps (2015 WEP)	Actual Number of Taps	Estimated Use (2015 WEP) (AF)	Actual Water Use (AF)	AF/Tap (from 2015 WEP)	Actual AF/Tap	% Savings per Tap
2015	5,884	5,857	2,205	1,995	0.37	0.34	9.08%
2016	6,031	6,639	2,260	2,390	0.37	0.36	3.93%
2017	6,182	6,964	2,317	2,400	0.37	0.34	8.04%
2018	6,337	7,318	2,375	2,144	0.37	0.29	21.8%
2019	6,495	7,901	2,434	2,127	0.37	0.27	28.2%
2020	6,657	8,419	2,495	2,443	0.37	0.29	22.6%
2021	6,824	9,049	2,557	2,502	0.37	0.28	26.2%
2022	6,994	9,533	2,621	2,495	0.37	0.26	30.2%
2023	7,169	9,692	2,687	2,209	0.37	0.23	39.2%
						Average	18.75%

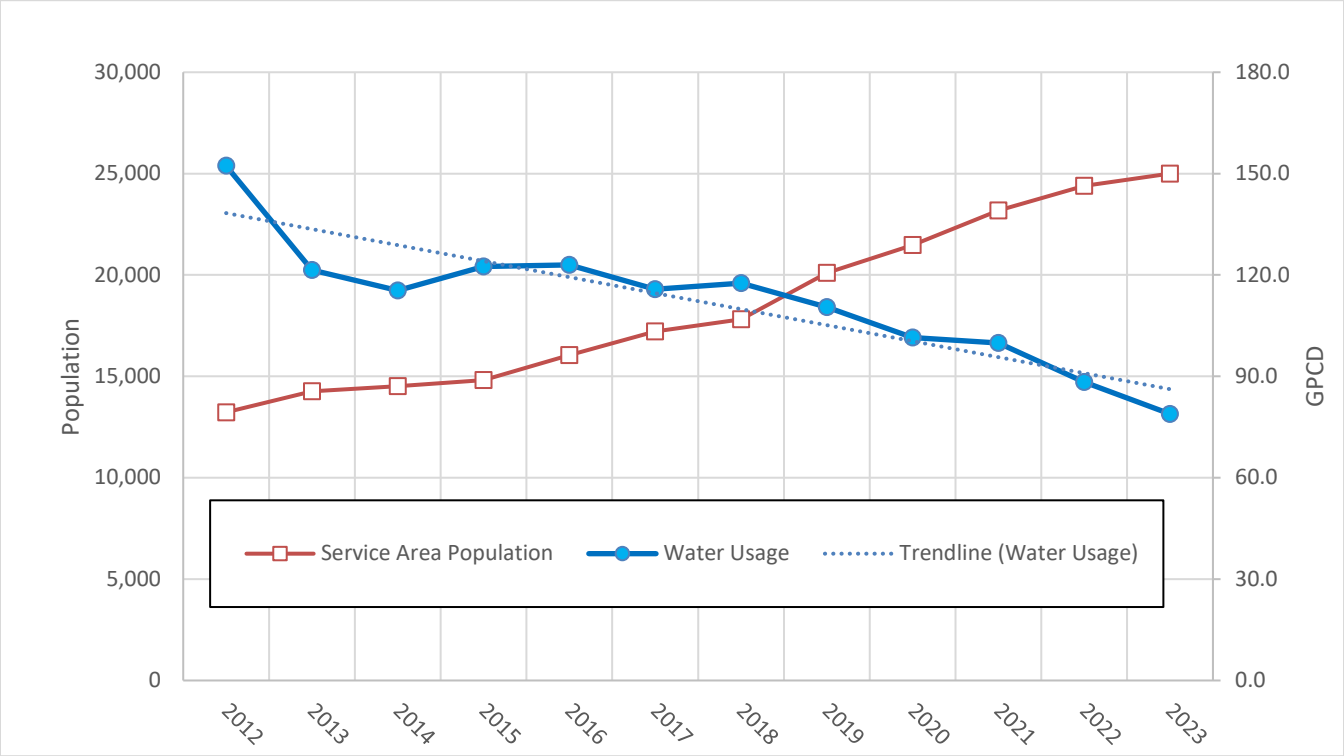

Figure ES-1: Per Capita Water Usage (GPCD) Compared with Population

A preliminary set of goals have been developed prior to the selection of the water efficiency activities to provide a means to screen and evaluate the selected activities. Goals from the Town's 2008 WCP were assessed and incorporated into the new goal development process.

A meeting was initially held with Town Staff to discuss water efficiency goals appropriate for Windsor. The following preliminary goals were established by Staff:

- In keeping with the savings goal established in Windsor's 2008 WCP, the targeted water savings goal for this Plan will be to lower the total per capita water use by 10% over the ten-year planning period.
- The targeted ten-year water reduction goals for the following customer categories were as follows:
    - In Town
        - Residential: 14.0%
        - Business: 5.0%
        - Industrial: 5.0%
        - School: 5.0%
        - Church: 5.0%
    - Out of Town
        - Residential: 12.0%
    - Dual System
        - Residential: 13.0%
        - Business: 5.0%
    - Landscape Only: 10.0%
    - Non-Revenue Water: 1.0%
- To develop a water efficiency program that can be implemented within Town staffing constraints and with Town Board approval.
- To implement water efficiency activities that are compatible with the community and their Town Board representatives.

The success of the stated goals will be measured through monitoring billing data, screening and evaluating activities that are acceptable to Town Staff and soliciting Town Board and community feedback on water efficiency activities.

Windsor used a four-phase process for selecting and fully evaluating water efficiency activities. The four phases included: 1) assessment; 2) identification; 3) qualitative screening; and 4) evaluation and selection.

The initial screening of the water efficiency activities with Town Staff resulted in selecting 28 candidate activities for further evaluation. Eliminated activities may be reevaluated with future planning efforts. Some of the activities were combined within their SWSI Levels Framework to assist in evaluation and avoid double counting savings. The second screening was accomplished by evaluating each activity based on the following criteria: Applicability to the Town of Windsor, Moderate to high potential

reduction of water use, and Town Board and Town resident support and acceptance. Of the 28 original activities evaluated, 27 of those activities were chosen for implementation. The Water Budgets activity was combined into a hybrid with Water Efficient Rate Structure with Regular Updates, and the following measure was eliminated in the second screening process:

- Give-Aways

The final 27 activities chosen are as follows:

- Meter Upgrades - Automatic Water Meter Reading Installation and Operations
- Meter Testing and Replacement Program/Meter Upgrades
- Water Efficient Rate Structure/ with Regular Updates
- Water Budgets
- Commercial Tap Fees with Water Use Efficiency Incentives
- System Wide Water Audits
- Control of Apparent Losses (with Metering)
- Leak Detection and Repair Program
- Water Line Replacement Program
- Master Plans/Water Supply Plans
- Indoor Residential Water Assessments
- Residential Appliance Retrofits/Rebates
- Residential Irrigation Assessments
- Commercial Water Efficiency Rebates
- Rebate for ET Irrigation System Controllers
- Turf Replacement Programs/Xeriscape Incentives
- Irrigation Improvements/Water Saving Technologies
- Water Waste Ordinance
- Time of Day Watering Restrictions
- Landscape Design Ordinances and Restrictions
- Outdoor Green Building Construction
- Town Facility Requirements
- General Educational Activities (Bill Stuffers, Newsletters, Newspaper Articles, Mass Mailings, Website (*water efficiency, interactive links, and other information*), and Social Networking
- Xeriscape Demonstration Garden
- Landscape Design (Xeriscape) and Maintenance Classes
- Customer Water Use Workshops
- Garden in a Box

Table ES-3 compares the anticipated water savings from the selected activities with the original goals and then adjusts the water savings goals for this Plan update. Over the ten-year planning period, the selected activities could potentially provide an overall water savings of 5,890 AF. The adjusted goals reflect what is believed to be obtainable by the Town's Staff. After the goals were adjusted to reflect the expected water

savings, the estimated water use reduction is 18.4%. Therefore, Windsor will target an overall reduction from their forecasted water use by 18.4% over the planning period because of implementation of this Plan.

Table ES-3: Water Efficiency Goals Comparison

Water Use Categories:	Total Projected Water Use (2015 to 2024) (AF)	Reduction Goals for Planning Horizon (%)	Reduction Goals for Planning Horizon (AF)	Adjusted Reduction Goals for Planning Horizon: Total Water Savings from Activities (AF)	Adjusted Reduction Goals for Planning Horizon: Resulting Reduction (%)
In Town Residential	10,430	14.0%	1,460	2,951	28.3%
In Town Business	2,071	5.0%	104	299	14.4%
In Town Industrial	2,618	5.0%	131	253	9.7%
In Town School	177	5.0%	9	23	12.8%
In Town Church	79	5.0%	4	10	13.1%
Out of Town Residential	55	12.0%	7	35	65.0%
Dual System Residential	8,787	13.0%	1142	1,681	19.1%
Dual System Business	533	5.0%	27	59	11.0%
Landscape Only	2,162	13.0%	281	401	18.5%
Non-Revenue Water	5,021	1.0%	50	179	15.2%
Total Water Supply:	31,933				
Total Demand Reduction:			3,214	5,890	
Total Percent Reduction:			10.1%		18.4%

Implementation and Monitoring Plan

The implementation plan defines the process necessary to carry out the selected water efficiency activities. Monitoring types of demand data can be beneficial in tracking the savings generated from implementing a water efficiency plan. Windsor monitors total treated water produced on a daily basis. Other categories of raw and treated water and customer accounts are monitored on a monthly and annual basis.

The demand data which will be collected during the monitoring period of the Plan is presented in **Table ES-4**. Leif Lesoing will be chiefly responsible for coordinating and delegating the implementation of this Plan. The Town also realizes that the most successful Plan is one that involves a team effort from many staff, other key personnel, and sometimes assistance outside of Town employees.

Table ES-4: Selection of Demand Data for Efficiency Plan Monitoring

Monitoring Data	HB 10-1051 Reporting Requirement					Selection			
	Annual	Monthly	Bi-Monthly	Daily		Annual	Monthly	Weekly	Daily
Total Water Use									
Total treated water supplied (metered at wholesale suppliers master meters)						X	X	X	X
Total treated water delivered (sum of customer meters)	√					X	X		
Raw non-potable deliveries (Parks and Open Space)						X	X		
Reclaimed water produced									
Reclaimed water delivered									
Per capita water use						X			
Indoor and outdoor treated water deliveries						X			
Treated water peak day produced									
Reclaimed water peak day produced									
Raw water peak day produced/delivered									
Non-revenue water	√					X			
Water Use by Customer Type									
Treated water delivered		√				X	X		
Raw non-potable deliveries (Parks and Open Space)						X	X		
Reclaimed water delivered									
Residential per capita water use						X			
Unit water use (e.g. AF/account or AF/irrigated acre)						X			
Indoor and outdoor treated water deliveries						X			
Large users						X	X		
Other Accounting for Substitute Water Supply Plans						X	X	X	
Other Demand Related Data									
Irrigated landscape (e.g. AF/acre or number of irrigated acres)						X			
Precipitation						X	X		
Temperature						X	X		
Evapotranspiration						X	X		
Drought index information						X			
Economic conditions						X			
Population						X	X		
New taps						X	X		

INTRODUCTION

The Town of Windsor ("Town" or "Windsor") is a growing Northern Colorado community located a little over 50 miles north of Denver. The Town is surrounded by the larger communities of Fort Collins to the west, Loveland to the southwest, and Greeley to the southeast. Windsor was founded in 1882 and incorporated in 1890. Windsor's roots are in agriculture, but in the 1950s its economy began to expand into manufacturing and other sectors as well. With the high growth along the northern Front Range, Windsor has grown in its economic diversity as well as providing a stable community for people working within Town limits and in the surrounding municipalities.

Windsor has an active community and Town Board that is highly vested in providing an exciting, healthy, and family-oriented lifestyle. Windsor adopted a new Strategic Plan in 2024 which emphasizes responsible and purposeful growth that enhances residential, commercial, and recreational diversity, with an emphasis on sustainability. A primary goal of this plan is to "provide a safe and reliable water supply for the community". This water efficiency plan aims to support Windsor in this goal.

The town limits of Windsor cover an area of approximately 27 square miles. The footprint of Windsor's Water Service Area, however, is a slightly different area as shown in **Figure 1**, Section 1.0. The Town receives its treated water from four water providers, Fort Collins-Loveland Water District (FCLWD), North Weld County Water District (NWCWD) and the City of Greeley. Windsor is responsible for acquiring its own raw water supplies, which it transfers to the water suppliers on an annual basis for treatment and delivery.

A portion of Windsor's residents within the Town's current boundary and future growth area is not served by the Town of Windsor Water Division. Residents in Larimer County are served by FCLWD, and residents in parts of the northern Town boundary and future growth area are served by NWCWD.

Windsor is committed to optimizing its water supplies and system through practical water conservation practices. The benefits may include delaying the purchase of costly water supplies and infrastructure upgrades and reducing wastewater flows and treatment. The purpose of this Water Efficiency Plan Update is to build on the 2015 Water Efficiency Plan and continue guiding Windsor in the process of water efficiency planning and implementation. The planning horizon for this plan is ten years, from 2024 to 2033.

Windsor has made a number of efforts in the last 15 years to improve their water use efficiency and has implemented a number of programs throughout that time. A Water Conservation Plan (2008 WCP) was completed in May 2009 and

an update to this plan was completed in May 2016 (2015 WEP). The 2008 WCP outlined several water efficiency activities that were implemented as early as 2003 (several years prior to the 2008 WCP) and have continued ever since. The 2015 WEP identified 22 additional water efficiency activities for implementation, such as indoor/outdoor residential water audits and improved water leak detection and repair.

In efforts to be as proactive as possible, Windsor has also completed other water related plans including a Water Rate Study in 2011, a Non-Potable Water Master Plan in 2010, and a Potable Water Master Plan in 2009. Each of these plans, in conjunction with each other and the current Plan, have helped and will continue to assist the Town to supply its residents and businesses with water at a reasonable value.

In this Plan update, the Town of Windsor will perform the five steps of municipal water efficiency planning as outlined in the Municipal Water Efficiency Plan Guidance Document (Guidance Document); 1) profile of existing water supply system, 2) profile of water demands and historical demand management, 3) integrated planning and water efficiency benefits and goals, 4) selection of water efficiency activities, and 5) implementation and monitoring plan. The Town has made many proactive conservation efforts to date and will continue this commitment into the future.

Several documents were reviewed and utilized to develop this Municipal Water Efficiency Plan (MWEP or Plan) update. The Colorado Water Conservation Board (CWCB) *Municipal Water Efficiency Plan Guidance Document* was used as a guide to develop this plan. The 2008 WCP, 2009 Potable Water Master Plan, 2010 Non-Potable Water Master Plan, 2011 Water Rate Study, 2015 WEP, and the 2024 Town of Windsor Comprehensive Plan were used for comparisons to previous goals, past and current implementations, and future projections. Windsor's website and Facebook pages were also used for additional information to help in this planning effort. There are many acronyms, terms, and terminology that are commonly used in water efficiency and water planning, and some additional terms are common in this geographical area; a list of terms and their meanings is included in **Appendix A**.

SECTION 1.0 – PROFILE OF EXISTING WATER SUPPLY SYSTEM

1.1 Overview of Existing Water Supply System

Service Area

Although the Town's western boundaries extend into Larimer County, Windsor's potable Water Service Area is located entirely within Weld County as shown in **Figure 1**. The northernmost boundary of the service area is Weld County Road (WCR) 74; the westernmost boundary is the Larimer-Weld County Line Road (also known as Colorado Boulevard or WCR 13); the southernmost boundary is Highway 34; and the easternmost boundary is approximately halfway between County Roads 23 and 25. The service area covers approximately 28.9 square miles.

The population that is served by the Town's water supply is estimated to be smaller than the Town's population. The water service population is estimated at 25,627 for 2024; the Town's overall population is estimated at 45,009 for the same year. The Town considers building permits issued when estimating population, which can be higher than U.S. Census Bureau numbers. Both methods provide a good description of population trends for the Town, and the number of building permits issued gives an indication of near future growth. The historical population from 2019 – 2024 of the Town and its Water Service Area are presented in **Table 1**.

Table 1: Town and Water Service Population (2019 – 2024)

Year	Population	Change in Population	Population Growth	Water Service Area Population
2019	34,214	2,495	8%	20,102
2020	36,697	2,483	7%	21,479
2021	40,350	3,653	10%	23,177
2022	42,840	2,490	6%	24,392
2023[1]	43,911	1,071	2%	25,002
2024 [1]	45,009	1,098	2%	25,627

[1] Estimates at the time of Plan research

Some of the Town residents in the northern reaches receive their water supply directly from NWCWD. All residents west of the Larimer-Weld County Line (WCR 13) receive their supply directly from FCLWD. Approximately 43% of the population of Windsor receives their water supply directly from one of these other water providers. These residents are not included in any past or future water use represented in this report. The Town hopes to partner with NWCWD and FCLWD

for potential water efficiency activities even though these partnerships would not directly affect Windsor's water savings.

Water Supply

Windsor is a wholesale purchaser of potable water. Currently, the Town does not operate a water treatment plant. Instead, Windsor uses its raw water rights to supply water to potable water providers that handle treatment and delivery. As mentioned previously, the Town works with three potable water providers: FCLWD, NWCWD, and the City of Greeley. Long-term contracts with these providers establish the terms of service including amount, duration, and payment. A surcharge of water is required in addition to the projected use for each year to cover losses from treatment and delivery to Windsor. **Table 2** shows the contracted flow from each water supplier.

Currently, Windsor does not supply reclaimed water. The dual systems within the Town obtain the non-potable water from a different provider. Additional details about non-potable water will be covered in Section 1.2 of the report.

Table 2: Contracted Flow from Suppliers

Name of Supplier	Annual Contracted Flow (Million Gallons per Year)
FCLWD	110
NWCWD	503
Greeley	379

** 10-year interim supply agreement*

Key Existing Facilities

Windsor has two treated-water storage tanks with a total capacity of five million gallons (MG) and a booster pump station that delivers water to elevations above that which can be delivered by gravity. The existing water storage tanks provide water for fire protection, daily operating levels, and emergency water storage. In early 2007, construction of the water booster pump station was completed. The station is located immediately adjacent to Windsor's existing water storage tanks. The pump station is necessary to supply water to future development above elevations of 4,940 feet. The treated water flows by gravity or pump stations from the master meter connections or storage tanks through over 125 miles of pipelines ranging in diameter from two inches to 30 inches. Recently, Windsor has added a new interconnect with Fort Collins-Loveland Water District, and a new reservoir (Kyger Reservoir) to store additional non-potable water supply.

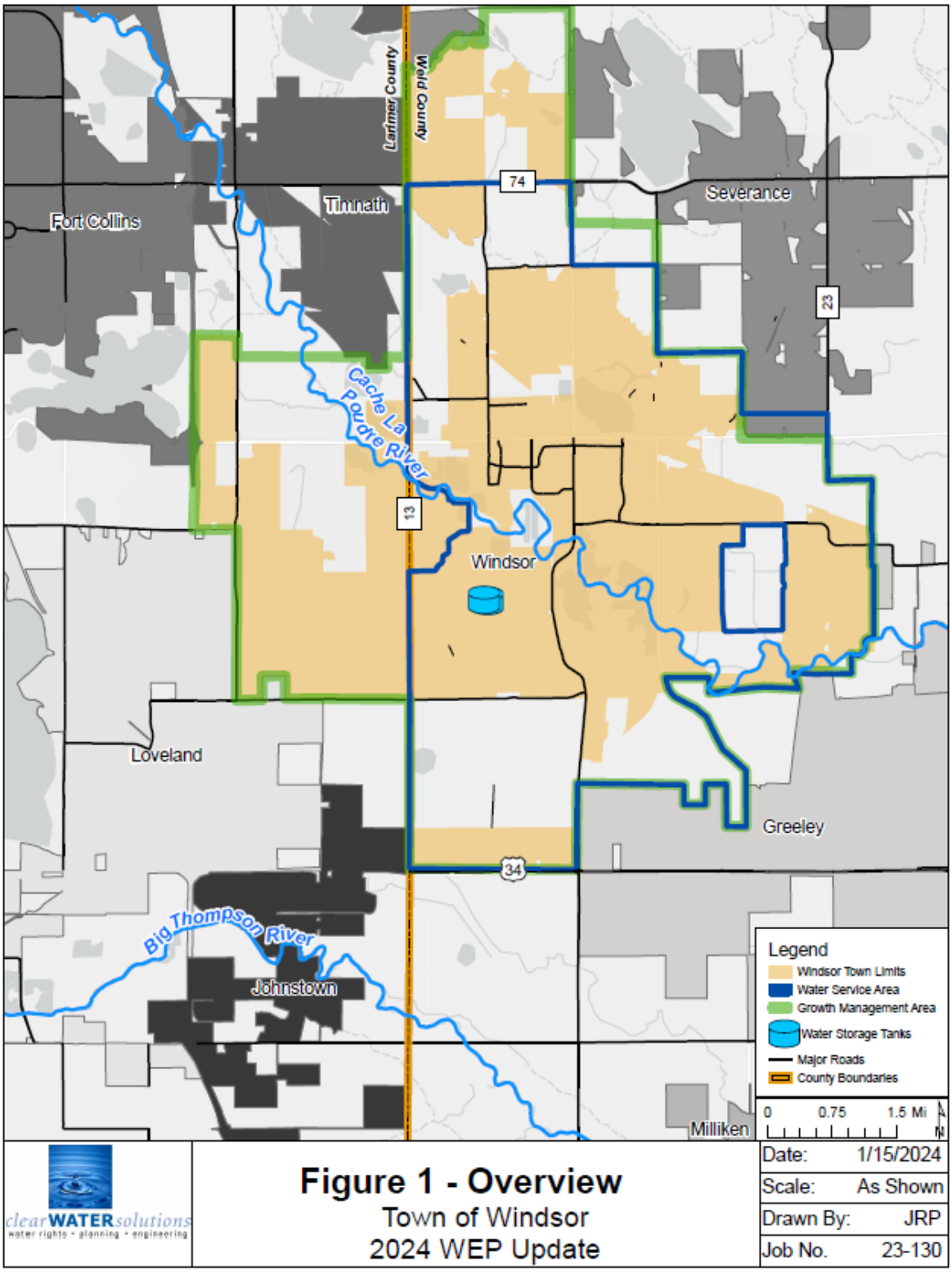

Figure 1: Windsor Service Area

1.2 Water Supply Reliability

Water supply reliability is the ability of the Town's water supplies to meet the needs of its customers during times of stress. The Town of Windsor is in the South Platte River Basin where the 2019 Technical Update to the Colorado Water Plan (2019 Technical Update) identified a maximum 43% gap between water needs and water supplies for the Basin's municipal and industrial sector by 2050. The 2019 Technical Update highlighted improved water efficiency as a critical component necessary to meet this gap.

Colorado-Big Thompson Project

CBT units are considered a reliable water supply even during drought periods. The CBT Project supplies on average over 212,000 acre-feet of water to CBT Allottees located within the Northern Water District boundaries along the Front Range in northern Colorado. Northern Water manages the system, which is comprised of 12 reservoirs, 35 miles of tunnels, 95 miles of canals, six hydroelectric power plants, and 700 miles of transmission lines. Most of the water supply is snowmelt from Colorado's high elevation Rocky Mountains, which is captured in storage reservoirs on the west side of the Continental Divide and subsequently pumped through the Adams Tunnel under the Continental Divide to provide a supplemental supply to farmers, municipalities, and industries on the east side of the Continental Divide.

The system has approximately 740,000 acre-feet of gross storage and consists of 310,000 units. CBT was designed to deliver up to 310,000 acre-feet in any particular year. Northern Water's Board sets an annual quota of water to supplement the water supplies provided by watersheds on the east slope. The quota typically ranges between 50% and 100%. A 70% quota equates to 0.7 acre-feet per CBT unit. A 100% quota provides for the annual delivery of 310,000 acre-feet. Given that CBT has approximately 2.3 times the storage needed to deliver a 100% quota means that CBT is able to allocate sufficient water to protect against multi-year droughts. Northern Water's Board sets an initial quote in November for the following water year, November 1 through October 31. A supplement quota is usually set in April and sometimes again in June if projected water supplies are sufficient to justify an additional water allocation. **Figure 2** summarizes the annual quota established by the Northern Water Board from 1957-2023.

In over fifty years of operation, the average yield has been 0.73 acre-feet per CBT unit. A 70% quota is considered the average quota for the CBT system. The yield has never been less than 0.50 acre-feet per unit (50% quota) or more than 1.0 acre-feet per unit (100% quota). The years 2002 and 2003 were an exception when for the first time in the system's history the quota was set partly based on limited supply. The quota was initially set at 30%, but supplemental quotas increased the yield to 0.5 acre-feet per CBT unit for that water year.

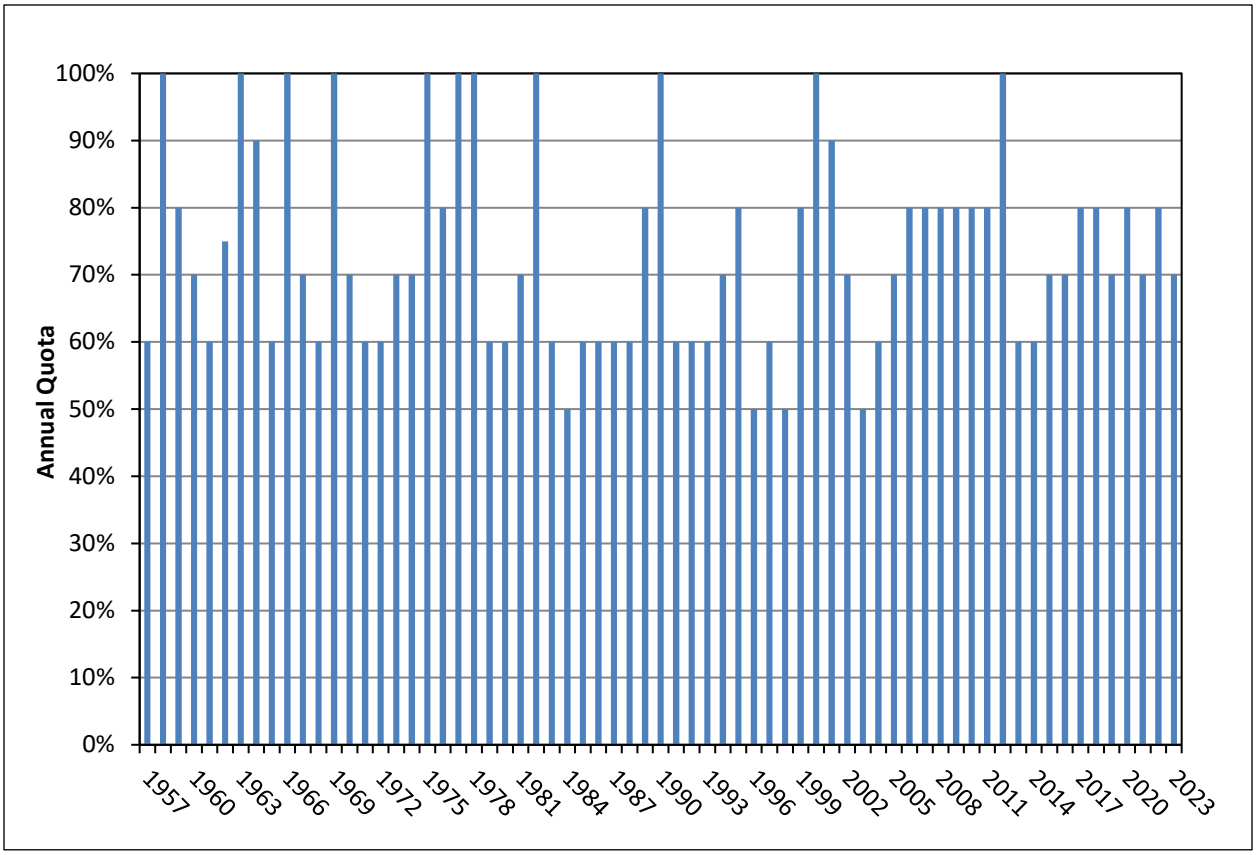

Figure 2: Historical CBT Quota (1957-2023)

Northern Water has a defined Annual Carryover Program for CBT Allottees, which allows CBT owners to carry over a portion of their unused CBT quota from the previous year to the following year. Although there is a cost associated with the carryover, the program provides some insurance against a drought for those Allottees that choose to participate.

Per Northern Water's Annual Carryover Program Procedures,

> *The Board and District staff will review the advantages and consequences of the Annual Carryover Program on a continuing basis. While the Board recognizes the Program's benefit to many CBT Allottees, it may modify or discontinue the Annual Carryover Program at any time.*

Non-Potable Supply

Native Water Supplies - The Town owns agricultural water rights that divert water from the Cache la Poudre River. These include shares in the following ditch companies: North Poudre Irrigation Company (NPIC), B.H. Eaton Ditch Company, Whitney Ditch Company, Fossil Creek Reservoir, New Cache la Poudre Irrigation Company, Cache la Poudre Reservoir Company and Louden Ditch Company. These water rights are decreed for augmentation and agricultural uses and are used to irrigate or augment irrigation of the Town's parks and open spaces. The NPIC native portion cannot be physically delivered to Windsor and is therefore always rented back to shareholders within that system.

North Poudre Irrigation Company - NPIC owns 40,000 C-BT units, so its shares include a C-BT portion and a native agricultural portion. The C-BT water is delivered equally among the 10,000 shares within the NPIC system for agricultural, municipal, and industrial use. Delivery of the C-BT portion can be taken anywhere that C-BT units can be delivered, so an entity outside of the NPIC service area can own NPIC shares and lease the native portion back to shareholders in the service area. As shown in **Table 3**, Windsor owns 533.75 shares of NPIC that equate to 1,281.0 AF able to be utilized for potable uses.

Reservoir Storage - Kern Reservoir (also known as Windsor Lake) is located within the municipal limits of the Town of Windsor. As Windsor has grown in recent decades, they acquired all 100 shares in the Kern Reservoir & Ditch Company (KRDC). The Town has completed the change of use court process for all 100 shares to include well augmentation and other municipal uses.

Windsor plans to continue to use KRDC as well as Windsor's Kyger Reservoir to augment depletions associated with their irrigation wells and to provide augmentation water needed to fulfill long-term lease agreements. In addition, Windsor will continue to use KRDC water directly for irrigation at additional public facilities and for municipal and recreation uses.

Table 3: Windsor's Current Water Supply Firm Yield

Water Source	Shares or Units	Average Yield per Share	Firm Yield per Share	Total Average Supply	Total Firm Supply	Notes
		(AF)	(AF)	(AF)	(AF)	
Potable Sources						
Colorado-Big Thompson Project - Fixed Quota	2,101.0	0.7	0.7	1,470.7	1,470.7	
Colorado-Big Thompson Project - Variable Quota	1,568.0	0.7	0.5	1,097.6	784.0	
North Poudre Irrigation Company (NPIC)	533.75	2.4	1.0	1,281.0	533.75	
Non-Potable Sources						
B.H. Eaton Ditch Company	2.0	26		52.0		
Whitney Ditch Company	2.0	33		66.0		
Alluvial Wells				190.0		According to permitted pumping rate
Agricultural component of NPIC	350.5	1.0		350.5		Not available for use; rented to shareholders

Water Source	Shares or Units	Average Yield per Share	Firm Yield per Share	Total Average Supply	Total Firm Supply	Notes
		(AF)	(AF)	(AF)	(AF)	
Non-Potable Sources						
Kern Reservoir & Ditch Company	100.0			450.0		
Louden Irrigating Canal & Reservoir Company [1]	13	9.03		117.4		
New Cache La Poudre Irrigating Company [1]	42.25	6.64		280.5		
Cache La Poudre Reservoir Company [1]	27.5	1.29		35.5		
Fossil Creek Reservoir	1.0	8.5		8.5		
Greeley Loveland Irrigation Company - Direct	34.25	7.1		243.2		
Greeley Loveland Irrigation Company - Boyd	34.25	14.5		496.6		
Lake Loveland Rights	9.75	35.6		347.1		
Seven Lakes shares	1.5	19.2		28.8		
Totals						
Total Available for Treated Use				3,488.7	2,638.2	
Total Available for Non-Potable Use				2,666.1		

[1] Values for "Average Yield per Share" and "Total Average Supply" are estimates only based on Historical Consumptive Use and do not necessarily represent decreed amounts.

Other Factors that Potentially Impact Water Supply

The C-BT supplies are stored in Lake Granby on the Western Slope of Colorado. Should a fire ever occur in that area, water quality would be a major issue for Windsor and other C-BT Allottees. There is a tremendous amount of beetle kill to trees surrounding Lake Granby, Grand Lake, and other C-BT Reservoirs. This beetle kill poses a potential increased risk of fire. Windsor would be vulnerable to FCLWD's, NWCWD's, and Greeley's abilities to treat large quantities of water degraded from ash and soot runoff. This has been an ongoing issue for other water treatment facilities when fire has been present in a basin used for raw water supply. In addition, East Slope C-BT storage, once segregated from the system to avoid contamination, is not enough storage to meet demands, particularly in a drought.

Windsor's water supplies would also be vulnerable in an extended drought. The Town currently maximizes its carryover each year through Northern Water, but a multi-year drought would likely decrease or eliminate Windsor's carryover account. Over a decade ago, Colorado experienced one of its severest water shortages on record during the Drought of 2002. Windsor's implemented a drought contingency plan during 2002, and they were able continue to provide adequate water for its residents. More recently, Colorado experienced another drought that stretched from 2012 through August of

2013; fortunately, no drought contingency plan was needed during this second recent shortage, and again, Windsor was able to deliver sufficient water for its residents. With the completion of a Drought Management Plan in 2019, Windsor has further solidified its drought mitigation and response strategies and is prepared for any future water shortages.

1.3 Supply-Side Limitations and Future Needs

Town System Limitations

The pipelines in the system consist of cast iron in the older part of the system and PVC in the newer areas. The cast-iron mains are slowly being replaced with PVC as their lifespan reaches an end. As mentioned earlier, Windsor maintains over 125 miles of pipeline within their system.

Floods bring challenges to water providers like Windsor. In September 2013, the Front Range experienced some of the largest rainfall amounts recorded for this area in the last 100 years. The Town witnessed several areas of considerable flooding as can be seen in the collage of photos in **Figure 3**; fortunately, they did not sustain any major damage to the potable water supply infrastructure during the flood. The southern portions of the Town, however, sit along the Poudre River which can easily flood again, potentially causing infrastructure damage in the future.

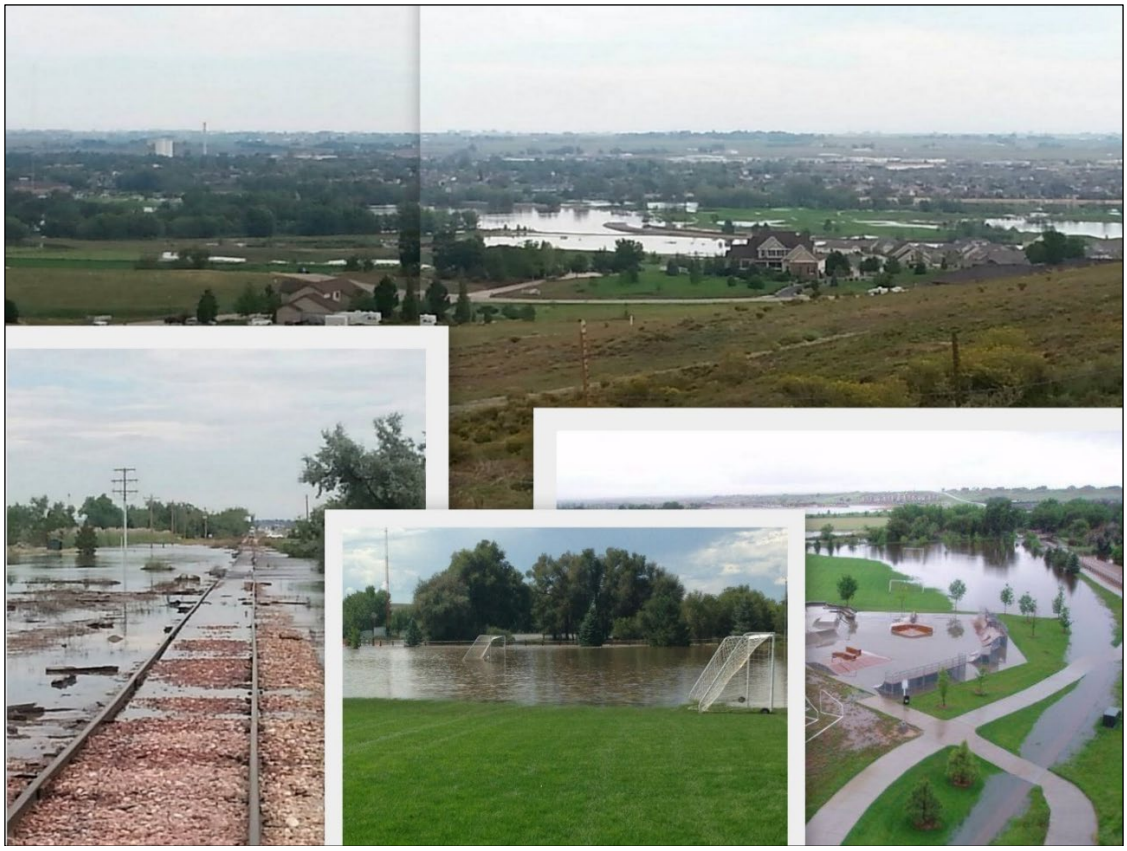

Figure 3: Various Images of 2013 Flood

Future Water Supply

Increasing pressure on water from population growth along the Front Range has driven the price of water up significantly in the last twenty years. The primary water sources that Windsor is considering for future supply are additional C-BT units, native Poudre River water, and an ongoing Northern Water project called the Northern Integrated Supply Project (NISP).

C-BT Units - In 1963, C-BT water could be purchased for $35 per unit from farmers that felt they had more water than they could use. Since C-BT water is so versatile, the market value of its shares has increased and is a good indication of the price for municipal water. The market price at the end of 2023 was approximately $70,000 per unit or $140,000 per AF assuming a 50% firm yield. **Figure 4** shows how the price of C-BT units varied from 1957 to 2023.

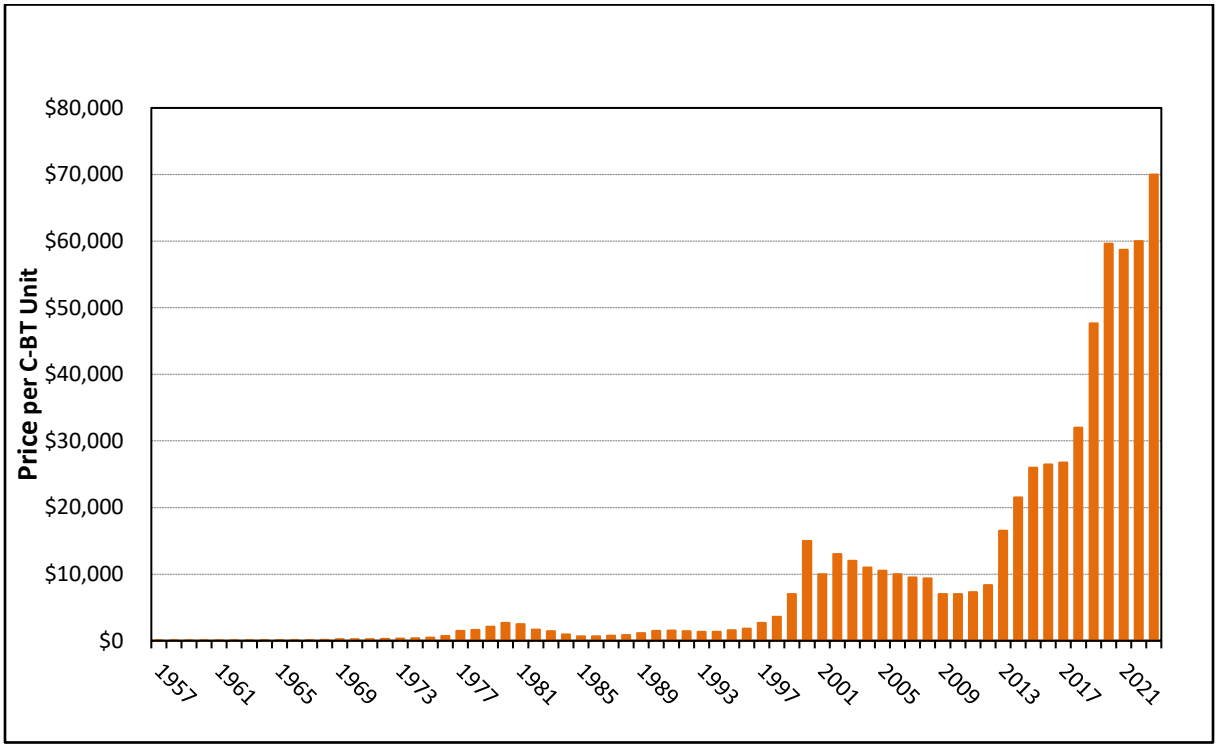

Figure 4: Historical Market Price of C-BT Units (1957-2023)

A key limitation with C-BT water is the fact that it is in great demand and is converting from agricultural (AG) use to municipal and industrial (M&I) use rapidly. The transition is illustrated in **Figure 5**. At this current rate of acquisition, it is projected that few (if any) C-BT units will be available by the year 2040. In the past several years, the oil and gas industry has acquired a significant amount of C-BT water when it goes to the open market. The high demand and limited availability of C-BT water has driven up the price significantly. Another key limitation to C-BT water is the inability for the water to be reused due to Northern Water policies. This second limitation curtails the possibility for

efficiency activities that might help stretch the existing water supplies by reusing C-BT water for irrigation or other non-potable uses.

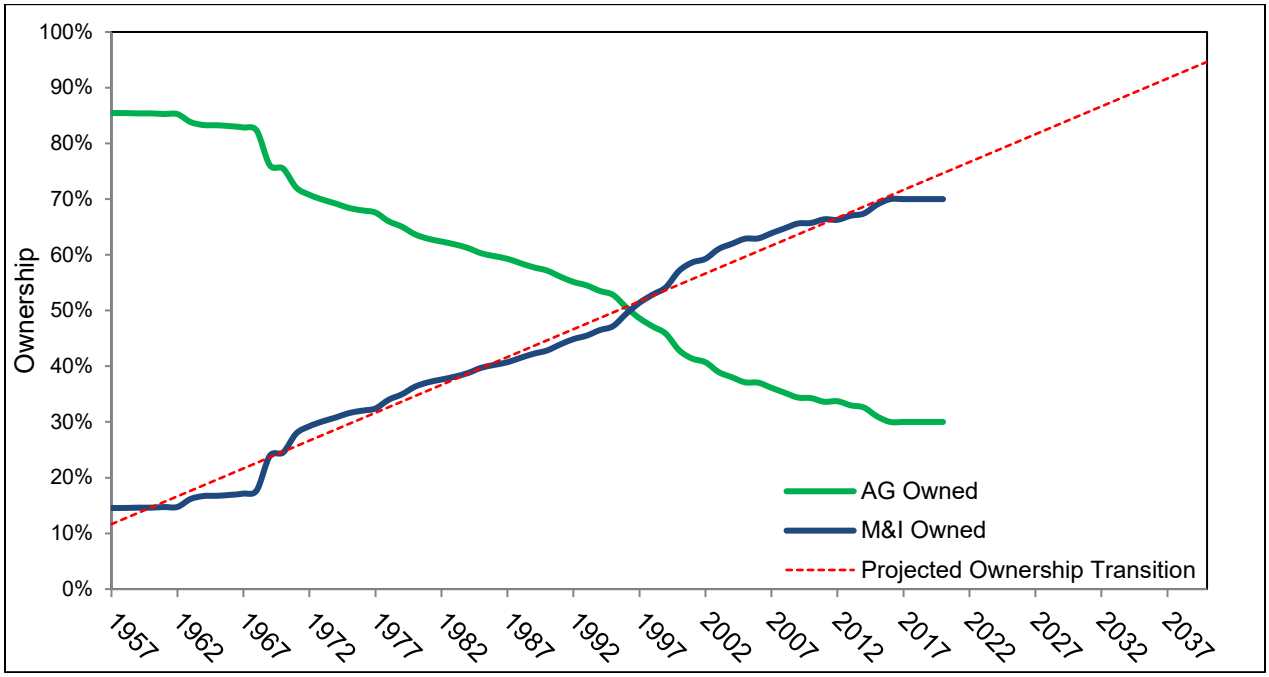

Figure 5: C-BT Ownership Transfer (1957-2023)

Potable Water Master Plan - Windsor completed a PWMP in November of 2009. The PWMP focuses on Windsor broadening its water portfolio. Some of these steps include water rights acquisition, clarifying and updating existing agreements, and changing allocation processes to meet the needs of the current population as well as plan for future growth. It should be noted that the PWMP does, however, highlight that water conservation is also key to meeting the future needs of Windsor's growing community; the PWMP specifically encourages that funds be budgeted for water efficiency activities. Although water reuse may help stretch Windsor's potable supplies further, it was not specifically addressed in the PWMP. Related to that topic, the viability of a water reuse system was discussed early on during the 2015 MWEP planning process. It was confirmed through communications with Northern Water that C-BT water is not allowed to be reused due to policy limitations.

It is Windsor's policy for new developments in certain areas to build dual systems using the agricultural water that was historically used on that same land. Water used to irrigate outdoor landscaping is therefore provided by native non-potable supplies. In many areas in Colorado, including Windsor, outdoor use can often make up over 40% of the total water consumption. Dual systems like these have several benefits; one of the greatest benefits is that the cost and energy to treat and delivery potable water is greatly reduced since less potable water is needed for irrigation purposes.

Non-Potable Water Master Plan - Windsor also completed a NPWMP in March of 2011. The NPWMP focuses on parks and open space irrigation. Much of the NPWMP focuses on wells and consumptive use of the many parks and open space areas of Windsor. The NPWMP does, however, encourage installing more efficient irrigation systems, a measure that will save water in the long run.

Northern Integrated Supply Project - The Northern Integrated Supply Project (NISP) is a regional water supply project for 15 Front Range entities to provide approximately 40,000 acre-feet of water. The project consists of 170,000 acre-feet of storage in the proposed Glade Reservoir northwest of Fort Collins and 40,000 acre-feet of storage in the proposed Galeton Reservoir, which is east of Ault. The South Platte Water Conservation portion of NISP (Galeton Reservoir) would construct pipelines to divert water from the South Platte River to fill Galeton Reservoir. Water would be subsequently released from Galeton Reservoir to Larimer and Weld Irrigation Company and New Cache la Poudre Irrigating Company to satisfy the shareholders lower in these two systems. Because the Larimer and Weld and New Cache systems are so large, this arrangement saves a tremendous amount of ditch loss and improves operations for the irrigation companies. In exchange, NISP would divert an equal amount of water into Glade Reservoir.

Northern Water has worked with the NISP participants to conduct several feasibility studies. According to Northern Water staff, approximately 40% of the water on average will be fully consumable and able to be used and reused to extinction. The following table shows the NISP participants and their respective portions of the 40,000 acre-feet. Windsor is currently participating in NISP, and if the project makes it through the permitting process, the Town will be obligated to pay for its share of the design and construction costs. This will involve a large capital outlay from participating entities in the short term but will provide water supply well past 2033 for Windsor. NISP received a Record of Decision from the U.S. Army Corps of Engineers in 2022, and the project is slated to begin construction on Glade Reservoir in the spring of 2024.

SECTION 2.0 – PROFILE OF WATER DEMANDS AND HISTORICAL WATER EFFICIENCY ACTIVIES

2.1 Demographics and Key Characteristics of the Service Area

Windsor provides potable and fire protection water to a 28.9 square mile service area that encompasses approximately. The Town provides service to approximately 9,319 taps for various end users. Over the past 20 years, the Town has seen a rapid growth rate that has averaged over 8%, reaching over 12% in 2018. On the outer boundaries of Windsor, there continues to be the steady shift from a rural setting to a more urban-style development.

The Town breaks its billing system into four larger categories: *In Town, Out of Town, Dual System*, and *Landscape Only*. Within each of those larger categories, the Town has further divided customers into subcategories. **Table 4** lists the categories and subcategories. Each of the categories will be discussed in more detail in Section 2.2.

Table 4: Windsor's Customer Categories

Customer Categories
In Town
Residential
Business
Industrial
School
Church
Out of Town
Residential
Business
Dual System
Residential
Business
Landscape Only

2.2 Historical Water Demands

Annual Treated Water

As mentioned previously, Windsor receives its potable water from three sources, FCLWD, NWCWD, and Greeley. **Figure 6** graphically illustrates the proportion delivered by each supplier since 1998. Prior to 1992, supplies were not recorded

by separate providers, so only the total is reported. Over the last ten years, NWCWD has supplied an average of approximately 56%, FCLWD has supplied 15%, and Greeley has supplied 29%.

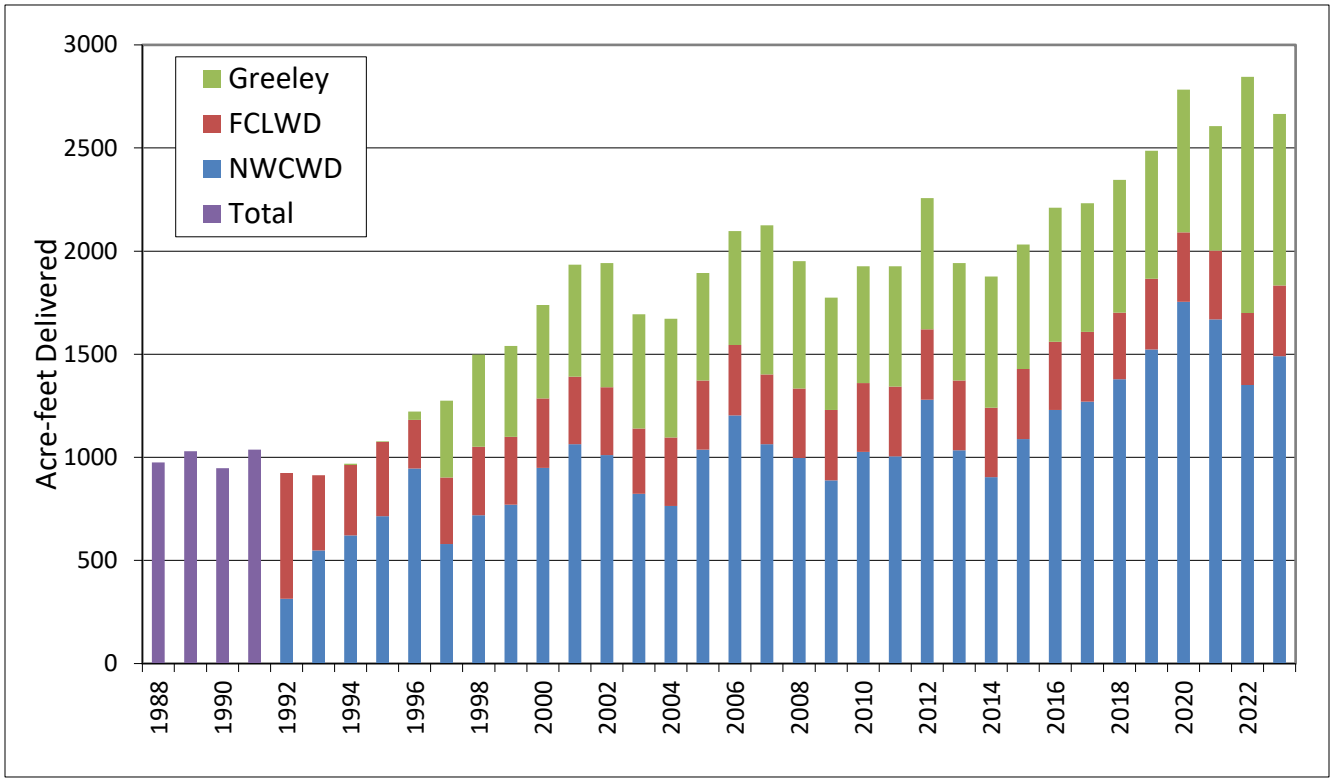

Figure 6: Potable Water Supply Source Breakdown

After receiving potable water at the master meters from the three suppliers, Windsor delivers potable water to its end users through the system's taps. **Table 5** shows the annual treated water deliveries made by Windsor for the years 2019 – 2023.

Table 5: Windsor Annual Treated Water Delivery

Year	Annual Treated Water Deliveries (AF)
2019	2,095
2020	2,205
2021	2,363
2022	2,414
2023	2,209
Average	***2,257***

Table 6 summarizes the various water uses per customer category. Values were calculated as an average over the years 2019 - 2023. The basic breakdown by percentage for the same years is further illustrated in **Figure 7**. Figure 7 combines the subcategories within the larger categories to give a better sense of the overall

percentages of customers. The customer categories, as well as non-revenue water, are described in more detail following the table and chart.

Table 6: Five-Year Average Potable Supply and Water Use by Category

Customer Category	Average (AF)	Percent of Total Provided by Suppliers
In Town		
Residential	873	32.6%
Business	173	6.5%
Industrial	219	8.2%
School	15	0.6%
Church	10.6	0.4%
In Town Total	**1,291**	**48.2%**
Out of Town		
Residential	4.6	0.171%
Out of Town Total	**4.6**	**0.2%**
Dual System		
Residential	736	27.5%
Business	45	1.7%
Dual System Total	**780**	**29.1%**
Landscape		
Landscape Only	181	6.8%
Total Delivered to End Users	**2,257**	**84.3%**
Non-Revenue	**420**	**15.7%**
Total Provided by Suppliers	**2,677**	**100.0%**

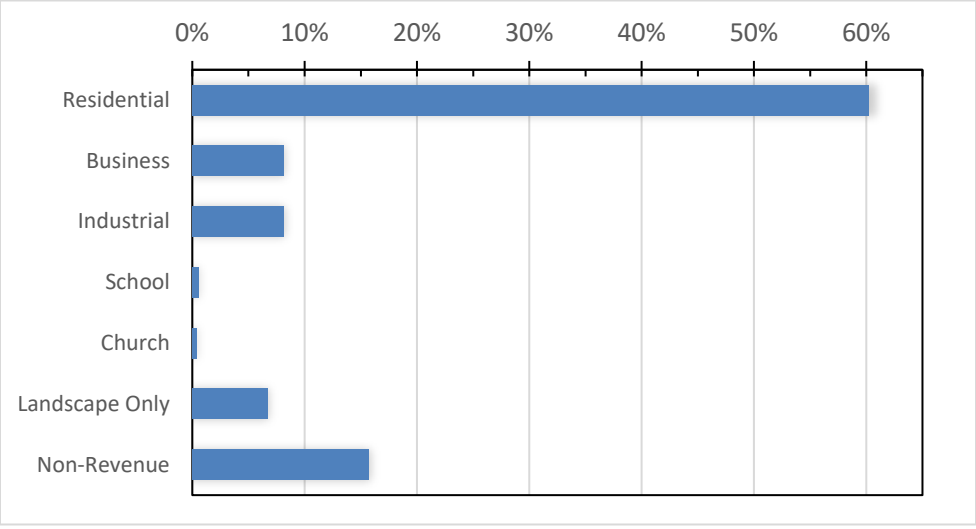

Figure 7: Average Water Usage by Customer Category (2019-2023)

In Town

In Town end users are broken into five subcategories: Residential, Business, Industrial, School, and Church. These end users are those that lie within the Town Limits and within the Water Service Boundary. Please see **Figure 1** for a map of the boundaries. All In Town users combined consumed an annual average of 1,291 AF of water from 2019 through 2023. This amount equates to 48.2% of all potable water supplied. Each category within In Town is detailed following this paragraph.

Residential: Residential water use includes both indoor and outdoor use. This customer category includes both single-family homes, townhomes, apartments, and condominiums. The Residential category constitutes the largest water use in the Town, at 32.6% of all potable water supplied. Residential water use in the Town is currently 873 AF per year.

Business: Business water users in the Town include office buildings, retail stores, grocery stores, restaurants, and car washes. In Town Businesses averaged 173 AF per year (2019 – 2023) in the Town which represents 6.5% of the potable water supplied.

Industrial: Industrial water users in the Town include multiple manufacturing and industrial facilities of various sizes. Industrial customers were the largest non-residential category. Industrial water use averaged 219 AF per year (2019 – 2023) which represents 8.2% of the potable water supplied.

School: Windsor has around ten public and private schools that are included within this category. School water use averaged 15 AF per year (2019 – 2023). This use equates to only 0.6% of the total potable water supplied.

Church: Windsor has around twenty churches that are supplied water through the Town's potable system. Even with this large number of churches for the size of the town, churches only used an average 10.6 AF per year (2019 – 2023). This amount equates to 0.4% of the total potable water supplied.

Out of Town

Out of Town end users are broken into two subcategories: Residential and Business. These customers are within the Windsor Water Service Boundary, but their actual location is outside of the Town Limits. The Out of Town category constitutes a relatively small amount of the overall water use with an annual average of only 4.6 AF from 2019 through 2023. This equates to only 0.2% of the total potable water supplied. The subcategories represent the same type of customers with the same name that were explained with the In Town subcategories. The average percentages and AF per year (2019 – 2023) for each of these subcategories can be seen in **Table 6**.

Dual System

Dual System end users are broken into two subcategories: Residential and Business. These customers have a dual system that supplies potable water suitable for human use and consumption and non-potable water mostly used for irrigation. The Dual System category utilizes a total of 29.1% of the annual potable water supplied or 780 AF per year (2019 – 2023). Currently the non-potable component of the dual use customers is tracked by a homeowners association or other type of private group, and the Town does not have any jurisdiction or reporting requirements.

Residential: Dual System Residential customers are very similar to the In Town Residential customers except they have a dual system. This category was the second largest water consumer overall. Residential Dual System customers consumed an average of 736 AF per year (2019 – 2023). This equates to 27.5% of the total potable water supplied.

Business: Similar to the Residential Dual System customers, Business Dual System customers are those businesses that have a dual system. This category was a relatively small water consumer. Business Dual System customers consumed an average of 45 AF per year (2019 – 2023). This equates to 1.7% of the total potable water supplied during that historical period.

Landscape

The Landscape Only category includes water used to irrigate areas surrounding parking lots, medians, and landscaped areas typically associated with commercial properties. Water use associated with the Landscape category averaged 181 AF per year (2019 – 2023). This equates to 6.8% of the total potable water supplied.

Non-Revenue

Non-revenue water is the difference between water supplied by Windsor and water used by the Town's customers. There was an average of 420 AF of non-revenue water per year (2019 – 2023). This equates to 15.7% of the total potable water supplied.

Annual Treated Water Use by Customer Category

The Town's average annual water demand for 2019 – 2023 for each customer category is shown on **Table 7**. Windsor has added several categories of billing data over the past several years to help identify specific use categories. The total annual potable water usage from 2019 – 2023 has ranged from 2,095 to 2,414 AF and averaged 2,257 AF. Also shown in **Table 7** is the residential and total per capita water use expressed as gallons per capita per day (GPCD). Residential GPCD is calculated as the residential water use divided by the Water Service Area population, and Total GPCD is

calculated as the total water use (all categories) divided by the Water Service Area population.

Table 7: Annual Treated Water Use by Customer Category

Customer Category	2019	2020	2021	2022	2023	Average
	Values in AF unless otherwise specified					
In Town						
Residential	885	972	908	885	716	873
Business	150	163	178	194	182	173
Industrial	222	234	247	204	189	219
School	15	12	14	15	18	15
Church	8	8	12	18	8	10.6
Out of Town						
Residential	4.9	6.6	7.7	2.8	0.8	4.6
Dual System						
Residential Dual System	588	609	741	841	900	736
Business Dual System	36	37	43	48	58	45
Landscape						
Landscape Only	186	163	212	206	138	181
Total (all categories)	**2,095**	**2,205**	**2,363**	**2,414**	**2,208**	**2,257**
Water Service Area Estimated Population	20,102	21,479	23,177	24,392	25,029	22,836
Residential GPCD	65.6	65.8	63.8	63.3	57.6	63.2
Total GPCD	93.0	91.4	91.0	88.4	78.8	88.5

Indoor and Outdoor Demands

The indoor and outdoor use was estimated using the total usage per month for five years (2019 – 2023) of data. The total monthly water use during the months from December through March was assumed to be only associated with indoor use. The basis for this assumption was determined from analyzing monthly use patterns over the previous five years as well as years prior to the period. A daily average for indoor use was calculated by dividing the total winter water use (December through March) by the number of days during the same four-month period. The indoor use for the other months of the year (April through November) was calculated as the average indoor use per day multiplied by the days per month. The outdoor monthly use was assumed to be the difference between the total monthly use and the indoor monthly use. **Figure 8** is a chart breaking out the estimated average monthly indoor and outdoor water use. For an average year (2019 – 2023), outdoor use constituted an estimated 31% of the total billed usage.

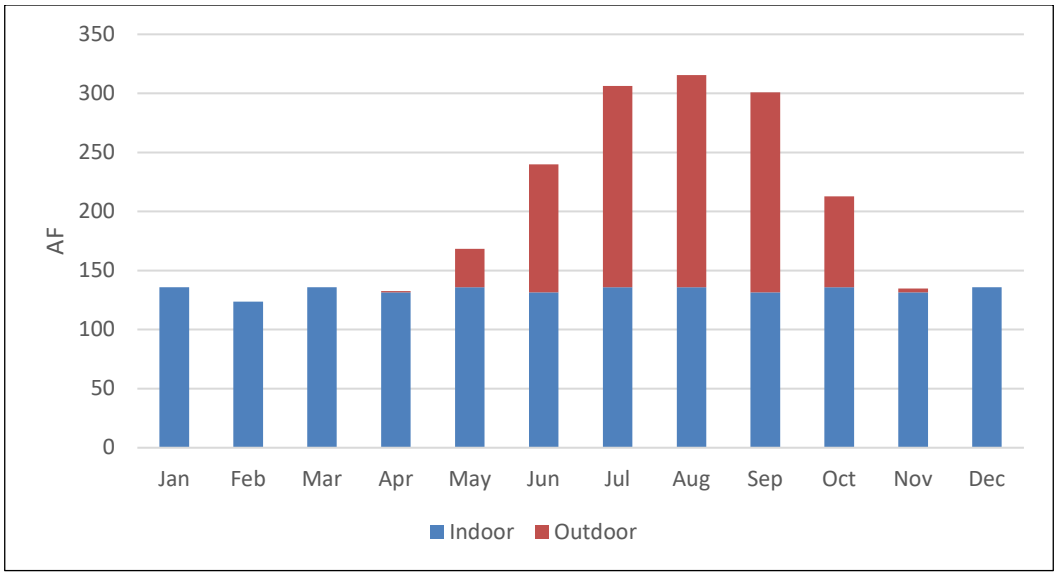

Figure 8: Average Monthly Indoor & Outdoor Water Use (2019-2023)

Parks and Open Space Irrigation

Currently the Town irrigates many of its Parks and Open Space areas with a separate system of meters, wells, reservoirs, and pipelines. This system currently consists of over 25 meters, and since the 2015 WEP, the Town has made continuous efforts to improve the tracking of the water used to irrigate these areas. Some of the water data tracking has been due to the required augmentation mentioned in Section 1.2. The other data has been tracked to better monitor use and more efficiently utilize the water resources available. **Table 8** shows the amount of non-potable and potable water that has been historically recorded since the 2015 WEP. Any potable water recorded here has not been recorded for any other customer categories previously mentioned.

On average, over the last five years (2019 – 2023), potable use has made up approximately 20% of the overall supply for irrigating Windsor's Parks and Open Space. **Figure 9** further illustrates how the percentage of non-potable versus potable use for Parks and Open Space has varied over the years since the 2015 WEP. It should be noted that earlier years in this data do not necessarily represent the entire amount of water utilized for irrigation due to meters coming online and other data recording complications. One of Windsor's goals is to continue to refine the data gathering and recording processes. Another goal for the Parks and Open Space is to implement further water efficiency efforts without compromising the water rights associated with the ditch shares.

Table 8: Parks and Open Space Water Use

Year	Non-Potable (AF)	Potable (AF)	Total (AF)
2016	204.8	132.3	337.1
2017	343.3	113.4	456.8
2018	325.0	56.7	381.6
2019	890.5	61.5	952.0
2020	581.9	275.3	857.2
2021	330.6	64.2	394.8
2022	280.5	59.6	340.1
2023	168.9	70.4	239.4

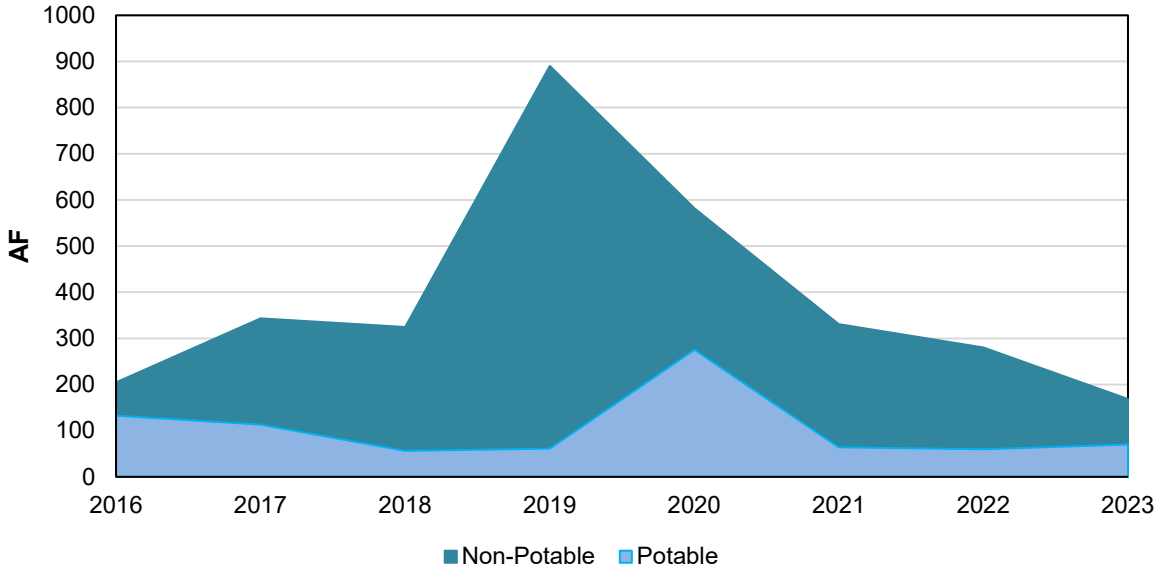

Figure 9: Windsor Parks and Open Space Annual Water Use

As can be expected, most of the water for Windsor's Parks and Open Space is utilized during the summer months. Similar to the outdoor use in the other categories, the highest use is seen during the months of July, August, and September. **Figure 10** illustrates the seasonal use of the Parks and Open Space water.

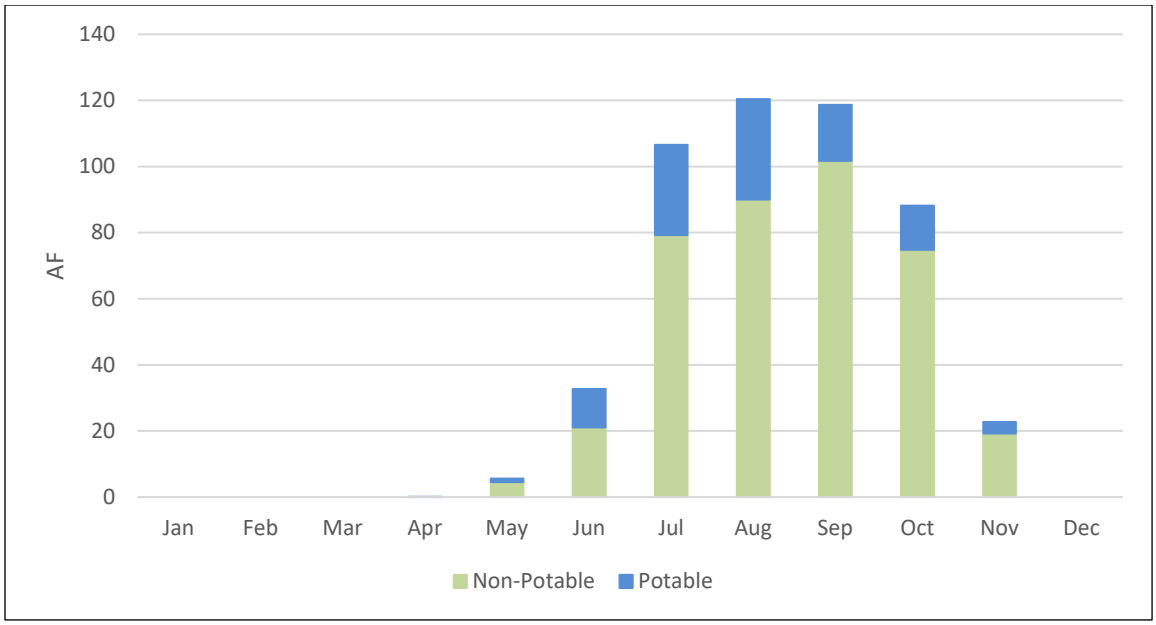

Figure 10: Windsor Parks and Open Space Seasonal Water Use (2016-2023)

2.3 Past and Current Water Efficient Activities and Impact to Demands

Current Water Efficiency Measures

Table 9 shows the existing and on-going water efficiency activities for the Town. As can be seen from the Water Efficiency Activities list, the Town is continuously making efforts to improve its own foundational activities such as its Tracking Water Use by Customer Type and Tiered Rate Structure activities. Windsor strives to encourage its customers to be water conscious through educational activities like the Treasure Island Xeriscape Demonstration Garden. Windsor has continued to expand the demonstration garden to further illustrate to its customers ways they can beautify their landscape while saving water at the same time (see **Figure 11**).

Table 9: Windsor's Previous and On-going Water Efficiency Activities

Selected Water Efficiency Activities	Approximate Date of Implementation [a]
Foundational Activities	
Water Efficient Rate Structure/Water Budgets with Regular Updates	*2015*
Automatic Water Meter Reading Installation and Operations	*Unknown*
Control of Apparent Losses (with Metering)	*2015*
Meter Testing and Replacement	*2009*
Meter Upgrades [b]	*2009*
Frequency of Meter Reading [c]	*2007*
Tracking Water Use by Customer Type [c]	*2007*

Selected Water Efficiency Activities *(cont.)*	Approximate Date of Implementation [a]
Foundational Activities *(cont.)*	
Volumetric Billing [c]	*2007*
Water Rate Adjustments [c]	*2007*
Frequency of Billing [c]	*2007*
Inclining/Tiered Rates [d]	*2003*
System Wide Water Audits	*2008*
Upgrade Billing System to Track Use by Sufficient Customer Types	*2007*
Leak Detection and Repair [d]	*2003*
Water Line Replacement Program	*Unknown*
Integrated Water Resources Plans [c]	*2007*
Master Plans/Water Supply Plans	*2008*
Capital Improvement Plans	*2007*
Parks and Open Space Meters	*2008*
Targeted Technical Assistance and Incentives	
High Efficiency Clothes Washer Rebate	*2015*
Rebate for Evapotranspiration (ET) Irrigation System Controllers	*2022*
Residential and Commercial Ultra High-Efficiency Toilet Upgrade Service or High-Efficiency Toilet Rebate Program	*2015*
Pre-Rinse Spray Valve Upgrades, Commercial Rebates/Retrofits	*2015*
Indoor Residential Water Audits	*2015*
Residential Irrigation Audits	*2015*
Landscape Water Budget Info. And Customer Feedback	*2022*
Indoor Audits [e]	*Unknown*
Xeriscape [d]	*2003*
Turf Replacement Programs	*2024*
Parks and Open Space Rain and ET Sensors	*2009*
Give-aways	*2013*
Ordinances and Regulations	
Town Facility Requirements	*2015*
Landscape Design Ordinances and Restrictions	*2015*
Water Waste Ordinance [d]	*2003*
Time of Day Watering Restriction	*2007*
Education Activities	
Combined Educational Activities (Bill Stuffers, Newsletters, Newspaper Articles, Mass Mailings, Website, Social Networking, Message Development) [d]	*2003*
K-12 Teacher and Classroom Education Programs [d]	*2003*
Interactive Websites	*2013*
Citizen Advisory Boards	*1978*
Landscape Design (Xeriscape) and Maintenance Classes	*2015*

Selected Water Efficiency Activities *(cont.)*	Approximate Date of Implementation [a]
Education Activities *(cont.)*	
Xeriscape Demonstration Garden [d]	*2003*
Garden in a Box	*2015*
Water Conservation Expert Available	*2022*

[a] Implemented activities have continued through the present day unless otherwise noted.
[b] No additional upgrades since upgrading to Orion.
[c] These activities were mentioned in the 2008 WCP as already existing, so they were likely started prior to 2007 when the planning process began.
[d] Implemented as a result of the 2002 Drought
[e] Audits are currently conducted for Town facilities only.

Figure 11: Windsor's Treasure Island Demonstration Garden

Water conservation occurs from both passive savings and active programs. Passive savings are those correlated with changes made by customers without any utility incentive; examples of these could be replacing old inefficient fixtures with newer more efficient models. Active programs, on the other hand, are like the ones listed in **Table 9** that have been initiated by the utility, in this case Windsor. Between passive and active

savings, Windsor continues to see a general downward trend of per capita usage. This trend will be discussed in more detail later in this section.

Numerous factors can contribute to overall water usage, so it is difficult to pinpoint what is the greatest contributor to increases and decreases in usage. Drought and drought restrictions (i.e. the Drought of 2002) may reduce water use considerably. On the other hand, until restrictions are in place, water usage may increase while customers are trying to compensate for lack of natural moisture. An improving economy like that of the Windsor area after the recent recession will often include additional construction and an overall increase in total water use. Some other factors may include tourism, floods (September 2013), and other significant events.

Water Savings Estimates Using Demand Data

Despite the resources available to estimate water savings, the savings of some activities, such as those that are highly dependent on human behavior (e.g. public education programs) are much more difficult to quantify and, in many cases, cannot be estimated with reasonable accuracy. Additionally, data was not collected for many activities. For the activities that we were unable to quantify, demand data was used to estimate savings.

The water savings from the Town's efforts since the 2015 WEP are presented in **Table 10**. This table shows savings evident on a per tap basis. The Town has saved an average of 18.75% on a per tap basis.

Table 10: Water Savings Estimates

Year	Estimated Total Number of Taps (2015 WEP)	Actual Number of Taps	Estimated Use (2015 WEP) (AF)	Actual Water Use (AF)	AF/Tap (from 2015 WEP)	Actual AF/Tap	% Savings per Tap
2015	5,884	5,857	2,205	1,995	0.37	0.34	9.08%
2016	6,031	6,639	2,260	2,390	0.37	0.36	3.93%
2017	6,182	6,964	2,317	2,400	0.37	0.34	8.04%
2018	6,337	7,318	2,375	2,144	0.37	0.29	21.8%
2019	6,495	7,901	2,434	2,127	0.37	0.27	28.2%
2020	6,657	8,419	2,495	2,443	0.37	0.29	22.6%
2021	6,824	9,049	2,557	2,502	0.37	0.28	26.2%
2022	6,994	9,533	2,621	2,495	0.37	0.26	30.2%
2023	7,169	9,692	2,687	2,209	0.37	0.23	39.2%
						Average	18.75%

As Windsor has grown at an 8% growth rate and the average temperature has steadily increased, GPCD has continually declined. The decrease in GPCD under an increasing

population and temperature highlights the resiliency and sustainability of Windsor's water conservation efforts **(Figure 12)**.

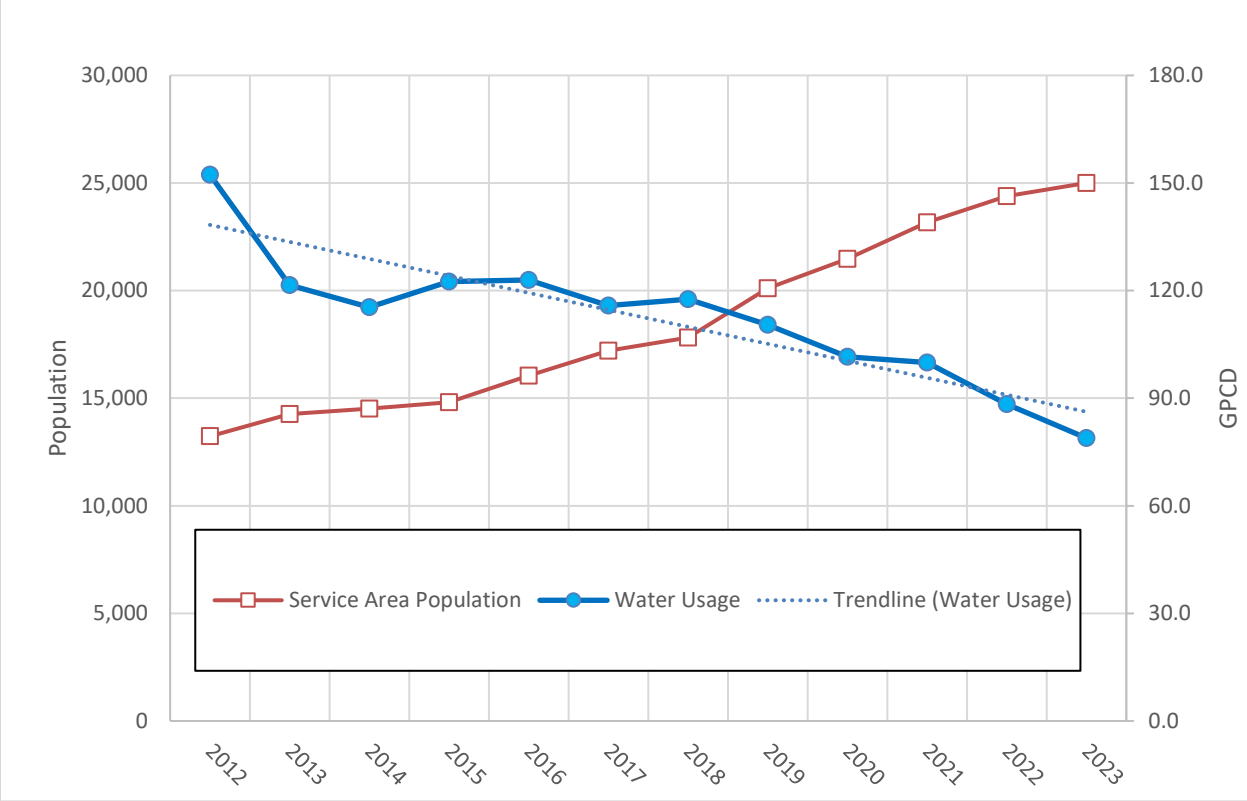

Figure 12: Per Capita Water Usage (GPCD) Compared with Population

2.4 Demand Forecasts

As part of the preparation of the water efficiency plan, we prepared an "unmodified" baseline demand forecast that does not include any impacts from water efficiency. This forecast shows demand starting in 2024 and going through the planning horizon of 2033 (10 years). The baseline forecast is based on a combination of anticipated demographics and land use in Windsor. In the baseline forecast, demands increase proportionally with the population at the current rate of usage. Population estimates shown in five-year increments for the previous 25 years and projected population for the next 10 years are presented in **Table 11** and illustrated in **Figure 13.** A conservative future estimate was developed by the Town Staff (Staff) based on the general growth trend of the Town.

Table 11: Windsor Population Growth in Five Year Increments

Year	Town Population	Average Yearly Growth Rate
1998	8,173	-
2003	12,657	9.2%
2008	16,892	6.0%
2013	21,982	5.4%
2018	31,719	7.7%
2023	43,911	6.7%
2028	49,681	2.5%
2033	56,210	2.5%

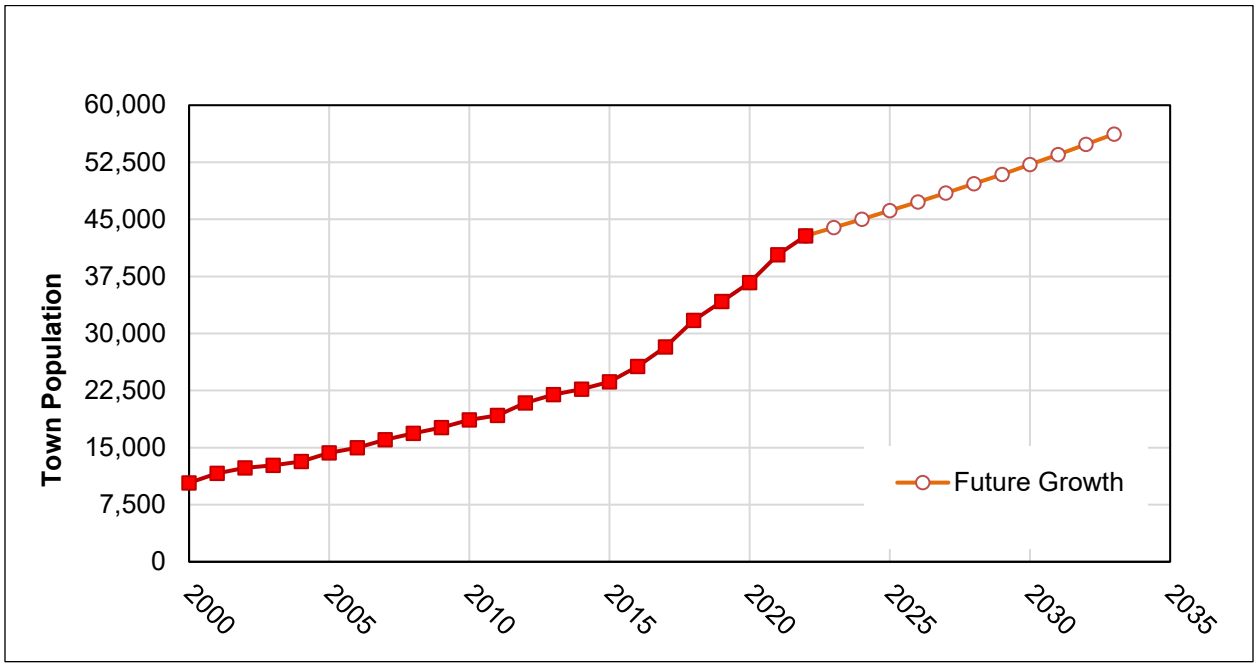

Figure 13: Windsor Projected Population Growth (2024-2033)

Table 12 shows the population growth (both Total Town Population and Water Service Area Population) for the planning period. This table also shows the Total Taps anticipated and the Total Treated Water Demand over the planning period. As is shown in **Table 13** and **14**, most of the treated water is anticipated to continue to be used by the residential categories. Steady growth and therefore demand is anticipated in all categories with similar percentages representing each customer category. Build-out is not anticipated during the next 10 years, and therefore the steady increase in demand is not predicted to taper off.

Table 12: Demand Projections

Year	Total Town Population	Water Service Area Population	Total Taps	Total Treated Water Demand (AF)
2024	45,009	25,627	9,934	2,855
2025	46,134	26,267	10,183	2,926
2026	47,287	26,924	10,437	2,999
2027	48,470	27,597	10,698	3,074
2028	49,681	28,287	10,966	3,151
2029	50,923	28,994	11,240	3,230
2030	52,196	29,719	11,521	3,311
2031	53,501	30,462	11,809	3,393
2032	54,839	31,224	12,104	3,478
2033	56,210	32,004	12,407	3,565

Table 13: Demand Projections for Customer Categories

Year	Total Treated Water Demand (AF)	Total Billed (AF)	In Town				
			Residential (AF)	Business (AF)	Industrial (AF)	School (AF)	Church (AF)
2024	2855	2,406	931	185	234	16	11
2025	2926	2,467	954	189	240	16	12
2026	2999	2,528	978	194	246	17	12
2027	3074	2,592	1003	199	252	17	12
2028	3151	2,656	1028	204	258	17	13
2029	3230	2,723	1053	209	264	18	13
2030	3311	2,791	1080	214	271	18	13
2031	3393	2,861	1107	220	278	19	13
2032	3478	2,932	1134	225	285	19	14
2033	3565	3,005	1163	231	292	20	14

Table 14: Demand Projections for Customer Categories (Continued)

Year	Out of Town	Dual System		Landscape	Non-Revenue (AF)
	Residential (AF)	Residential (AF)	Business (AF)	Landscape Only (AF)	
2024	4.9	784	48	193	448
2025	5.0	804	49	198	459
2026	5.1	824	50	203	471
2027	5.2	845	51	208	483
2028	5.4	866	52	213	495
2029	5.5	887	54	218	507
2030	5.6	910	55	224	520
2031	5.8	932	57	229	533
2032	5.9	956	58	235	546
2033	6.1	979	59	241	560

SECTION 3.0 – INTEGRATED PLANNING AND WATER EFFICIENCY BENEFITS AND GOALS

3.1 Water Efficiency and Water Supply Planning

Forecasted Modified Water Demands

A modified demand forecast that includes the impacts of the proposed water efficiency activities is illustrated in **Figure 14** and summarized in **Table 15**. Under the revised forecast, it is estimated that total demands for Windsor in 2033 will be about 1,230 AF greater than they are in 2023. By the end of the planning period, it is estimated that the Town will see a savings of 436 AF annually. This represents 436 AF of savings over not continuing current activities or implementing any new activities. The Town plans to accomplish this level of water efficiency by continuing successful programs already implemented (e.g., *Master Plans/Water Supply Plans* and *Strong Educational Activities*), repeat and improve important programs (e.g., *Water Efficient Rate Structure/Water Budgets with Regular Updates*), and implement new programs (e.g., offering *Slow the Flow Irrigation Audits* and other incentives like rebates). Projected water savings are expected to be seen by a steady reduction in per capita use. Overall raw water demand, however, will continue to increase.

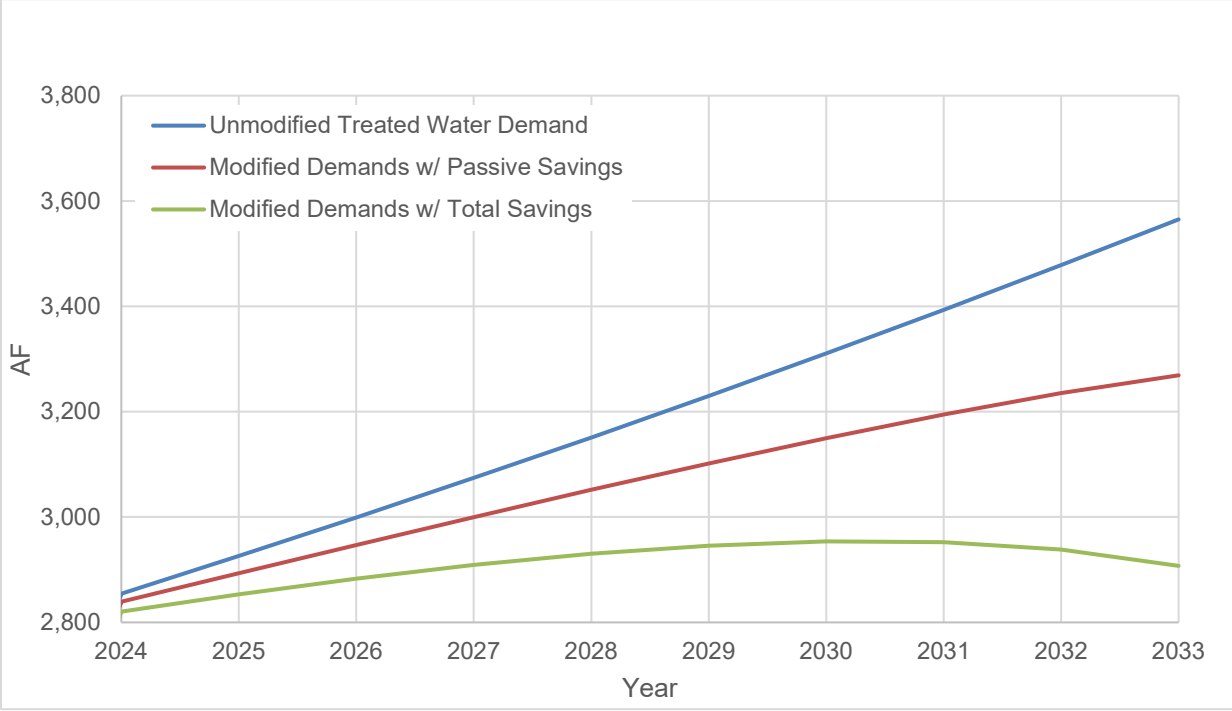

Figure 14: Demand Projections with Modified Demands

Table 15: Demand Projections – Unmodified and Modified

Year	Unmodified Treated Water Demand (AF)	Modified Treated Water Demand with Passive Savings (AF)	Modified Treated Water Demands with Combination Savings (AF)
2024	2,855	2,839	2,820
2025	2,926	2,893	2,853
2026	2,999	2,947	2,883
2027	3,074	3,000	2,909
2028	3,151	3,052	2,930
2029	3,230	3,102	2,946
2030	3,311	3,150	2,954
2031	3,393	3,195	2,952
2032	3,478	3,235	2,938
2033	3,565	3,269	2,907
Savings		8.3%	18.4%
Increase in Use from 2023	710	430	87
Difference from Unmodified		280	623

Impacts on Future Water Facilities and Supply Acquisitions

Water efficiency planning is very important to Windsor. The benefits of this water efficiency planning effort may include:

- Freeing up water supplies for increased growth and development
- Additional water to cover shortages in droughts or other emergency situations
- Delaying the purchase of additional water supplies

3.2 Water Efficiency Goals

Water efficiency goals are intended to lay out a set of targeted objectives that if accomplished will result in the identified benefits. A preliminary set of goals has been developed prior to the selection of water efficiency activities to provide a means to screen and evaluate the selected activities. Goals from the Town's 2015 WEP were assessed and incorporated into the new goal development process.

A meeting was initially held with Town Staff to discuss water efficiency goals appropriate for Windsor. The following preliminary goals were established by Staff:

- In keeping with the savings goal established in Windsor's 2008 WCP and 2015 Update, the targeted water savings goal for this Plan will be to lower the total per capita water use by 10% over the ten-year planning period.

- The targeted ten-year water reduction goals for the following customer categories were as follows:
    - In Town
        - Residential: 14.0%
        - Business: 5.0%
        - Industrial: 5.0%
        - School: 5.0%
        - Church: 5.0%
    - Out of Town
        - Residential: 12.0%
    - Dual System
        - Residential: 13.0%
        - Business: 5.0%
    - Landscape Only: 10.0%
    - Non-Revenue Water: 1.0%
- To develop a water efficiency program that can be implemented within Town staffing constraints and with Town Board approval.
- To implement water efficiency activities that are compatible with the community and their Town Board representatives.

The success of the stated goals will be measured through monitoring billing data, screening and evaluating activities that are acceptable to Town Staff and soliciting Town Board and community feedback on water efficiency activities.

SECTION 4.0 – SELECTION OF WATER EFFICIENCY ACTIVITIES

4.1 Summary of Selection Process

Windsor used a four-phase process for selecting and fully evaluating water efficiency activities. The four phases include: 1) assessment; 2) identification; 3) qualitative screening; and 4) evaluation and selection.

Assessment, Identification, and Qualitative Screening

Using the analysis performed and presented in Section 2.3, the Town identified areas where water efficiency could be enhanced. With the apparent water saving success of the Water Efficient Rate Structure Updates and the popularity of Windsor's Education Program, the Town would like to continue these activities as well as several others. In addition to these activities, the Town generally wants to focus on activities that assist with meeting their water efficiency goals.

We utilized Worksheets D-G from the *MWEP Guidance Document* to identify a list of water efficiency activities that are generally compatible with the Town's needs. A copy of Worksheets D-G can be found in **Appendix B** of this report.

The list of activities evaluated are organized according to the SWSI Levels Framework. The SWSI Levels Framework was developed as a component of the 2010 SWSI update to organize water efficiency activities into a model that assists municipalities in prioritizing and selecting activities. The framework may be represented as a cylinder consisting of the following four categories in **Figure 15**.

SWSI Levels Framework includes the following levels of water efficiency activities:

- **Foundational Activities** – These activities focus on system operations and water efficiencies that are under Windsor's direct control and can improve the effectiveness of the planning efforts by ensuring sufficient metering and data tracking.
- **Targeted Technical Assistance and Incentives** – These measures cover activities that Windsor and its customers can do to improve existing water efficiency.
- **Ordinances and Regulations** – These measures include regulatory activities designed to encourage water efficiency.
- **Education Activities** – These efforts educate the public on the benefits of water efficiency, inform customers on how they can reduce their water usage, and publicize water efficiency activities that Windsor is implementing.

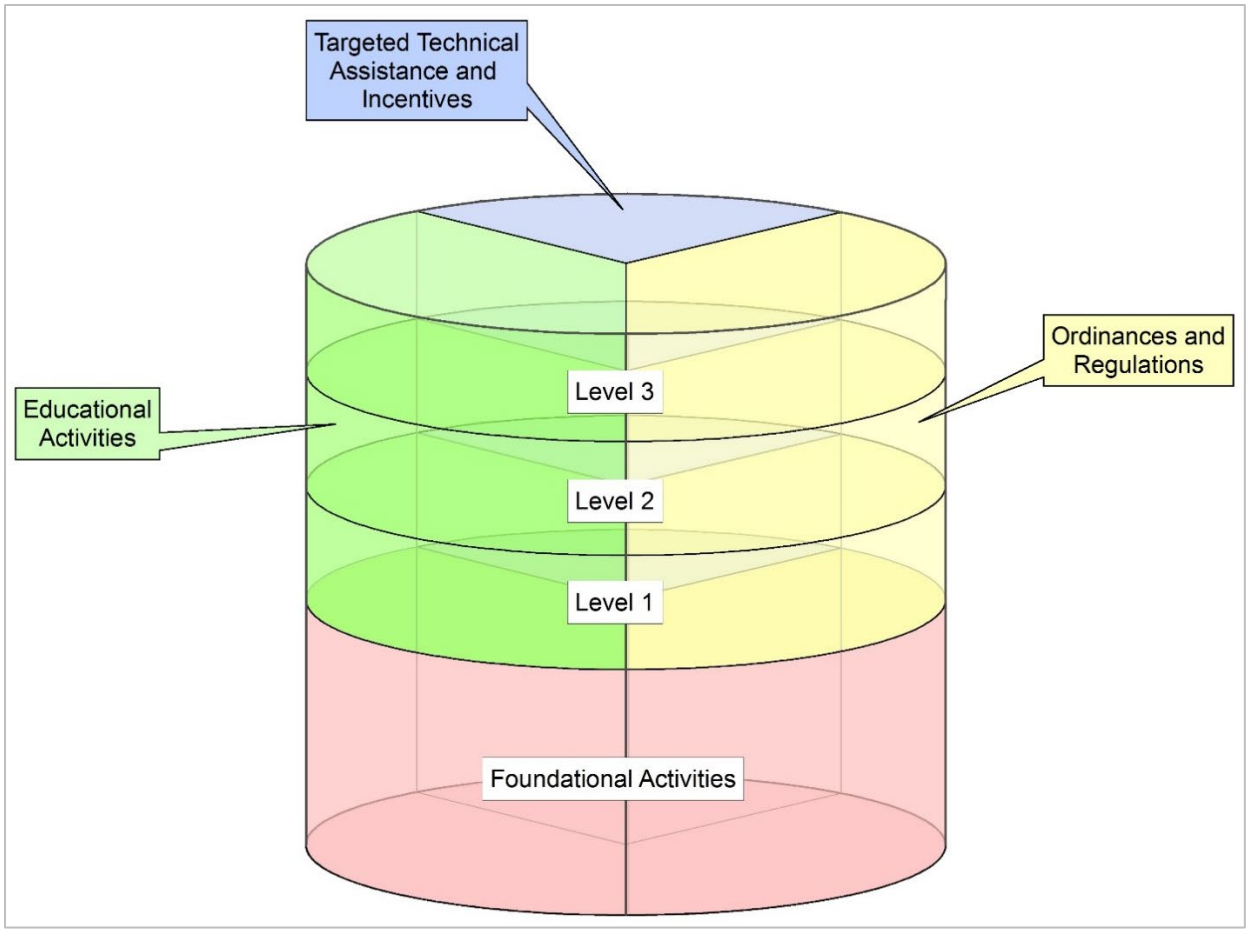

Figure 15: SWSI Levels Framework

Further discussion regarding the SWSI Levels Framework is provided in subsequent sections.

Town Staff developed qualitative screening criteria used to evaluate the preliminary list of activities. The screening criteria include: 1) Financially feasibility; 2) Staff availability; 3) Staff and Board Approval. Activities not meeting the screening criteria were eliminated. The specific reason for elimination of activities can be found in Worksheets D-G, located in **Appendix B**.

Evaluation and Selection

The evaluation and selection phase of the selection process involved development of evaluation criteria, evaluation of the activities, and selection of the final activities for implementation. Some of the general evaluation criteria included:

- Applicability to the Town of Windsor
- Moderate to high potential reduction of water use
- Town Board and Town resident support and acceptance

4.2 Water Efficiency Activities

The initial screening of the water efficiency activities with Town Staff resulted in selecting 28 candidate activities for further evaluation. Eliminated activities may be evaluated with future planning efforts. Some of the activities were combined within their SWSI Levels Framework to assist in evaluation and avoid double counting savings. The preliminary analysis of costs and benefits of the selected measures and programs are shown in **Table C1, Appendix C**. Details about the cost/benefit evaluation and information about each measure can be found in the following section with further detail available in **Appendix D.**

4.3 Selection of Activities for Implementation

The second screening was accomplished by evaluating each activity based on the criteria discussed in Section 4.1 (Applicability to Town of Windsor, moderate to high potential reduction of water use, and Town Board and Town resident support and acceptance). Only one of the original activities evaluated, Give-Aways; Residential Water Audit Kits, was eliminated during the second screening. Details about the final 27 activities chosen can be found in the following descriptions.

<u>Foundational Activities</u>

- **Meter Upgrades - Automatic Water Meter Reading Installation and Operations**
  All of Windsor customer meters have been upgraded to Orion Automatic Meter Reading (AMR) meters. The Town is planning on further upgrades to an Advanced Metering Infrastructure (AMI) system during the Planning Period. Upgrading to AMI technology can help Windsor further automate their water systems, detect problem areas earlier, give customers tools to monitor water use, provide more accurate rates and reduce demand. A key benefit of AMI is enabling customers to access their water use data through a portal, which allows customers to monitor their water use.
- **Meter Testing and Replacement Program**
  The Town has a program in place where large meters are sent in for testing and calibration every seven years, and small meters are replaced every ten years. Faulty meters account for apparent losses (i.e. losses due to meter inaccuracies) and real losses (also known as physical losses), and the Town wants to minimize these losses.
- **System Wide Water Audits**
  By utilizing System Wide Water Audits and pairing it with other measures (e.g., *Meter Testing and Replacement* and *Leak Detection*), Windsor identifies unmetered and unbilled treated water uses to assess where losses are occurring and how losses can be addressed. These losses are considered non-revenue water.
- **Control of Apparent Losses (with Metering)**
  This measure entails utilizing existing meters as well as adding additional meters to determine where system losses are occurring. This measure is often coupled

with System Wide Water Audits since they have similar benefits, and metering helps the auditing process.

- **Water Efficient Rate Structure/Water Budgets with Regular Updates**
  Based on many studies, water rates (e.g., inclining and/or tiered) are one of the most effective ways to encourage efficient water use. A rate study is necessary to ensure maximum water conservation savings. Windsor's current rate structure is included in **Table 16**. To further educate and communicate with Windsor's customers about their water use, the Town is currently in the process of adding tiered rate information to the customers' bills to inform them where their monthly water consumption is related to the next rate tier. *Volumetric Billing* is also included within *Water Efficient Rate Structure/Water Budgets with Regular Updates* since both activities are very interrelated. The complete water fees schedule and other water related fees are included in **Appendix E**.

Table 16: Windsor's Current Tiered Rate Structure (Not Including Base Fees)

Meter Size	1st Tier Usage Charge per 1,000 gal	1st Tier Threshold gal / month	2nd Tier Usage Charge per 1,000 gal	2nd Tier Threshold gal / month	3rd Tier Usage Charge per 1,000 gal	3rd Tier Threshold gal / month
¾" Single family residential	$6.71	16,000	$10.02	22,500	$14.94	> 22,500
¾" residential with dual system	$6.71	9,700	$10.02	> 9,700	N/A	N/A
1" residential with dual system	$6.71	9,700	$10.02	> 9,700	N/A	N/A
1.5" residential with dual system	$6.71	9,700	$10.02	> 9,700	N/A	N/A
Multi-family residential	$6.71	157,000	$10.02	> 157,000	N/A	N/A
¾" commercial, industrial, school	$6.71	157,000	$10.02	> 157,000	N/A	N/A
1" commercial, industrial, school	$6.71	157,000	$10.02	> 157,000	N/A	N/A
1.5" commercial, industrial, school	$6.71	157,000	$10.02	> 157,000	N/A	N/A
2" commercial	$6.71	493,000	$10.02	> 493,000	N/A	N/A
2" industrial	$6.71	783,000	$10.02	> 783,000	N/A	N/A
2" school	$6.71	157,000	$10.02	> 157,000	N/A	N/A
3" school	$6.71	306,700	$10.02	> 306,700	N/A	N/A
4" industrial	$6.71	2,461,000	$10.02	> 2,461,000	N/A	N/A

Windsor is also investigating a Water Budget type of Rate Structure. Every water customer has unique water needs. For this activity, Windsor proposes to bill customers using a personalized water budget. Water budgets are typically

based on some type of predetermined allotment and represent the amount of water a customer is expected to need for a specific month and/or year. Water budgets may vary monthly due to seasonal watering demands and climate fluctuations. The goal of a water budget structure is to encourage customers to use water more efficiently by rewarding efficient water use and reducing water waste. Those customers who are efficient use the lowest-cost water and therefore pay the lowest rates. Customers who are inefficient pay higher rates for water use that exceed the budgeted amount. No matter what, customers are only billed for the water they use.

- **Leak Detection and Repair Program**
  Currently Windsor combines customer water use observations by Staff and pairs it with help from outside consultants ("American Leak Detection" (ALD) and "National Meter and Automation Inc.") to evaluate their system for leaks. Repairs to the system are made as needed.
- **Water Line Replacement Program**
  Windsor has budgeted 1.2 million dollars for 2016 to replace older and higher use pipelines.
- ***Commercial Tap Fees with Water Use Efficiency Incentives***
  Windsor determines tap fees for commercial customers depending on the anticipated use, incentivizing commercial customers to use less water.
- **Master Plans/Water Supply Plans**
  The Town has seen many benefits in developing, updating, and evaluating Master Plans, Water Supply Plans, Capital Improvement Plans, and Water Efficiency Plans. These plans have increased the Towns awareness of activities and programs they can incorporate to help play their part in this region's overall need for water efficiency. Windsor plans to continue committing resources for such plans that will improve its overall water efficiency and help plan for future use.

Targeted Technical Assistance and Incentives

- **Indoor Residential Water Assessments (Audits)**
  The Water Conservation Specialist also performs indoor water assessments. This includes seeking out leaks and other unintended uses for water, look for high water use appliances, provide new showerheads and faucet aerators if necessary, and suggest repairs, rebates or upgrades.
- **Residential Appliance Retrofits and Rebates**
  This activity is often a part of Indoor Residential Water Assessments but is considered separately since retrofits and rebates aren't always suggested during the assessments. Windsor provides and installs low-flow showerheads and faucet aerators and has rebates available for toilets
- **Residential Irrigation Assessments (Audits)**
  Windsor has hired a Water Conservation Specialist who performs irrigation assessments. The assessment includes a series of tests on your automatic sprinkler system, a visual inspection of each zone to identify problems, measuring how much water is being applied and where, water pressure check

and adjustment recommendation, a custom watering schedule derived from the tests performed, and information about the lawn's seasonal needs for water. This program has been largely successful to date, with over 300 assessments performed in 2 years, and an estimated 39.9 acre-feet of water saved.

- **Rebate for ET Irrigation System Controllers**
  The Town plans to offer rebates (likely in the form of a bill credit) for customers who install “Smart Controllers” for Irrigation. Smart controllers sense either the soil moisture or climate conditions (e.g., rainfall, ET, and temperature) and adjust the irrigation scheduling accordingly.
- **Turf Replacement Programs and Xeriscape Incentives**
  Windsor has partnered with Resource Central to offer turf replacement to their customers at a discounted rate. This activity will eventually be fully managed by Windsor and expanded to cover customer classes outside of residential. Windsor intends the beginning stages of this turf replacement program to be primarily educational, showing residents that low water use gardens can be functional and beautiful.
- **Commercial Water Efficiency Rebates**
  Windsor offers a commercial rebate program similar in structure to the City of Greeley's. Commercial water users can apply for rebates that cover a variety of commercial appliances, including Toilets, Irrigation Equipment, Commercial Kitchen Products (ex: Ice Machines, Dishwashers), Washing Machines, and Car Wash Spray Nozzles.

Ordinances and Regulations

- **Water Waste Ordinance**
  Windsor currently has an ordinance in place that specifies the responsibility the property owner must keep the water lines on their property in good condition to prevent the waste of water.
- **Time of Day Watering Restrictions**
  Windsor has a Water Restriction Ordinance in place that states, "From May 1 through September 30 of each year, no lawn watering shall be permitted between the hours of 10:00 a.m. and 6:00 p.m." This restriction is also highlighted on the Water Conservation webpage.
- **Landscape Design Ordinances and Restrictions**
  Windsor is investigating the following landscape design ordinances: Rules and Regulations for Landscape Design/Installation, Irrigation Efficiency Regulations, Soil Amendment Requirements, Non-Functional Turf Restrictions, Irrigation Equipment Requirements, Landscaper Training and Certification, and Irrigation System Installer Training and Certification. The Town Staff would like to word ordinances and restrictions in such a way to encourage proactive efforts on the part of developers.
- **Outdoor Green Building Construction**
  As highlighted in the CO WaterWise planning documents, some communities adopt voluntary “green building” rating systems, incentive programs, and/or labels that are managed themselves or by other organizations (e.g., Leadership

in Energy and Environmental Design (LEED) certification, International Green Construction Code (IgCC®), EPA WaterSense Labeled Homes, etc.) to guide development projects. Here, we assess a similar program for the Town of Windsor.

- **Town Facility Requirements**
  Windsor hopes to update their Town facility fixtures with water saving fixtures. This activity includes city facility requirements, plus appliance replacement, process water requirements, green construction, and indoor plumbing requirements.

Educational Activities

- **General Educational Activities**
  The Town has in the past and plans to continue to make strong efforts to educate its citizens with many educational activities. These activities include Bill Stuffers, Newsletters, Newspaper Articles, Mass Mailings, a Water Efficiency Page and links on Windsor's Website, and Social Networking (e.g., Facebook and Twitter). Windsor is also very active in the community with other outreach efforts like Water Fairs and K-12 Teacher and Classroom Education. The Town has an interactive, educational 32-foot trailer it uses to travel to schools as well as community and civic events. The trailer, named the "Water Wagon", helps to raise the awareness of water and its conservation by demonstrating the sources, importance, function, and uses of the water that so many take for granted. A snapshot of the inside of the Water Wagon and its many displays is pictured in **Figure 16**. The Water Wagon is often paired with additional outside activities to enhance the students' experiences.

  Windsor also has Citizen Advisory Boards to further encourage residents' involvement in water efficiency efforts. For ease of evaluating and avoiding overlap of the costs and benefits, these activities were combined into one category.
- **Xeriscape Demonstration Garden**
  Maintaining a xeriscape demonstration garden is an excellent way to educate the public to the water savings and beauty available from xeriscaping. Windsor, in partnership with the Demonstration Gardening Group (DiGGers), has designed and maintained the Treasure Island Demonstration Garden located along the Poudre River Trail Corridor multiuse trail since 2008. The DiGGers are part of the Weld County Colorado Master Gardeners, a group of volunteers who help encourage and educate home and community gardeners. Treasure Island continues to expand each year and remains a beautiful example for Windsor residents to admire low-watering landscape options and get ideas for their own landscaping and gardening adventures.

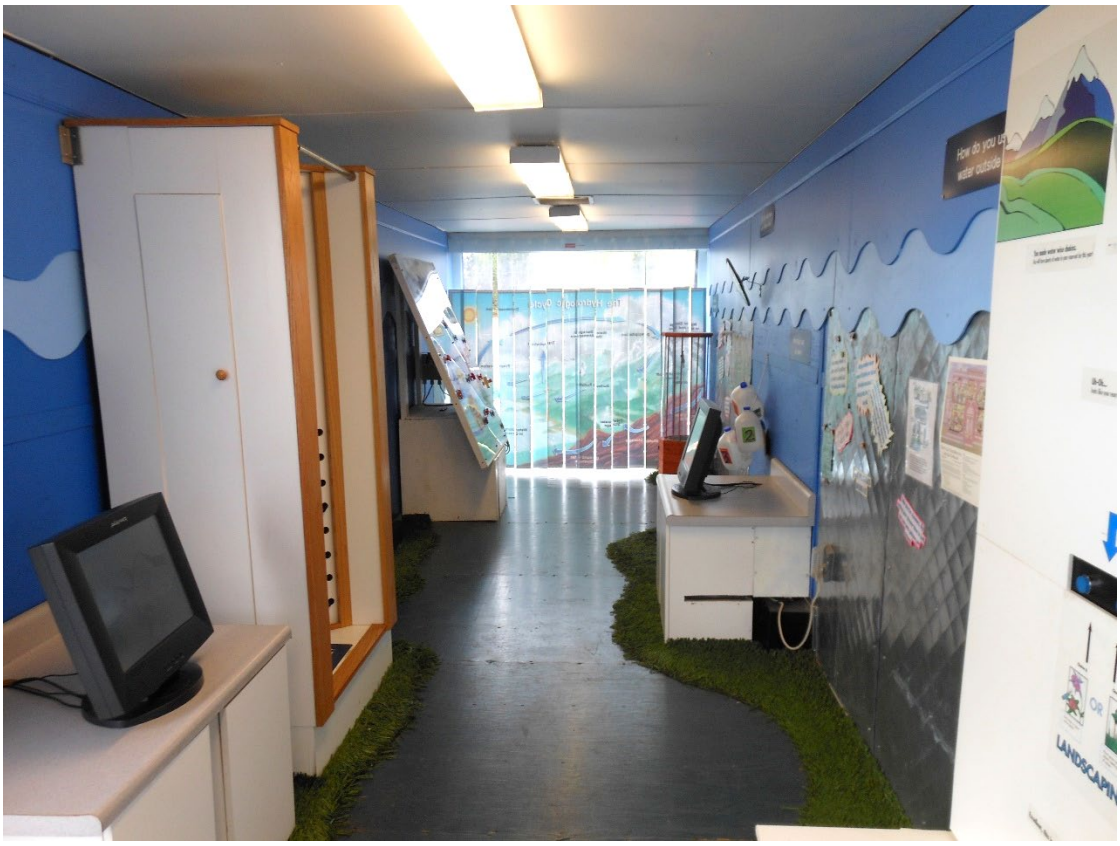

Figure 16: Windsor's Water Wagon

Treasure Island also serves other purposes. The DiGGers have often offered xeriscape and gardening classes during the summer months. During its growing seasons, the garden has provided thousands of pounds of fresh vegetables to the Windsor Food Pantry. Listed in **Table 17** are just a few of the inspiring numbers associated with Treasure Island. The estimated visitors and observers are likely very conservative.

Table 17: Treasure Island Xeriscape Demonstration Garden

Year	Total Vegetable Distribution of the Windsor Food Pantry (lbs.)	Visitors (estimated)	Cyclist and pedestrians observers from Poudre Trail (estimated)	Volunteer Efforts (Hours)
2013	1,980 [1]	500	1,250	1,173
2014	2,843	600	1,100	1,416
2015	4,868	750	1,250	1,799

[1] 2013 Flood caused pounds of vegetables produced to be lowered by approximately 300 pounds from previous years.

- **Landscape Design (Xeriscape) and Maintenance Classes**
  Classes have been traditionally conducted at the Treasure Island Xeriscape Demonstration Garden. The classes provide several venues in which participants can learn more about xeriscaping as well as other home gardening tricks and techniques.
- **Customer Water Use Workshops**
  Windsor is considering starting classes where participants can learn more about wise water use. The Town is currently in the process of hiring staff to assist with this activity.
- **Garden in a Box**
  Windsor hopes to partner with Resource Central for another of the programs available. Each year Resource Centra; offers an "array of do it yourself Xeric Garden kits, created by professional landscape designers for sun, shade, and everything in between." These plant by number gardens can have a significant conservation impact and are perfect for anyone who wants to beautify their yard while using less water than standard turf. Garden is a Box is also a great complimentary activity to other programs like the demonstration garden at Treasure Island and the Landscape Classes.

Comparison of Costs and Benefits

As shown in **Table C1**, the cost for the evaluated activities varied from $0.39 per 1,000 gallons for the *Water Efficient Rate Structure/Water Budgets with Regular Updates* to $2,331.77 per 1,000 gallons for the *Water Line Replacement Program*. The 27 selected water efficiency activities and associated water savings were arranged within the targeted customer categories to more easily compare the anticipated savings to the original goals. Some of the measures contribute savings to more than one category. **Table 18** shows the water savings for the selected activities, sub-totaled for each category.

Table 18: Combined Water Savings of Selected Water Efficiency Activities

Conservation Measures and Programs	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Non-Revenue Water		
Meter Testing and Replacement Program/Meter Upgrades	1.64	16.4
System Wide Water Audits	0.82	8.2
Control of Apparent Losses (with Metering)	0.82	8.2
Leak Detection and Repair Program	1.64	16.4
Master Plans/Water Supply Plans	0.41	4.1
Water Line Replacement Program	0.52	5.2

Conservation Measures and Programs *(cont.)*	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Non-Revenue Water cont.		
Subtotal - MG	**5.8**	**58**
Acre-Feet	**17.9**	**179**
Residential (InT-Res)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	20.39	203.9
Water Efficient Rate Structure with Regular Updates to Rate Study	16.99	169.9
Water Budgets	33.99	339.9
Master Plans/Water Supply Plans	0.85	8.5
Indoor Residential Water Assessments	0.06	3.0
Residential Appliance Retrofits	0.22	12.1
Residential Irrigation Assessments	2.17	119.5
Rebate for ET Irrigation System Controllers	0.22	11.9
Turf Replacement Programs/Xeriscape Incentives	0.06	3.4
Water Waste Ordinance	0.10	1.0
Time of Day Watering Restrictions	0.16	1.6
Landscape Design Ordinances and Restrictions	0.39	3.9
Outdoor Green Building Construction	0.10	5.5
Educational Activities	6.80	68.0
Xeriscape Demonstration Garden	0.85	8.5
Landscape Design (Xeriscape) and Maintenance Classes	0.003	0.2
Customer Water Use Workshops	0.00349	0.2
Garden in a Box	0.01	0.5
Subtotal - MG	**83.4**	**961**
Acre-Feet	**255.8**	**2,951**
Business (InT-Bus)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	2.02	20.2
Water Efficient Rate Structure with Regular Updates to Rate Study	1.35	13.5
Water Budgets	3.37	33.7
Commercial Tap Fees with Water Use Efficiency Incentives	0.34	3.4
Master Plans/Water Supply Plans	0.17	1.7
Irrigation Improvements/Water Saving Technologies	0.01	0.1
Commercial Water Efficiency Rebates	1.41	14.1
Rebate for ET Irrigation System Controllers	0.02	1.2

Conservation Measures and Programs *(cont.)*	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Business (InT-Bus) cont.		
Turf Replacement Programs/Xeriscape Incentives	0.01	0.5
Water Waste Ordinance	0.10	1.0
Time of Day Watering Restrictions	0.01	0.1
Landscape Design Ordinances and Restrictions	0.03	0.3
Town Facility Requirements	0.22	2.2
Educational Activities	0.34	3.4
Xeriscape Demonstration Garden	0.17	1.7
Landscape Design (Xeriscape) and Maintenance Classes	0.0002	0.01
Customer Water Use Workshops	0.0002	0.01
Garden in a Box	0.0007	0.04
Subtotal - MG	**9.6**	**97**
Acre-Feet	**29.4**	**299**
Industrial (InT-Ind)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	2.56	25.6
Water Efficient Rate Structure with Regular Updates to Rate Study	0.85	8.5
Water Budgets	1.71	17.1
Master Plans/Water Supply Plans	0.21	2.1
Irrigation Improvements/Water Saving Technologies	0.02	0.2
Commercial Water Efficiency Rebates	1.79	17.9
Rebate for ET Irrigation System Controllers	0.05	2.6
Turf Replacement Programs/Xeriscape Incentives	0.01	0.7
Water Waste Ordinance	0.10	1.0
Time of Day Watering Restrictions	0.01	0.1
Landscape Design Ordinances and Restrictions	0.03	0.3
Educational Activities	0.43	4.3
Xeriscape Demonstration Garden	0.21	2.1
Landscape Design (Xeriscape) and Maintenance Classes	0.001	0.04
Customer Water Use Workshops	0.001	0.04
Garden in a Box	0.001	0.04
Subtotal - MG	**8.0**	**83**
Acre-Feet	**24.5**	**253**
School (InT-Sch)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	0.17	1.7

Conservation Measures and Programs *(cont.)*	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
School (InT-Sch) cont.		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	0.06	0.6
Water Efficient Rate Structure with Regular Updates to Rate Study	0.17	1.7
Water Budgets	0.01	0.1
Master Plans/Water Supply Plans	0.12	1.2
Commercial Water Efficiency Rebates	0.10	1.0
Water Waste Ordinance	0.09	0.9
Educational Activities	0.01	0.1
Subtotal - MG	**0.7**	**7**
Acre-Feet	**2.3**	**23**
Church (InT-Chu)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	0.08	0.8
Water Efficient Rate Structure with Regular Updates to Rate Study	0.03	0.3
Water Budgets	0.08	0.8
Master Plans/Water Supply Plans	0.01	0.1
Irrigation Improvements/Water Saving Technologies	0.01	0.1
Water Waste Ordinance	0.10	1.0
Time of Day Watering Restrictions	0.001	0.014
Landscape Design Ordinances and Restrictions	0.004	0.036
Educational Activities	0.03	0.3
Xeriscape Demonstration Garden	0.01	0.1
Garden in a Box	0.0004	0.02
Subtotal - MG	**0.3**	**3**
Acre-Feet	**1.0**	**10**
Residential (OutT-Res)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	0.05	0.5
Water Efficient Rate Structure with Regular Updates to Rate Study	0.09	0.9
Water Budgets	0.18	1.8
Master Plans/Water Supply Plans	0.004	0.04
Water Waste Ordinance	0.10	1.0
Indoor Residential Water Assessments	0.13	7.0
Educational Activities	0.04	0.4
Subtotal - MG	**0.6**	**12**
Acre-Feet	**1.8**	**35**

Conservation Measures and Programs *(cont.)*	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Residential Dual System (Dual-Res)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	17.18	171.8
Water Efficient Rate Structure with Regular Updates to Rate Study	14.32	143.2
Water Budgets	14.32	143.2
Master Plans/Water Supply Plans	0.72	7.2
Indoor Residential Water Assessments	0.04	2.1
Residential Appliance Retrofits	0.19	10.6
Residential Irrigation Assessments	0.16	8.7
Rebate for ET Irrigation System Controllers	0.003	0.2
Turf Replacement Programs/Xeriscape Incentives	0.02	1.1
Water Waste Ordinance	0.10	1.0
Time of Day Watering Restrictions	0.02	0.2
Landscape Design Ordinances and Restrictions	0.06	0.6
Outdoor Green Building Construction	0.14	7.7
Educational Activities	4.29	42.9
Xeriscape Demonstration Garden	0.72	7.2
Landscape Design (Xeriscape) and Maintenance Classes	0.00004	0.002
Customer Water Use Workshops	0.00004	0.002
Garden in a Box	0.002	0.1
Subtotal - MG	**52.3**	**548**
Acre-Feet	**160.4**	**1,681**
Business Dual System (Dual-Bus)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	0.52	5.2
Water Efficient Rate Structure with Regular Updates to Rate Study	0.35	3.5
Water Budgets	0.43	4.3
Commercial Tap Fees with Water Use Efficiency Incentives	0.09	0.9
Master Plans/Water Supply Plans	0.04	0.4
Water Waste Ordinance	0.10	1.0
Commercial Water Efficiency Rebates	0.36	3.6
Educational Activities	0.02	0.2
Subtotal - MG	**1.9**	**19**
Acre-Feet	**5.9**	**59**

Conservation Measures and Programs *(cont.)*	Estimated Annual Water Savings (MG)	Estimated Total Water Savings over Planning Period (MG)
Landscape Only (Land)		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	2.11	21.1
Water Efficient Rate Structure with Regular Updates to Rate Study	2.82	28.2
Water Budgets	7.04	70.4
Master Plans/Water Supply Plans	0.18	1.8
Irrigation Improvements/Water Saving Technologies	0.09	0.9
Turf Replacement Programs/Xeriscape Incentives	0.01	0.5
Water Waste Ordinance	0.10	1.0
Time of Day Watering Restrictions	0.07	0.7
Landscape Design Ordinances and Restrictions	0.17	1.7
Educational Activities	0.14	1.4
Xeriscape Demonstration Garden	0.18	1.8
Landscape Design (Xeriscape) and Maintenance Classes	0.01	0.5
Customer Water Use Workshops	0.01	0.5
Garden in a Box	0.002	0.1
Subtotal - MG	**12.9**	**131**
Acre-Feet	**39.7**	**401**
Grand Total - (MG)	**175.5**	**1,919.3**
Acre-Feet	**538.7**	**5,890.1**

These savings were compared to the original goals set in Section 3. **Table 19** compares the anticipated water savings from the selected activities with the original goals and then adjusts the water saving goals for this Plan.

Over the ten-year planning period, the selected activities provide an overall estimated water savings of 5,890 acre-feet if all activities could be implemented for the entire period. The adjusted goals reflect the goals believed to be obtainable by Town Staff.

After the goals were adjusted to reflect the expected water savings, the estimated water use reduction is 18.4%. Therefore, Windsor will target an overall reduction in its projected water use by 18.4% over the planning period because of implementation of this Plan.

Table 19: Water Efficiency Goals Comparison

Water Use Categories:	Total Projected Water Use (2015 to 2024) (AF)	Reduction Goals for Planning Horizon (%)	Reduction Goals for Planning Horizon (AF)	Adjusted Reduction Goals for Planning Horizon: Total Water Savings from Activities (AF)	Adjusted Reduction Goals for Planning Horizon: Resulting Reduction (%)
In Town Residential	10,430	14.0%	1,460	2,951	28.3%
In Town Business	2,071	5.0%	104	299	14.4%
In Town Industrial	2,618	5.0%	131	253	9.7%
In Town School	177	5.0%	9	23	12.8%
In Town Church	79	5.0%	4	10	13.1%
Out of Town Residential	55	12.0%	7	35	65.0%
Dual System Residential	8,787	13.0%	1142	1,681	19.1%
Dual System Business	533	5.0%	27	59	11.0%
Landscape Only	2,162	13.0%	281	401	18.5%
Non-Revenue Water	5,021	1.0%	50	179	15.2%
Total Water Supply:	31,933				
Total Demand Reduction:			3,214	5,890	
Total Percent Reduction:			10.1%		18.4%

SECTION 5.0 – IMPLEMENTATION AND MONITORING PLAN

5.1 Implementation Plan

The implementation plan defines the process necessary to carry out the selected water efficiency activities. Leif Lesoing will be chiefly responsible for coordinating and delegating the implementation of this Plan. Some of the details Windsor will use to implement the water efficiency plan are presented in Worksheet J, **Appendix B**. Windsor will continue to work to budget money and pursue CWCB water efficiency implementation grants to meet its water efficiency goals.

5.2 Monitoring Plan

Monitoring types of demand data can be beneficial in tracking the savings generated by implementing a water efficiency plan. Windsor monitors the total treated water produced daily. Other categories of raw and treated water and customer accounts are monitored on a monthly and annual basis. The demand data which will be collected during the monitoring period of the plan is presented in Worksheets K and L, **Appendix B**. An abbreviated table of Worksheet K is presented in the following, **Table 20.**

Table 20: Selection of Demand Data for Efficiency Plan Monitoring

Monitoring Data	HB 10-1051 Reporting Requirement					Selection			
	Annual	Monthly	Bi-Monthly	Daily		Annual	Monthly	Weekly	Daily
Total Water Use									
Total treated water supplied (metered at wholesale suppliers master meters)						X	X	X	X
Total treated water delivered (sum of customer meters)	√					X	X		
Raw non-potable deliveries (Parks and Open Space)						X	X		
Reclaimed water produced									
Reclaimed water delivered									
Per capita water use						X			
Indoor and outdoor treated water deliveries						X			
Treated water peak day produced									
Reclaimed water peak day produced									
Raw water peak day produced/delivered									
Non-revenue water	√					X			

Monitoring Data *(cont.)*	HB 10-1051 Reporting Requirement					Selection			
	Annual	Monthly	Bi-Monthly	Daily		Annual	Monthly	Weekly	Daily
Water Use by Customer Type									
Treated water delivered		√				X	X		
Raw non-potable deliveries (Parks and Open Space)						X	X		
Reclaimed water delivered									
Residential per capita water use						X			
Unit water use (e.g. AF/account or AF/irrigated acre)						X			
Indoor and outdoor treated water deliveries						X			
Large users						X	X		
Other Accounting for Substitute Water Supply Plans						X	X	X	
Other Demand Related Data									
Irrigated landscape (e.g. AF/acre or number of irrigated acres)						X			
Precipitation						X	X		
Temperature						X	X		
Evapotranspiration						X	X		
Drought index information						X			
Economic conditions						X			
Population						X	X		
New taps						X	X		

SECTION 6.0 – ADOPTION OF NEW POLICY, PUBLIC REVIEW, AND FORMAL APPROVAL

6.1 Public Review Process

A public review process is required for all State approved plans. Since Windsor has had a municipal water efficiency or conservation program in place since 2002, the public has become familiar with the efficiency concept and the associated activities. The Town's public education program has contributed to this level of awareness. For this water efficiency planning process, the public was notified of the 60-day comment period from September 30, 2024, to November 29, 2024 and given instructions on how to submit comments. The Plan was available for download on Windsor's website on the Water Conservation webpage and at the Town Hall for review. One set of public comments was received during the 60-day comment period. Not all comments were directly related to water efficiency. To the extent possible, comments were addressed in the revised Plan update. Copies of public notice announcements, and a summary of the public comments, and the official Plan adoption resolution are provided in **Appendix F**.

6.2 Local Adoption and State Approval Process

After the public comment period, the comments were incorporated into the planning document as well as any additional revisions. The Windsor Board adopted the Plan at the Board meeting on December 16, 2024, and the Plan was submitted to CWCB following the Board Meeting.

CWCB provided written notification of approval with minor additions on March 20, 2025. Conditions for approval were addressed, and the official approval was received on March XX, 2025. Research and set up of programs can begin upon approval and implementation of the selected measures will likely begin in the summer of 2025. The cover letter prepared for CWCB, CWCB's Approval Checklist, and CWCB's formal approval letter are included in **Appendix G**.

6.3 Periodic Review and Update

The Town plans to review and update this efficiency plan every seven years. The next update is scheduled to be completed in 2031.

APPENDIX A

Definition of Terms

DEFINITION OF TERMS & TERMINOLOGY

This section provides an overview of some of the common terminology used in this document. Please note that this is not a comprehensive list of all terms and definitions. Other important terminology is reserved for discussion in the document.

AF:	Acre-foot: The amount of water it would take to cover one acre of land to a depth of one foot; approximately 325,851 gallons.
Build-out:	Theoretical maximum development of city, town, district, or service area
C-BT:	Colorado Big Thompson
C-BT Quota:	The percentage set by the NCWCD Board of Directors each water year which determines the amount of ac-ft per unit of CBT, i.e. 70% quota equals 0.7 ac-ft per CBT unit.
CRC:	Community Recreation Center (in Windsor)
CWCB:	Colorado Water Conservation Board
Demand management:	The implementation of water efficiency activities to reduce water deliveries (demands) and or improve efficiencies within the distribution system. For purposes of this document, demand management refers to both system and customer water demands. Demand management is used interchangeably with water efficiency.
Demand-side:	The distribution and consumption of treated water supplies for domestic purposes or the delivery and use of reclaimed water or untreated raw (i.e. ditch water, groundwater) for non-potable purposes such as irrigation or industrial processes.
Dual water supply systems:	Water supply systems that use a combination of treated water to meet potable water needs and reclaimed water and/or non-treated water (i.e. untreated ditch water and groundwater) to meet non-potable water needs.
ET Controllers:	Evapo-transpiration controllers adjust the amount of water applied from sprinkler systems based on soil moisture and weather conditions.

ET:	Evapo-transpiration: The rate at which water is removed from the soil by evaporation and from plant surfaces by transpiration.
FCLWD:	Fort Collins-Loveland Water District
GMA:	Growth Management Area
GPCD:	Gallons per capita per day: A measure of efficiency to determine the approximate amount of water that each resident within an area utilizes each day.
Maximum Day:	The largest amount of water used in a single day.
MG:	Million gallons
MGD:	Million gallons per day
MWEP:	Municipal Water Efficiency Plan
NCWCD:	Northern Colorado Water Conservancy District. More often referred to as Northern Water (see Northern Water)
NISP:	Northern Integrated Supply Project
Non-Potable Use:	Water that is not treated and used for irrigation or other uses than potable.
Non-revenue water:	Annual non-revenue water (previously referred to as unaccounted for water) consists of unbilled authorized uses (i.e. hydrant flushing), apparent losses, and real losses. Real losses consist of leaks in the water distribution system that does not reach the end user. Apparent losses consist of unauthorized consumption, customer metering inaccuracies, and data handling errors.
Northern Water:	Northern Colorado Water Conservancy District
NPIC:	North Poudre Irrigation Company
NWCWD:	North Weld County Water District
Phreatophytes:	Species of plants and trees that consume groundwater through their root zones below the water table such as Cottonwood and Russian Olive trees.
Potable Use:	Water that is treated to drinking water standards for municipal use, including residential and commercial use.

Supply-side:	Water supply operations and facilities that include the diversion, extraction, storage, and transmission of untreated water.
SWSI:	State Wide Supply Initiative
Water efficiency:	Water efficiency includes the practices, techniques, and technologies that extend water supplies either directly through water savings or through substituting alternative supplies such as reuse. For purposes of this document, water efficiency is inclusive of water conservation and is used instead of "water conservation." The term water efficiency captures the essential objective of a local plan which is to improve the efficiency of a municipal demand and water supply system. Water efficiency includes both system demands and customer water demands. *Note: CWCB's former 2005 Water Conservation Plan Development Guidance Document and other literature on conservation and water use efficiency distinguish supply-side and demand-side water use efficiency. These resources generally characterize demand-side as technical efficiencies (e.g. water efficient toilets) and behaviors (e.g. taking shorter showers) that save water at the end use/water user level. Supply-side refers to water efficiency at the system level such as the repair of pipeline leaks and water reuse. For purposes of this Plan, the distinction between these water efficiency encompasses both supply and demand side efficiencies.*
Water efficiency activities:	Traditionally water efficiency activities have been referred to as water conservation measures and or water conservation programs. For purposes of this document, measures and programs are replaced with water efficiency activities. Water efficiency activities encompass all efforts to either save water or improve efficiencies within a water supply system.
WCP:	Water Conservation Plan. CWCB's previous designation for (Municipal) Water Efficiency Plans
Wind and Rain Sensor:	A device that is connected to the irrigation system controller that will temporarily shut off irrigation when a pre-determined amount of rain or wind is detected.
WTP:	Water treatment plant
WWTP:	Wastewater treatment plant

APPENDIX B

Municipal Water Efficiency Plan Guidance Document Worksheets

WORKSHEET A - WATER SUPPLY LIMITATIONS AND FUTURE NEEDS

Limitation and/or Future Need [1]	[2] Yes	[2] No	Comments on Limitation or Future Need [3]	How is Limitation or Future Need Being Addressed [4]
System is in a designated critical water supply shortage area	X		The Town of Windsor is located in the South Platte River Basin where the 2019 Technical Update to the Colorado Water Plan identified a maximum 43 percent gap between water needs and water supplies for the Basin's municipal and industrial sector by 2050.	Water Efficiency Planning
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	Appear to be leveling off. Higher than surrounding communities.	Town continues to add to their water right and storage portfolio for future development.
Planning substantial improvements or additions		X		Town is participating in a regional water treatment plant and the NISP project
Increases to wastewater system capacity anticipated		X		
Need additional drought reserves		X		
Drinking water quality issues		X	None	
Aging infrastructure in need of repair		X	Town is consistently upgrading their older infrastructure	
Issues with water pressure in portions of distribution system		X	No Issues	

Instructions:
[1] This column provides a list of limitations/future needs related to planning and operating the water supply system.
[2] Enter an "X" to show whether or not the system exhibits the limitations/future needs.
[3] Include any comments regarding the limitations/future needs that may be useful to consider in the planning process.
[4] If applicable, include how the limitation/future need is being addressed.

WORKSHEET D - IDENTIFICATION AND SCREENING OF FOUNDATIONAL ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification		Carry to Evaluation [5]	Reason for Elimination/Notes [6]
		Existing/ Potential Activity [3]	Targeted Customer Category [4]		
Metering (BP1)	V, VII				
Automatic Meter Reading Installation and Operations		E	All Categories	X	Includes meter upgrades
Submetering for Large Users (Indoor and Outdoor)		P	All Categories [a]		Town does not have these situations
Meter Testing and Replacement		E	Non-Revenue	X	
Meter Upgrades		E	All Categories		Included with "Automatic Meter Reading Installation and Operations"
Identify Unmetered/Unbilled Treated Water Uses		E	Non-Revenue		Part of system wide water audits
Data Collection - Monitoring and Verification (BP2)					
Frequency of Meter Reading		E	All Categories		Activities not evaluated in cost/benefit analysis because it is difficult to quantify savings
Tracking Water Use by Customer Type		E	All Categories		
Upgrade Billing System to Track Use by Sufficient Customer Types		E	All Categories		
Tracking Water Use for Large Customers		E	All Categories		
Area of Irrigated Lands in Service Area (e.g. acres)		E	All Categories		Included as cost as a component of other activities
Water Use Efficiency Oriented Rates and Tap Fees (BP1)	VII, VIII				
Volumetric Billing		E	All Categories [a]	X	combined to single activity: "Water Efficient Rate Structure"
Water Rate Adjustments		E	All Categories [a]		
Frequency of Billing		E	All Categories [a]		
Inclining/Tiered Rates		E	All Categories [a]		
Water Budgets		P	All Categories [a]	X	
Tap Fees with Water Use Efficiency Incentives		P	InT Bus, Dual Bus	X	
System Water Loss Management and Control (BP3)	V				
System Wide Water Audits		E	Non-Revenue	X	Includes "Identify Unmetered/Unbilled Treated Water Uses"
Control of Apparent Losses (with Metering)		E	Non-Revenue	X	
Leak Detection and Repair		E	Non-Revenue	X	
Water Line Replacement Program		E	Non-Revenue	X	
Planning (BP2)					
Integrated Water Resources Plans		E	All Categories		Will re-evaluate with future planning efforts
Master Plans/Water Supply Plans		E	All Categories	X	
Capital Improvement Plans		E	All Categories		Not evaluated in cost/benefit analysis because it is difficult to quantify savings
Feasbility Studies		E	All Categories		Not evaluated in cost/benefit analysis because it is difficult to quantify savings
Staff (BP4)					
Water Conservation Coordinator		E	All Categories		Cost and benefit captured in the other activities

Instructions:
[1] This column provides a list of possible activities & identifies the Best Practice activity as defined in the Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is "Existing" or a "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[5] Based on the screening process, indicate which activities will be carried onto the the evaluation phase with an "X".
[6] If eliminated via screening, comment on why.

[a] All categories except Non-Revenue
[b] Outdoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Sch, OutT-Res, OutT-Bus, OutT-Chu, and Dual-Bus excluded in calculations due to small percentages of customers in these categories.
[c] Indoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Chu, OutT-Res, OutT-Bus, OutT-Chu, and Land excluded in calculations due to small percentages of customers in these categories.

WORKSHEET E - IDENTIFICATION AND SCREENING OF TARGETED TECHNICAL ASSISTANCE INCENTIVES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification: Existing/ Potential Activity [3]	Identification: Targeted Customer Category [5]	Carry to Evaluation [6]	Reason for Elimination/Notes [7]
Installation of Water Efficient Fixtures and Appliances	I				
Indoor Audits		E	InT-Res, OutTRes, Dual-Res	X	
Toilet Retrofits		E	InT-Res, InT-Bus, Dual-Res, Dual-Bus	X	Combined into "Residential Appliance Retrofits"
Urinal Retrofits		E			
Showerhead Retrofits		E			
Faucet Retrofits (e.g. aerator installation)		E			
Water Efficient Washing Machines		E	InT-Bus, Dual-Bus	X	Included with "Commercial Water Efficient Rebates"
Water Efficient Dishwashers		E			
Efficient Swamp Cooler and Air Conditioning Use		P			
Low Water Use Landscapes	II				
Drought Resistant Vegetation		E	All Categories [b]		Included in "Turf Replacement Programs/Xeriscape Incentives"
Removal of Phreatophytes		P	All Categories [a]		Negative public response
Irrigation Efficiency Evaluations/Outdoor Water Audits		E	All Categories [b]	X	
Outdoor Irrigation Controllers		E	All Categories [b]	X	Captured in "Outdoor Water Assessments" and "Irrigation Smart Controller Rebates", and "Turf Replacement Programs/Xeriscape Incentives"
Irrigation Scheduling/Timing		E			
Rain Sensors		E			
Residential Outdoor Meter Installations		P			
Xeriscape		E			
Other Low Water Use Landscapes		E			
Irrigation Equipment Retrofits		E			
Water- Efficient Industrial and Commercial Water-Using Processes	III				
Specialized Nonresidential Surveys, Audits and Equipment Efficiency Improvements		E	InT-Bus, InT-Ind, InT-Sch, Dual-Bus	X	Evaluated as "Commercial Water Efficient Rebates"
Commercial Indoor Fixture and Appliance Rebates/Retrofits		E			
Cooling Equipment Efficiency		E			
Restaurant equipment		E			
Incentives	X				
Toilet Rebates		E	InT-Res, InT-Bus, Dual-Res, Dual-Bus	X	Combined into "Indoor Residential Rebates"
Urinal Rebates		E			
Showerhead Rebates		E			
Water Efficient Faucet or Aerator Rebates		E			
Water Efficient Washing Machine Rebates		E			
Water Efficient Dishwasher Rebates		E			
Efficient Irrigation Equipment Rebates		E	All Categories [b]		Captured in "Residential Irrigation Assessments"
Landscape Water Budgets Information and Customer Feedback		E	All Categories [b]		
Turf Replacement Programs/Xeriscape Incentives		E	InT-Res, InT-Bus, Dual-Res, Dual-Bus	X	
Give-aways		E	InT-Res, Dual-Res	X	

Instructions:

[1] This column provides a list of activities & if applicable, identifies the Best Practice activity as defined under *Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado*. List additional activities identified through the planning process.

[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.

[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.

[4] Specify which level the historical/potential activities fall under by entering an "X" in the appropriate column.

[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.

[6] Based on the screening process, indicate which activities will be carried on the the evaluation phase with an "X".

[7] If eliminated via screening, comment on why.

[a] All categories except Non-Revenue

[b] Outdoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Sch, OutT-Res, OutT-Bus, OutT-Chu, and Dual-Bus excluded in calculations due to small percentages of customers in these categories.

[c] Indoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Chu, OutT-Res, OutT-Bus, OutT-Chu, and Land excluded in calculations due to small percentages of customers in these categories.

WORKSHEET F - IDENTIFICATION AND SCREENING OF ORDINANCES AND REGULATIONS

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification		Carry to Evaluation [6]	Reason for Elimination/Notes [7]
		Existing/ Potential Activity [3]	Targeted Customer Category [5]		
General Water Use Regulations	IX				
Water Waste Ordinance (BP 5)		E	All Categories	X	
Time of Day Watering Restriction		E	All Categories [b]	X	
Day of Week Watering Restriction		P	All Categories [b]		
Water Overspray Limitations		P	All Categories		Will re-evaluate in future planning efforts
Landscape Design/Installation Rules and Regulations	IX				
Rules and Regulations for Landscape Design/Installation (BP 9)		P	All Categories [b]		
Landscaper Training and Certification (BP 8)		P			
Irrigation System Installer Training and Certification (BP 8)		P			
Soil Amendment Requirements (BP 9)		P			
Turf Restrictions (BP 9)		P			
Irrigation Equipment Requirements		P			
Outoor Water Audits/Irrigation Efficiency Regulations (BP 10)		P		X	
Outdoor Green Building Construction (BP 8,9)		P	All Categories [b]	X	
Indoor and Commercial Regulations	IX				
High Efficiency Fixture and Appliance Replacement (BP 12)		P	All Categories [c]		
Commercial Cooling and Process Water Requirements (BP 14)		P			
Green Building Construction (BP 12)		P			
Indoor Plumbing Requirements (BP 12)		P			
City Facility Requirements (BP 12)		E		X	
Required Indoor Residential Audits (BP 13)		P	InT-Res, OutT-Res, Dual-Res		Negative public response
Required Indoor Commercial Audits (BP 14)		P	InT-Bus, InT-Ind, InT-Sch, Dual-Bus		Negative public response
Commercial Water Wise Use Regulations (Car Washes, Restaurants, etc.)		P	InT-Bus, Dual-Bus		Will re-evaluate in future planning efforts

Instructions:
[1] This column provides a list of possible activities & if applicable identifies the Best Practice activity as defined under Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Based on the screening process, indicate which activies will be carried on the the evaluation phase with an "X".
[7] If eliminated via screening, comment on why.

[a] All categories except Non-Revenue
[b] Outdoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Sch, OutT-Res, OutT-Bus, OutT-Chu, and Dual-Bus excluded in calculations due to small percentages of customers in these categories.
[c] Indoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Chu, OutT-Res, OutT-Bus, OutT-Chu, and Land excluded in calculations due to small percentages of customers in these categories.

WORKSHEET G - IDENTIFICATION AND SCREENING OF EDUCATION ACTIVITIES

Water Efficiency Activities for Screening [1]	State Statute Requirement [2]	Identification		Carry to Evaluation [6]	Reason for Elimination/Notes [7]
		Existing/ Potential Activity [3]	Targeted Customer Category [5]		
Customer Education (BP6)	VI				
Bill Stuffers		E	All Categories [a]	X	Combined into "Public Education"
Newsletter		E			
Newspaper Articles		E			
Mass Mailings		E			
Web Pages		E			
Water Fairs		E	InT-Res, OutT-Res, Dual-Res		
K-12 Teacher and Classroom Education Programs		E			
Message Development/Campaign		E	All Categories [a]		
Interactive Websites		E			
Social Networking (e.g Facebook)		E			
Customer Surveys		P			
Focus Groups		P			Will re-evaluate in future planning efforts
Citizen Advisory Boards		E			
Technical Assistance	VI				
Customer Water Use Workshops		P	All Categories [b]	X	
Landscape Design and Maintenance Workshops		E		X	
Xeriscape Demonstration Garden		E		X	
Garden in a Box		E		X	
Water Conservation Expert Available		E	All Categories [a]	X	

Instructions:
[1] This column provides a list of possible activities & if applicable identifies the Best Practice activity as defined under Colorado WaterWise Guidebook of Best Practices (BP) for Municipal Water Conservation in Colorado. List additional activities identified through the planning process.
[2] This column identifies, by roman numeral, the elements that correspond with the best practices and that shall be fully considered in the planning process per Colorado State Statute 37-60-126.
[3] Specify whether the activity is an "Existing" or "Potential" activity to carry through screening by entering an "E" or "P", respectively.
[4] For current/historical activities, specify which level the activities fall under by entering an "X" in the appropriate column.
[5] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[6] Based on the screening process, indicate which activities will be carried on the the evaluation phase with an "X".
[7] If eliminated via screening, comment on why.

[a] All categories except Non-Revenue
[b] Outdoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Sch, OutT-Res, OutT-Bus, OutT-Chu, and Dual-Bus excluded in calculations due to small percentages of customers in these categories.
[c] Indoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Chu, OutT-Res, OutT-Bus, OutT-Chu, and Land excluded in calculations due to small percentages of customers in these categories.

WORKSHEET J - IMPLEMENTATION PLAN

Selected Water Efficiency Activities [1]	Period of Implementation [2]	Entity/Staff Responsible for Implementation [6]
Foundational Activities		
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	2009 - ongoing	Engineering; Public Works
System Wide Water Audits	2008 - ongoing	Engineering; Public Works
Meter Testing and Replacement Program/Meter Upgrades	Unknown - ongoing	Engineering; Public Works
Water Efficient Rate Structure/Water Budgets with Regular Updates	2003 - present	Engineering
Leak Detection and Repair Program	2003 - present	Engineering; Public Works
Water Line Replacement Program	Unknown - ongoing	Engineering; Public Works
Master Plans/Water Supply Plans	2008 - ongoing	Various Town Staff
Control of Apparent Losses (with Metering)	Unknown - ongoing	Engineering; Public Works
Commercial Tap Fees with Water Use Efficiency Incentives	2025	Engineering; Public Works; Planning
Water Budgets	2025	Engineering; Public Works
Targeted Technical Assistance and Incentives		
Residential Irrigation Assessments	2017 - ongoing	Water Efficiency; Utility Billing
Indoor Residential Water Assessments	2017 - ongoing	Water Efficiency; Utility Billing
Residential Appliance Retrofits/Rebates	2018 - ongoing	Water Efficiency; Utility Billing
Rebate for ET Irrigation System Controllers	2016 - ongoing	Water Efficiency; Utility Billing
Irrigation Improvements/Water Saving Technologies	2025	Water Efficiency; Utility Billing
Turf Replacement Programs/Xeriscape Incentives	2025	Water Efficiency; Utility Billing
Commercial Water Efficiency Rebates	2025	Water Efficiency; Utility Billing
Ordinances and Regulations		
Water Waste Ordinance	2003 - present	Public Works
Time of Day Watering Restrictions	2007 - present	Public Works
Landscape Design Ordinances and Restrictions	2017 - ongoing	Public Works
Town Facility Requirements	2016 - ongoing	Engineering; Public Works
Outdoor Green Building Construction	2025	Economic Development
Education Activities		
Education Activities: Bill Stuffers, Newsletters, Newspaper Articles, Mass Mailings, Message Development, Social Networking & Website	2003 - present	Water Efficiency; Utility Billing
Xeriscape Demonstration Garden	2003 - present	Water Efficiency
Landscape Design (Xeriscape) and Maintenance Classes	2012 - present	Water Efficiency
Garden in a Box	2017 - ongoing	Water Efficiency; Utility Billing
Customer Water Use Workshops	2025	Water Efficiency

Instructions:
[1] Provide the list of water efficiency activities selected for implementation during Step 4.
[2] Provide period in which activity is going to be implemented.
[3] Include information on specific actions necessary to implement the activites (e.g. advertise rebates to public).
[4] Indicate timing of when the action are scheduled to be implemented (e.g. when leaks will be repaired, when rebate program will start, etc.).
[5] Insert anticipated annual costs.
[6] Specify which entity/staff responsible for implementing the activities.
[7] If applicable, comment on necessary coordination among staff/other entities and how the public will be involved. This includes educational campaigns, feedback, direct participation in certain actions, etc.
[8] Add any additional comments.

WORKSHEET K - SELECTION OF MONITORING DEMAND DATA FOR MONITORING PLAN

Monitoring Data [1]	HB 10-1051 Reporting Requirement [2]				Selection [3]				Entity/Staff Responsible for Data Collection and Evaluation [4]	Comments [6]
	Annual	Monthly	Bi-Monthly	Daily	Annual	Monthly	Bi-Monthly	Daily		
Total Water Use										
Total treated water produced (metered at WTP discharge)					X	X	X	X	Engineering, Public Works	
Total treated water delivered (sum of customer meters)	√				X	X			Engineering, Public Works	
Raw non-potable deliveries					X	X			Wade Willis (Parks and Open Space Division)	
Reclaimed water produced (metered at WWTP discharge)									N/A	
Reclaimed water delivered (sum of customer meters)									N/A	
Per capita water use					X				Engineering, Public Works	Per capita use based on residential population
Indoor and outdoor treated water deliveries					X				Engineering, Public Works	Estimated from daily average use during Dec - Mar
Treated water peak day produced									N/A	
Reclaimed water peak day produced									N/A	
Raw water peak day produced/delivered									N/A	
Non-revenue water	√				X				Engineering, Public Works	
Insert other demand data										
Water Use by Customer Type										
Treated water delivered		√			X	X			Engineering, Public Works	
Raw non-potable deliveries					X	X			Water Resources	
Reclaimed water delivered									N/A	
Residential per capita water use					X				Engineering, Public Works	Per capita use based on residential population
Unit water use (e.g. AF/account or AF/irrigated acre)					X				Engineering, Public Works	Based on taps
Indoor and outdoor treated water deliveries					X				Engineering, Public Works	Estimated from daily average use during Dec - Mar
Large users					X	X			Customer Service	No specific format. Mostly observational.
Other Accounting for Substitute Water Supply Plans					X	X	X		Water Resources	
Other Demand Related Data										
Irrigated landscape (e.g. AF/acre or number of irrigated acres)					X				Engineering, Public Works	Town owned irrigated lands. Water Budgets may include additional analysis
Precipitation					X	X			Engineering, Public Works, Parks and Open Space	
Temperature					X	X			Engineering, Public Works, Parks and Open Space	
Evapotranspiration					X	X			Engineering, Public Works, Parks and Open Space	
Drought index information					X				Engineering, Public Works, Parks and Open Space	
Economic conditions					X				Finance, Engineering, Other Town Staff	
Population					X	X			Planning and Zoning	
New taps					X	X			Customer Service	
Insert other demand related data										

Instructions:
[1] This worksheets provides a list of possible demand data. Add additional demand data provider would like to monitor.
[2] Specifies annual reporting requirements per HB 10-1051.
[3] Select demand data provider plans to use to monitor effectiveness of water efficiency activities by inserting an "X" in appropriate boxes.
[4] Specify staff/entity reponsible for data collection and evaluation.
[5] Specify the timing and/or set schedule in which data will be collected and evaluated.
[6] Add any additional comments.

APPENDIX C

Additional Tables

Table C-1: Water Effciency Activity Evaluation

Water Efficiency Activities for Evaluation	Existing/ Potential Activity	Targeted Customer Category	Review of Qualitative Screening			Evaluation								
			Qualitative Goals			Projected Water Savings						Quantitative Goals		
			Benefit in Water Savings	*Staff Approval and Availability*	*Board and Public Approval*	Total Water Savings over the Planning Period (MG)	Total Water Savings over the Planning Period (AF)	Average Annual Water Savings (MG/yr)	Average Annual Water Savings (AF/yr)	Cost per 1,000 gal saved	Projected Implementation Costs over Planning Period	*Helps to Achieve Overall Savings Goals*	*Low Cost w/ Significant Water Savings*	*Beneficial to Community*
Foundational Activities														
Meter Upgrades - Automatic Water Meter Reading Installation and Operations	E	All Categories [a]	X	X	X	450.9	1,383.86	45.09	138.39	$11.98	$5,400,000	X	X	X
Meter Testing and Replacement Program/Meter Upgrades	E	Non-Revenue	X	X	X	16.4	50.22	1.64	5.02	$17.39	$284,558	X		X
Water Efficient Rate Structure with Regular Updates to Rate Study	E	All Categories [a]	X	X	X	368.5	1,130.87	36.85	113.09	$0.39	$145,000	X	X	X
Water Budgets	P	All Categories [a]	X	X		612.9	1,880.92	61.29	188.09	$0.49	$300,833	X	X	
Commercial Tap Fees with Water Use Efficiency Incentives	P	In-Bus, Dual-Bus	X	X	X	4.2	13.02	0.42	1.30	$1.18	$5,000			
System Wide Water Audits	E	Non-Revenue	X	X	X	8.2	25.11	0.82	2.51	$9.17	$75,000	X		X
Control of Apparent Losses (with Metering)	E	Non-Revenue				8.2	25.11	0.82	2.51	$39.72	$325,000			
Leak Detection and Repair Program	E	Non-Revenue	X	X	X	16.4	50.22	1.64	5.02	$12.22	$200,000	X		X
Water Line Replacement Program	E	Non-Revenue				5.2	15.99	0.52	1.60	$2,331.77	$12,150,000			
Master Plans/Water Supply Plans	E	All Categories	X	X	X	26.0	79.83	2.60	7.98	$10.57	$275,000	X		X
Targeted Technical Assistance and Incentives														
Indoor Residential Water Assessments	P	InT-Res, OutT-Res, Dual-Res	X	X	X	12.1	37.25	0.22	0.68	$6.05	$73,500	X		X
Residential Appliance Retrofits/Rebates		InT-Res, OutT-Res, Dual-Res	X	X	X	22.7	69.56	0.41	1.26	$0.77	$17,400			
Residential Irrigation Assessments	P	InT-Res, OutT-Res, Dual-Res	X	X	X	128.2	393.57	2.33	7.16	$4.68	$600,000	X		X
Commercial Water Efficiency Rebates	P	In-Bus, InT-Ind, InT-Sch, Dual-Bus	X	X	X	36.8	112.97	3.68	11.30	$3.04	$112,000	X		
Rebate for ET Irrigation System Controllers	P	InT-Res, In-Bus, InT-Ind, Dual-Res, Land	X	X	X	15.9	48.86	0.29	0.89	$21.78	$346,797			
Turf Replacement Programs/Xeriscape Incentives	P	InT-Res, In-Bus, InT-Ind, Dual-Res, Land	X	X	X	6.1	18.84	0.11	0.34	$39.10	$240,000			
Irrigation Improvements/Water Saving Technologies	P	In-Bus, InT-Ind, InT-Chu, Land	X	X	X	1.4	4.20	0.14	0.42	$274.24	$375,000			
Ordinances and Regulations														
Water Waste Ordinance	E	All Categories [a]	X	X	X	8.8	26.96	0.88	2.70	$3.41	$30,000			
Time of Day Watering Restrictions	E	All Categories [b]	X	X		2.7	8.41	0.27	0.84	$21.89	$60,000	X		X
Landscape Design Ordinances and Restrictions	P	All Categories [b]	X			6.9	21.03	0.69	2.10	$17.51	$120,000			
Outdoor Green Building Construction	P	IntT-Res, Dual-Res	X			13.2	40.39	0.24	0.73	$9.12	$120,000			
Town Facility Requirements	P	In-Bus	X	X	X	2.2	6.86	0.22	0.69	$18.40	$41,150			
Education Activities														
Bill Stuffers	E	All Categories [a]	X	X	X	121.6	373.25	12.16	37.32	$7.09	$862,498	X	X	X
Newsletters	E		X	X	X							X	X	X
Newspaper Articles	E		X	X	X							X	X	X
Mass Mailings	E		X	X	X							X	X	X
Message Development	E		X	X	X							X		
Social Networking	E		X	X	X							X		
Website	E		X	X	X							X	X	X

Table C-1: Water Effciency Activity Evaluation

Water Efficiency Activities for Evaluation	Existing/ Potential Activity	Targeted Customer Category	Review of Qualitative Screening			Evaluation								
			Qualitative Goals			Projected Water Savings						Quantitative Goals		
			Benefit in Water Savings	*Staff Approval and Availability*	*Board and Public Approval*	Total Water Savings over the Planning Period (MG)	Total Water Savings over the Planning Period (AF)	Average Annual Water Savings (MG/yr)	Average Annual Water Savings (AF/yr)	Cost per 1,000 gal saved	Projected Implementation Costs over Planning Period	*Helps to Achieve Overall Savings Goals*	*Low Cost w/ Significant Water Savings*	*Beneficial to Community*
Xeriscape Demonstration Garden	E	InT-Res, In-Bus, InT-Ind, InT-Sch, InT-Chu, Dual-Res, Land	X	X	X	**21.4**	**65.81**	**2.14**	**6.58**	**$1.34**	**$28,750**			
Landscape Design (Xeriscape) and Maintenance Classes	P/E	All Categories [b]	X		X	**0.7**	**2.24**	**0.01**	**0.04**	**$36.00**	**$26,250**			
Customer Water Use Workshops		InT-Res, In-Bus, InT-Ind, Dual-Res, Land	X		X	**0.7**	**2.24**	**0.01**	**0.04**	**$30.86**	**$22,500**			
Garden in a Box	P	All Categories [b]	X	X	X	**0.8**	**2.53**	**0.01**	**0.05**	**$49.83**	**$41,000**			
					TOTAL	**1,919.30**	**5,890.11**	**175.52**	**538.65**	**-**	**$16,758,736**			

[a] All categories except Non-Revenue
[b] Outdoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Sch, OutT-Res, OutT-Chu, and Dual-Bus excluded in calculations due to small percentages of customers in these categories.
[c] Indoor Efficiency Activity: All categories except Non-Revenue potentially benefitted; InT-Chu, OutT-Res, OutT-Chu, and Land excluded in calculations due to small percentages of customers in these categories.

Instructions:
[1] List of water efficiency activities that were carried to the evaluation process (based upon Worksheets D through G).
[2] Specify whether the activity is "Existing" or "Potential" activity by entering an "E" or "P", respectively.
[3] As applicable, specify which customer category (residential, commercial, etc.) is/would be impacted by the activity.
[4] Enter the screening results from Worksheets D through G by entering the screening criteria and appropriate "X" designations.
[5] As applicable, enter the estimated water savings to implement the activities within the planning horizon and the average annual water savings. Enter N/A if the water savings can not be estimated with reasonable accuracy.
[6] As applicable, enter the estimated annual costs.
[7] Enter evaluation criteria based on quantitative goals developed in Step 3 and insert an "X" for activities that meet the listed criteria.
[8] Enter an "X" for activities selected for implementation and provide an explanation if an activity was not selected for implementation.

Total Projected Treated Water Delivery (2024-2033)=	31,982 AF
Total Savings =	18.4%
Initial Goal =	10%

APPENDIX D

Activity Cost and Benefit Analysis

Meter Upgrades - Automatic Water Meter Reading Installation and Operations

Advanced Metering Infrastructure (AMI) refers to systems that measure, collect and analyze water or energy usage, and interact with water meters, through various communication media either on-demand or on pre-defined schedules. Upgrading to AMI technology can help Windsor further automate their water systems, detect problem areas earlier, give customers tools to monitor water use, provide more accurate rates and reduce demand. A key benefit of AMI is enabling customers to access their water use data through a portal, which allows customers to monitor their water use.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Savings Rate	*Estimated Annual Water Savings (gal/yr)*
In Town Residential	339.86	6.0%	20,391,898
In Town Business	67.49	3.0%	2,024,666
In Town Industrial	85.32	3.0%	2,559,592
In Town School	5.78	3.0%	173,276
In Town Church	2.57	3.0%	77,074
Out of Town Residential	1.78	3.0%	53,330
Residential Dual System	286.32	6.0%	17,179,383
Business Dual System	17.35	3.0%	520,562
Landscape Only	70.45	3.0%	2,113,384

Estimated Annual Water Savings	**45.09**	MG/yr
Estimated Savings over Planning Period	**450.9**	MG

Notes:

"We found that signing up for an AMI portal led to an average decrease in daily water usage in the range of 6.3 to 12.1%. However, the observed decrease did not reach the threshold of statistical significance". (Increasing consumer benefits & engagement in AMI-based conservation programs, The Behavioralist/AWWA)

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	600	/year
Hourly Cost	$150.00	/hour
Annual Labor	**$90,000.00**	/year

Material Costs		
Unit Cost (per Meter)	**$450.00**	
Number of Meters/Year	**1000**	
Annual Materials	**$450,000.00**	/year

Notes:

Unit Cost based on another provider's cost-benefit on AMI in 2020. We assume approximately 1/10th of the meters would be replaced per year.

Estimated Annual Cost	**$540,000**	/year
Estimated Cost over Planning Period	**$5,400,000**	
Cost per 1000 Gallons Saved	**$11.98**	

Meter Testing and Replacement Program/Meter Upgrades

Large meters are sent in for testing and calibration every 7 years; small meters are replaced every 10 years. Faulty meters account for apparent losses (i.e. losses due to meter inaccuracies) and real losses (also known as physical losses).

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	1.00%	

Notes:

A study conducted in Anne Arundel County, Maryland showed an average savings of 1% by upgrading and replacing faulty meters.

Category	Avg. Annual Water Use over Planning Period (MG)	*Estimated Annual Water Savings (gal/yr)*
Non Revenue Water	163.64	1,636,387

Estimated Annual Water Savings	**1.64**	MG/yr
Estimated Savings over Planning Period	**16.4**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	135.0	
Hourly Cost	$150.00	
Annual Staff Costs	$20,250	
Annual Labor	**$20,250.00**	
Materials Costs		
Unit Cost	$182.35	/participant
Number of Meters/Year	45	/year
Annual Materials	**$8,205.83**	/year

Notes:

The $155.10 weighted average unit cost includes meter testing and replacement costs.

Residential = $150/meter, NonRes and other categories = $200/meter.

Estimated Annual Cost	**$28,456**	/year
Estimated Total Cost over Planning Period	**$284,558**	
Cost per 1000 Gallons Saved	**$17.39**	

Water Efficient Rate Structure with Regular Updates to Rate Study

Based on many studies, water rates (e.g., inclining and/or tiered) are one of the most effective ways to encourage efficient water use. A rate study is necessary to ensure maximum water conservation savings. Windsor's last rate study was conducted in 2011. Because they are very interrelated, this measure also includes Inclining/Tiered rates and Volumetric Billing.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Annual Estimated Savings Rate	*Estimated Annual Water Savings (gal/yr)*
In Town Residential	339.86	5.0%	16,993,248
In Town Business	67.49	2.0%	1,349,777
In Town Industrial	85.32	1.0%	853,197
In Town School	5.78	1.0%	57,759
In Town Church	2.57	1.0%	25,691
Out of Town Residential	1.78	5.0%	88,884
Residential Dual System	286.32	5.0%	14,316,153
Business Dual System	17.35	2.0%	347,041
Landscape Only	70.45	4.0%	2,817,845

Notes:

Assumed a conservative reduction of per customer category of projected total billed water. Rate change studies have shown an even greater savings (e.g., Southwest Florida Water Management District study indicated a 13% savings). Conservative savings rates were applied to each category.

Estimated Annual Water Savings	**36.85**	MG/yr
Estimated Savings over Planning Period	**368.5**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	50	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$7,500.00	
Third Party Costs (Rate study)	$7,000.00	/year
Annual Labor	**$14,500.00**	/year

Notes:

Annual staff costs include coordination with consultants.

Total Cost to Water Provider

Estimated Annual Cost	**$14,500**	/year
Estimated Total Cost over Planning Period	**$145,000**	
Cost per 1000 Gallons Saved	**$0.39**	

Water Budgets

Every water customer has unique water needs. For this activity, Windsor proposes to bill customers using a personalized water budget (using previous 12 months of usage) that will reflect their specific water needs.The goal of a water budget structure is to incentivize customers to use water more efficiently by rewarding efficient water use and reducing water waste. Those customers who are efficient, use the lowest-cost water and therefore pay the lowest rates. Customers who are inefficient pay more for the increasing cost of the water they consume. A water budget is the amount of water a customer is expected to need for a specific month. Since everyone's needs are different, each customer's water budget will be different. Also, water budgets may vary monthly based on seasonal outdoor watering needs. No matter what a customer's budget is, customers will only be billed for the water they use.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Annual Estimated Savings Rate	*Estimated Annual Water Savings (gal/yr)*
In Town Residential	339.86	10.0%	33,986,497
In Town Business	67.49	5.0%	3,374,443
In Town Industrial	85.32	2.0%	1,706,394
In Town School	5.78	3.0%	173,276
In Town Church	2.57	3.0%	77,074
Out of Town Residential	1.78	10.0%	177,768
Residential Dual System	286.32	5.0%	14,316,153
Business Dual System	17.35	2.5%	433,801
Landscape Only	70.45	10.0%	7,044,613

Notes:

Assumed a conservative reduction of per customer category of projected total billed water. Rate change studies have shown an even greater savings (e.g. DeOreo et al. (2008) indicates that water budget-based structures can reduce water demands by 10-30%).

Estimated Annual Water Savings	**61.29**	MG/yr
Estimated Savings over Planning Period	**612.9**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	110	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$16,500.00	
Third Party Costs (Rate study)	$8,000.00	/year
Annual Labor	**$24,500.00**	/year

Notes:

Annual staff costs include coordination with consultants.

Set-up Costs		
Staff Hours	280	
Hourly Cost	$150.00	/hour
Staff Costs	$42,000.00	
Software upgrades	$25,000.00	/year
Total Set-up Costs	**$67,000.00**	/year

Total Cost to Water Provider

Estimated Annual Cost	**$30,083**	/year
Estimated Total Cost over Planning Period	**$300,833**	
Cost per 1000 Gallons Saved	**$0.49**	

Commercial Tap Fees with Water Use Efficiency Incentives

Windsor determines tap fees for commericial customers depending on the anticipated use, incentivizing commercial customers to use less water.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Annual Estimated Savings Rate	*Estimated Annual Water Savings (gal/yr)*
In Town Business	67.49	0.5%	337,444
Business Dual System	17.35	0.5%	86,760

Notes:

Tap fees are a one-time cost, so we assume a conservative reduction of per customer category of projected total billed water.

Estimated Annual Water Savings	**0.42**	MG/yr
Estimated Savings over Planning Period	**4.2**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	40	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$6,000.00	
Annual Labor	**$6,000.00**	/year

Total Cost to Water Provider

Estimated Annual Cost	**$500**	/year
Estimated Total Cost over Planning Period	**$5,000**	
Cost per 1000 Gallons Saved	**$1.18**	

System Wide Water Audits

By utilizing System Wide Water Audits and paired with other measures (e.g., Metering), Windsor identifies unmetered and unbilled treated water uses in order to assess where losses are occurring and how losses can be addressed. These losses are considered non-revenue water.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.5%

Notes:

By specifically identifying these losses, additional actions can be taken to reduce the water lost. This measure has the potential to improve all categories. A conservative reduction of 0.5% of projected annual water use was assumed.

Category	Avg. Annual Water Use over Planning Period (MG)	*Estimated Annual Water Savings (gal/yr)*
Non Revenue Water	163.64	818,193

Estimated Annual Water Savings	**0.82**	MG/yr
Estimated Savings over Planning Period	**8.2**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	50	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$7,500.00	
Annual Labor	**$7,500.00**	/year

Notes:

Estimated Annual Cost	**$7,500**	/year
Estimated Total Cost over Planning Period	**$75,000**	
Cost per 1000 Gallons Saved	**$9.17**	

Control of Apparent Losses (with Metering)

This measure entails utilizing - meters throughout the system to determine where system losses are occuring.

Planning Period	2024 to 2033
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	0.5%

Category	Avg. Annual Water Use over Planning Period (MG)	*Estimated Annual Water Savings (gal/yr)*
Non Revenue Water	163.64	818,193

Notes:

2019 - 2023 average system non-revenue leakage/loss rate was 15.7% . One of the first steps in reducing losses is to identify where the losses are occuring. Metering and System Wide Water Audits help in this process.

Estimated Annual Water Savings	**0.82**	MG/yr
Estimated Savings over Planning Period	**8.2**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	100.0	
Hourly Cost	$150.00	
Annual Staff Costs	$15,000	
Annual Labor	**$15,000.00**	
Materials Costs		
Unit Cost	$3,500.00	/meter
Number of New Meters	5	/year
Annual Materials	**$17,500.00**	/year

Notes:

Staff Hours is estimated at approximately 20 hrs./replaced meter

Meters range in price depending on size and type. Prices range from $2000/unit to over $5,000 per unit. Unit cost represents an approximate average.

Estimated Annual Cost	**$32,500.00**	/year
Estimated Total Cost over Planning Period	**$325,000.00**	
Cost per 1000 Gallons Saved	**$39.72**	

Leak Detection and Repair Program

Currenlty, Windsor combines staff water use observations with help from an outside consultant to evaluate their system for leaks. Repairs to the system are made as needed.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	1.00%	
Annual Estimated Non-Revenue Water without Savings	163.64	MG/yr
Estimated Annual Water Savings	**1.64**	MG/yr
Estimated Savings over Planning Period	**16.4**	MG

Notes:

2019 - 2023 average system unaccounted leakage/loss rate was 15.7%.

Savings is the estimated production (without savings) equals the current projected water usage including metered and non-revenue water.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	80	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$12,000.00	
Third Party Costs (Leak Detection Consult)	$8,000.00	/year
Annual Labor	**$20,000.00**	/year

Notes:

Third Party Costs include leak survey preformed annually by a consultant.

Annual staff costs include coordination with consultants.

Estimated Annual Cost	**$20,000**	/year
Estimated Total Cost over Planning Period	**$200,000**	
Cost per 1000 Gallons Saved	**$12.22**	

Water Line Replacement Program

This measure involves a continuing process of replacing old pipes within Windsor

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	1.0%	of area replaced
Estimated Percentage of Usage of Area Affected	5.0%	
Annual Estimated Water Usage for Area Affected	52.11	MG/yr
Estimated Water Production over Planning Period without Savings	521.06	MG
Estimated Annual Water Savings	**0.52**	MG/yr
Estimated Savings over Planning Period	**5.2**	MG

Notes:

The line replacement is estimated to affect approximately 5% of the service area each year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	100	/year
Hourly Cost	$150	/hour
Annual Labor	**$15,000**	/year

Notes:

Costs provided by Windsor.
1.2 million budgeted in 2016

Labor and Materials Costs		
Annual Materials Budget	$1,200,000	/year
Annual Materials	**$1,200,000**	/year

Notes:

Costs provided by Windsor. $1.2 million budgeted for 2016

Estimated Annual Cost	**$1,215,000**	/year
Estimated Total Cost over Planning Period	**$12,150,000**	
Cost per 1000 Gallons Saved	**$2,331.77**	

Master Plans/Water Supply Plans

Windsor plans to continue developing, updating, and evaluating plans (i.e. Master Plans, Water Supply Plans, Capital Improvement Plans, and Water Efficiency Plans) that will improve its overall water efficiency and help plan for future use.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.25%

Notes:

This measure has the potential to improve all categorie s. A conservative reduction of 0.25% of projected annual water use was assumed.

Category	Avg. Annual Water Use over Planning Period (MG)	*Estimated Annual Water Savings (gal/yr)*
Non-Revenue	163.64	409,097
In Town Residential	339.86	849,662
In Town Business	67.49	168,722
In Town Industrial	85.32	213,299
In Town School	5.78	14,440
In Town Church	2.57	6,423
Out of Town Residential	1.78	4,444
Residential Dual System	286.32	715,808
Business Dual System	17.35	43,380
Landscape Only	70.45	176,115

Estimated Annual Water Savings	**2.60**	MG/yr
Estimated Savings over Planning Period	**26.0**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	90	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$13,500.00	
Third Party Costs	$14,000.00	/year
Annual Labor	**$27,500.00**	/year

Notes:

Estimated Annual Cost	**$27,500**	/year
Estimated Cost over Planning Period	**$275,000**	
Cost per 1000 Gallons Saved	**$10.57**	

Indoor Residential Water Assessments

Windsor offers indoor water audits (w/ low-flow shower-heads and faucet aerators) to seek out leaks and other unintended uses for water. Windsor's Water Efficiency Specialist will: look for high water use appliances, provide new showerheads and faucet aerators if necessary, and suggest repairs, rebates or upgrades. Indoor audits are available to Windsor Utility customers for free. This activity only considers the non-material portion of the assessment. Retrofitted showerheads, faucet aerators, and other material improvements are considered in a separate activity.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	5%

Customer Category	Avg. Annual Indoor Water Use Over the Planning Period (gal/tap)	*Estimated Annual Water Savings (gal/tap/yr)*	*Annual Program Participants (taps)*
In Town Residential	46,634.0	2,332	24
Out of Town Residential	126,976.4	6,349	20
Residential Dual System	39,753.1	1,988	19

Estimated Annual Water Savings	**0.221**	MG/yr
Estimated Savings over Planning Period	**12.14**	MG

Notes:

•The indoor use estimates are based on the following In Town Residential = 54%, Out of Town Residential = 93%, Residential Dual System = 92%

•Assumed a conservative estimate of 5% savings of projected indoor water usage . Customers have to put Auditor's advice and suggestions into practice.

• Annual Program Participant numbers based on 2023 participation.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	49	/year
Hourly Cost	$150	/hour
Annual Staff Costs	$7,350	
Annual Labor	**$7,350**	/year

Notes:

Estimated Annual Cost	**$7,350**	/year
Estimated Cost over Planning Period	**$73,500**	
Cost per 1000 Gallons Saved	**$6.05**	

Residential Appliance Retrofits/Rebates

Windsor will offer retrofits to customers that includes toilet, showerhead, and faucet retrofits as part of the Residential Indoor Audit program. The non-material component of the residential audit program, like behavioral advice, is captured in a separate activity.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Customer Category	**Avg. Annual Indoor Water Use Over the Planning Period** (gal/tap)	***Estimated Annual Water Savings*** *(gal/tap/yr)*	***Annual Program Participants*** *(taps)*
In Town Residential	46,634	13,736	*16*
Out of Town Residential	126,976	13,736	*0*
Residential Dual System	39,753	13,736	*14*

Residential Annual Use	43,488	gallons/tap/yr
Total	43,488	gallons/tap/yr
Showerhead Savings	4818	gallons/tap/yr
Toilet Savings	3084	gallons/tap/yr
Faucet Savings	5834	gallons/tap/yr
People per Household (tap)	2.70	
Gallons Saved per Household per Year	13,736	gallons/yr
Annual Program Participants	30	/yr
Maximum No. of Participants over Planning Period	300	
Estimated Annual Water Savings	**0.41**	MG/yr
Estimated Savings over Planning Period	**22.66**	MG

Notes:

Annual Program Participant Estimate based on 2023 retrofit participation.

Showerhead savings: Based on switching from 2.5 gpm to 1.5 gpm showerheads.

Toilet savings: Anticipated to be at least 40% over a 1.6 gpf toilet.

Faucet savings: Based on switching from 2.2 gpm to 1 gpm aerators.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$1,200.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$1,200.00**	/year
Materials Costs		
Material Cost	$18.00	
Number of Participants	30	/year
Annual Material Cost	**$540.00**	

Notes:

Costs include staff time for implementing (approximately 15 min. per participant).

Material Cost: On average, participants use approx. 4 aerators (3 bathroom aerators, 1 kitchen aerator) and 2 showerheads. We conservatively estimate a cost of $18 for these materials.

Estimated Annual Cost	**$1,740**	/year
Estimated Cost over Planning Period	**$17,400**	
Cost per 1000 Gallons Saved	**$0.77**	

Residential Irrigation Assessments

Windsor's Water Efficiency Specialist performs a series of tests on residential automatic sprinkler systems, which includes: a visual inspection of each zone to identify problems, measuring how much water is being applied to your lawn and where, a water pressure check and adjustment recommendation, a custom watering schedule derived from the tests performed, and information about lawns' seasonal needs for water.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	50%

Customer Category	**Avg. Annual Outdoor Water Use Over the Planning Period** (gal/tap)	***Estimated Annual Water Savings*** *(gal/tap/yr)*	***Annual Program Participants*** *(taps)*
In Town Residential	39,880.7	19,940	109
Out of Town Residential	9,101.2	4,551	0
Residential Dual System	3,478.3	1,739	91

Estimated Annual Water Savings	**2.332**	MG/yr
Estimated Savings over Planning Period	**128.2**	MG

Notes:

•The outdoor use estimates are based on the following approximations for each customer category: In Town Residential = 46%, Out of Town Residential = 7%, Residential Dual System = 8%.

•Assumed an estimate of 50% based on participation and data for participants from 2022 and 2023. The Town saw a 39.9 acre-feet decrease in consumption from the previous five-year average (2017-2021).

•Program Participants based on 2023 irrigation audit participation

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	400	/year
Hourly Cost	$150	/hour
Annual Labor	**$60,000**	/year

Notes:

Estimated Annual Cost	**$60,000**	/year
Estimated Cost over Planning Period	**$600,000**	
Cost per 1000 Gallons Saved	**$4.68**	

Commercial Water Efficiency Rebates

Windsor offers a commercial rebate program similar in structure to the City of Greeley's. Commercial water users can apply for rebates that cover a variety of commerical appliances, including Toilets, Irrigation Equipment, Commercial Kitchen Products (ex: Ice Machines, Dishwashers), Washing Machines, and Car Wash Spray Nozzles.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate: 73.00 gal/cap/yr

Year	Est. Population	Est. Total Savings (MG/yr)
2024	45009	3.29
2025	46134	3.37
2026	47287	3.45
2027	48470	3.54
2028	49681	3.63
2029	50923	3.72
2030	52196	3.81
2031	53501	3.91
2032	54839	4.00
2033	56210	4.10

Customer Category	Avg. Annual Water Use Over the Planning Period (MG)	*Estimated Annual Water Savings (MG/yr)*	*Percent of Annual Program Participants*
In Town Business	67.49	1.41	38%
In Town Industrial	85.32	1.79	48%
In Town School	5.78	0.12	3%
Business Dual System	17.35	0.36	10%

Estimated Annual Water Savings **3.68** MG/yr

Estimated Savings over Planning Period **36.8** MG

Notes:

The National Survey of Commercial, Industrial, and Institutional (CII) Water Efficiency Programs from 2016 showed a median value water savings from CII programs of 0.28 gpcd. 0.2 gcpd was used as a conservative estimate.

Costs

Total Cost to Water Provider

Labor Costs

Staff Hours	48	/year
Hourly Cost	$150	/hour
Annual Staff Costs	$7,200	
Annual Labor	**$7,200**	/year

Rebate Costs

Annual Rebates	**$4,000**	/year

Estimated Annual Cost	**$11,200**	/year
Estimated Cost over Planning Period	**$112,000**	
Cost per 1000 Gallons Saved	**$3.04**	

Irrigation Improvements/Water Saving Technologies

Windsor is interested in making improvements to Commercial irrigation systems. These improvements include retrofits, installing outdoor irrigation controllers and rain sensors for smart irrigation scheduling/timing, incorporating xeriscape into landscaping. Due to the uncertainty of measuring savings from retrofits and xeriscaping, only savings from irrigation controllers are quantified here.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	16%

Customer Category	Avg. Annual Outdoor Water Use Over the Planning Period (gal)	*Estimated Annual Water Savings (gal/yr)*
In Town Business	46,404.3	7424.7
In Town Industrial	148,289.5	23726.3
In Town Church	76,472.3	12235.6
Landscape Only	583,453.1	93352.5

Estimated Annual Water Savings	**0.137**	MG/yr
Estimated Savings over Planning Period	**1.4**	MG

Notes:

"There have been numerous studies performed by independent third parties to investigate the potential water savings associated with commercially available Weather Based Irrigation and Soil Moisture Sensor controllers. Studies reviewed show a range of 15%–40% reduction in water use. The amount of water savings depends on many factors including climate, plant types, control programming, sensor types, and system size" (Federal Energy Management Program)

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	250	/year
Hourly Cost	$150	/hour
Annual Labor	**$37,500**	/year

Notes:

Estimated Annual Cost	**$37,500**	/year
Estimated Cost over Planning Period	**$375,000**	
Cost per 1000 Gallons Saved	**$274.24**	

Turf Replacement Programs/Xeriscape Incentives

Windsor has partnered with Resource Central to offer turf replacement to their customers at a discounted rate. This activity will eventually be fully managed by Windsor and expanded to cover customer classes outside of residential. Windsor intends the beginning stages of this turf replacement program to be primarily educational, showing residents that low water use gardens can be functional and beautiful.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate: 83% [1]

Customer Category	**Avg. Annual Outdoor Water Use Over the Planning Period** (gal/tap)	***Estimated Annual Water Savings*** *(gal/sq. ft./yr)*	***Annual Program Participants*** *(sq. ft.)*
In Town Residential	39,880.7	18.60	3,300
In Town Business	46,404.3	18.60	500
In Town Industrial	148,289.5	18.60	650
Residential Dual System	3,478.3	18.60	1,100
Landscape Only	583,453.1	18.60	450

Estimated Annual Water Savings	**0.11**	MG/yr
Estimated Savings over Planning Period	**6.1**	MG

Notes:

[1] The "Annual Estimated Saving Rate" represents a 25% savings of water for the turf area replaced and not a 25% savings overall.

Similar to the Demonstration Gardens themselves, this measure affects projected outdoor water usage for the listed Customer Categories. Other customer categories may also benefit, but participation would be considerably less given the demographics or the very small percentage of customers within those categories.

Estimate that approximately 40% of total customer use is outdoor use. For each square foot of turf replaces, there is an estimated water savings of 3.75 gal/sq. ft./year which equates to approximately ½ AF/acre

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	100	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$15,000.00	
Annual Labor	**$15,000.00**	/year
Rebates		
Associated Costs	$1.50	/sq. ft.
Number of square feet	6000	/year
Number of participants	11	
Annual Rebates	**$9,000.00**	/year

Notes:

$2.50/sqft is the cost of participation if a homeowner's water provider isn't partnered with Resource Central. $1/sqft is the cost if partnered. Assuming a $1.50/sqft cost to Windsor

Estimated Annual Cost	**$24,000**	/year
Estimated Cost over Planning Period	**$240,000**	
Cost per 1000 Gallons Saved	**$39.10**	

Rebate for ET Irrigation System Controllers

Windsor will offer rebates to customers for installing smart irrigation controllers. Smart controllers sense either the soil moisture or climate conditions and adjust the irrigation scheduling accordingly. Outdoor audit rebates are available only to water customers that follow the recommendations made during the residential irrigation assessment and makes the improvements to their systems. The Town follows up to remeasure, create a new watering schedule, install, program, and teach the customer how to use the Smart Controller.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	16.0%

Customer Category	**Avg. Annual Outdoor Water Use Over the Planning Period** (gal/tap)	***Estimated Annual Water Savings*** *(gal/tap/yr)*	***Annual Program Participants*** *(taps)*
In Town Residential	39,881	6,381	34
In Town Business	46,404	7,425	3
In Town Industrial	148,289	23,726	2
Residential Dual System	3,478	557	5

Estimated Annual Water Savings	**0.29**	MG/yr
Estimated Savings over Planning Period	**15.9**	MG

Notes:

Number of Annual Program Participants based on participation from 2022 and 2023.

"There have been numerous studies performed by independent third parties to investigate the potential water savings associated with commercially available Weather Based Irrigation and Soil Moisture Sensor controllers. Studies reviewed show a range of 15%–40% reduction in water use. The amount of water savings depends on many factors including climate, plant types, control programming, sensor types, and system size" (Federal Energy Management Program)

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	100	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$15,000.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$9,000.00	/year
Annual Labor	**$24,000.00**	/year
Materials Costs		
Annual Materials Budget (including Rebate)	$10,680	/year
Annual Materials (incl. Rebate)	**$10,679.70**	/year

Notes:

Most costs associated with issuing of rebates: verification of correct ET sensor and installation.

On average, controllers cost approximately $356.

Estimated Annual Cost	**$34,679.70**	/year
Estimated Cost over Planning Period	**$346,797.00**	
Cost per 1000 Gallons Saved	**$21.78**	

Water Waste Ordinance

Windsor currently has an ordinance in place that specifies the responsibility of the property owners to keep the water lines on their property in good condition in order to prevent the waste of water.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.10%

Notes:

This measure potentially affects all customer categories. A conservative estimate of 0.1 % savings is used for calculations.

Customer Category	**Avg. Annual Water Use over Planning Period** (MG)	***Estimated Annual Water Savings*** *(gal/yr)*
Total Metered Water Use	878.49	878,490

Estimated Annual Water Savings	**0.88**	MG/yr
Estimated Savings over Planning Period	**8.8**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	20	/year
Hourly Cost	$150.00	/hour
Annual Labor	**$3,000.00**	/year

Notes:

Estimated one time staff costs for Staff to spend approximately 20 hours at $60.00/hour to evaluate current policies within the Town.

Estimated Annual Cost	**$3,000**	/year
Estimated Cost over Planning Period	**$30,000**	
Cost per 1000 Gallons Saved	**$3.41**	

Time of Day Watering Restrictions

Windsor has an Water Restriction Ordinance in place that states, "From May 1 through September 30 of each year, no lawn watering shall be permitted between the hours of 10:00 a.m. and 6:00 p.m."

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.10%	

Notes:

Outdoor use is estimated at a weighted average of approximately 40% for the listed categories. Outdoor use of the categories not included represented less than 0.5% of the total water consumed.

A conservative estimate of 0.1% savings of projected outdoor water usage was assumed.

Customer Category	Avg. Annual Outdoor Water Use Over the Planning Period (MG)	*Estimated Annual Water Savings (gal/yr)*
In Town Residential	156.67	156,667
In Town Business	12.92	12,917
In Town Industrial	10.58	10,580
In Town Church	1.44	1,441
Residential Dual System	23.04	23,037
Landscape Only	69.48	69,478

Estimated Annual Water Savings	**0.3**	MG/yr
Estimated Savings over Planning Period	**3**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	40	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$6,000.00	
Annual Labor	**$6,000.00**	/year

Notes:

Costs include staff time for enforcing water restrictions for existing measure.

Estimated Annual Cost	**$6,000**	/year
Estimated Cost over Planning Period	**$60,000**	
Cost per 1000 Gallons Saved	**$21.89**	

Landscape Design Ordinances and Restrictions

Windsor is investigating the following landscape design ordinances: Rules and Regulations for Landscape Design/Installation, Irrigation Efficiency Regulations, Soil Amendment Requirements, Non-Functional Turf Restrictions, Irrigation Equipment Requirements, Landscaper Training and Certification, and Irrigation System Installer Training and Certification. These ordinances and restrictions are evaluated collectively due to their interdependencies.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.25%

Notes:

Outdoor use is estimated at a weighted average of approximately 40% for the listed categories. Outdoor use of the categories not included represented less than 0.5% of the total water consumed.

Customer Category	**Avg. Annual Outdoor Water Use Over the Planning Period** (MG)	***Estimated Annual Water Savings*** *(gal/yr)*
In Town Residential	156.67	391,669
In Town Business	12.92	32,292
In Town Industrial	10.58	26,450
In Town Church	1.44	3,602
Residential Dual System	23.04	57,592
Landscape Only	69.48	173,695

A conservative estimate of 0.25% savings of projected outdoor water usage was assumed. Most of these ordinances and restrictions would only be applied to new construction.

Estimated Annual Water Savings	**0.7**	MG/yr
Estimated Savings over Planning Period	**7**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	80	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$12,000.00	
Annual Labor	**$12,000.00**	/year

Notes:

Costs include staff time for setting up rules and ordinances and for enforcing rules and restrictions for measure.

Estimated Annual Cost	**$12,000**	/year
Estimated Cost over Planning Period	**$120,000**	
Cost per 1000 Gallons Saved	**$17.51**	

Outdoor Green Building Construction

As highlighted in the CO WaterWise planning documents, some communities adopt voluntary "green building" rating systems, incentive programs, and/or labels that are managed themselves or by other organizations (e.g., Leadership in Energy and Environmental Design (LEED) certification, International Green Construction Code (IgCC®), EPA WaterSense Labeled Homes, etc.) to guide development projects. Here, we assess a similar program for the Town of Windsor.

Planning Period	2015 to 2024	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Percent Savings	**9%**

Customer Category	Avg. Annual Indoor Water Use Over the Planning Period (gal/tap)	*1/4 of Avg. New Taps Added Annually*	*Estimated Annual Water Savings* (gal/yr)
In Town Residential	45,675	24	99,744
Residential Dual System	37,905	41	139,554

Estimated Annual Water Savings	**0.239**	MG/yr
Estimated Savings over Planning Period	**13.16**	MG

Notes:

Savings from the Water Efficient New Home Construction Incentive Program from Thornton were between 9-14%, 50 homes saved 430,000 gal of water. As the program would be voluntary, we estimate one quarter of homes built would participate in the program.

Costs

Total Cost to Water Provider

Yearly Labor Costs		
Staff Hours	**80**	/year
Hourly Cost	$150.00	/hour
Annual Labor	$12,000.00	/year

Estimated Annual Cost	**$12,000**	/year
Estimated Cost over Planning Period	**$120,000**	
Cost per 1000 Gallons Saved	**$9.12**	

Town Facility Requirements

Windsor hopes to update their Town facility fixtures with water saving fixtures. This activity includes city facility requirements, plus appliance replacement, process water requirements, green construction, and indoor plumbing requirements.

Planning Period	2015 to 2024	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Percent Savings	**10%**	

Annual Estimated Water Use Per Tap without Savings

Customer Category	Avg. Annual Indoor Water Use Over the Planning Period (gal/tap)	*Estimated Annual Water Savings*
In Town Business	192,260	See Below

Water Saving Fixtures

Number of Town Buildings and Facililities	10	
Number of employees	100	
Toilets and urinals per building	10	
Total Toilets and Urinals	100	
Estimated flushes	300	/day
Gallons Saved per flush per day	0.8	gallons
Total gallons saved per year	87,600	gallons/yr
Faucets per building	15	
Total Faucets	150	
Estimated minutes	4	/person/day
Total number of minutes	146,000	/yr
Amount saved	0.8	gpm
Total gallons saved per year	116,800	gallons/yr

Policies and Requirements

Total gallons saved per year	19,226	gallons/yr
Estimated Annual Water Savings	**0.224**	MG/yr
Estimated Savings over Planning Period	**2.24**	MG

Notes:

Savings based on 10 Town Buildings and Facilities with approximately 10 toilets and urinals per building. It is also estimated that approximately 1.5 faucets per toilet/urinal will be in each area. These would include sink areas outside of restrooms.

We also estimate that there are approximately 100 employees total utilizing Town facilities.

Notes:

Savings for Toilet/Urinal replacement is based on data provided by other water providers.

Savings for Policies and Requirements are estimated at 10%, but the savings could vary depending on the policies and their implementation

Costs

Total Cost to Water Provider

Installation (One Time) Labor Costs

Staff Hours	**275**	1st year
Hourly Cost	$60.00	/hour
Labor	$16,500.00	1st year

Yearly Labor Costs

Staff Hours	**4**	/year
Hourly Cost	$60.00	/hour
Annual Labor	$240.00	/year

Equipment

High Efficiency Toilet Cost	$200.00	each
Fixture/Faucets	$15	each
Total Equipment Costs	**$22,250.00**	one time fee

Notes:

Costs do not include developing/implementing policies/requirements.

Annual staff time is estimated at approximately 2 hrs. per toilet and 30 min. per fixture/faucet replacement).

This time includes water savings tracking.

Toilet equipment cost is estimated at $200 each and fixture/faucet replacement at $15 each.

One Time Cost	**$38,750**	
Estimated Annual Cost	**$4,115**	/year
Estimated Cost over Planning Period	**$41,150**	
Cost per 1000 Gallons Saved	**$18.40**	

Educational Activities

Analysis of costs and benefits for educational activities are combined as shown below. Activities include Message Development, Social Networking, Bill Stuffers, Newsletter, Newspaper Articles, Mass Mailings, and Water Efficiency Page on Windsor Website. Windsor is also very active in the community with outreach efforts to the public schools.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Customer Category	Avg. Annual Water Use over Planning Period (MG)	Estimated Annual Savings Rate	*Estimated Annual Water Savings (gal/yr)*
In Town Residential	339.86	2.0%	6,797,299
In Town Business	67.49	0.5%	337,444
In Town Industrial	85.32	0.5%	426,599
In Town School	5.78	1.5%	86,638
In Town Church	2.57	1.0%	25,691
Out of Town Residential	1.78	2.0%	35,554
Residential Dual System	286.32	1.5%	4,294,846
Business Dual System	17.35	0.1%	17,352
Landscape Only	70.45	0.2%	140,892

Estimated Annual Water Savings	12.2	MG/yr
Estimated Savings over Planning Period	**122**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	556	/year
Hourly Cost	$150.00	/hour
Annual Labor	**$83,467.50**	/year
Materials Costs		
Unit Cost (cost of Bill Stuffers)	$0.25	/participant
Avg. Number of Participants (receiving bill stuffers) over Planning Period	11,129	/year
Annual Materials	**$2,782.25**	/year

Notes:

Staff hours include time spent preparing newsletter, updating website, and preparing bill stuffers.

In 2014 there were over 5,700 active tap accounts. The average affected number of taps during the planning period is projected to be 11129.

Estimated Annual Cost	**$86,250**	/year
Estimated Cost over Planning Period	**$862,498**	
Cost per 1000 Gallons Saved	**$7.09**	

Xeriscape Demonstration Garden

Maintaining a xeriscape demonstration garden is an excellent way to educate the public to the water savings and beauty available from xeriscaping. Windsor has designed, maintained, and continued to expand a xeriscape demonstration garden along the Poudre River Trail Cooridor multiuse trail since 2008.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.25%

Customer Category	Avg. Annual Water Use over Planning Period (MG)	*Estimated Annual Water Savings (gal/yr)*
In Town Residential	339.86	849,662
In Town Business	67.49	168,722
In Town Industrial	85.32	213,299
In Town School	5.78	14,440
In Town Church	2.57	6,423
Residential Dual System	286.32	715,808
Landscape Only	70.45	176,115

Estimated Annual Water Savings	2.1	MG/yr
Estimated Savings over Planning Period	**21**	MG

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	3	/year
Hourly Cost	$150.00	/hour
Annual Labor	**$375.00**	/year
Materials Costs		
Avg. Number of Participantsover Planning Period	50	/year
Annual Materials	**$2,500.00**	/year

Notes:

Staff hours include time spent preparing newsletter, updating website, and preparing bill stuffers.

In 2014 there were over 5,700 active tap accounts. The average affected number of taps during the planning period is projected to be 50.

Estimated Annual Cost	**$2,875**	/year
Estimated Cost over Planning Period	**$28,750**	
Cost per 1000 Gallons Saved	**$1.34**	

Landscape Design (Xeriscape) and Maintenance Classes

Classes have been conducted at the Treasure Island Xeriscape Demonstration Garden. The classes provide a number of venues in which participants can learn more about xeriscaping.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.25%

Customer Category	**Avg. Annual Outdoor Water Use Over the Planning Period** (gal/tap)	***Estimated Annual Water Savings*** *(gal/tap/yr)*	***Annual Program Participants*** *(taps)*
In Town Residential	39,880.7	100	35
In Town Business	46,404.3	116	2
In Town Industrial	148,289.5	371	2
In Town Church	76,472.3	191	0
Residential Dual System	3,478.3	9	5
Landscape Only	583,453.1	1,459	6

Estimated Annual Water Savings	**0.01**	MG/yr
Estimated Savings over Planning Period	**0.7**	MG

Notes:

Similar to the Demonstration Gardens themselves, this measure affects projected outdoor water usage for the listed Customer Categories. Other customer categories may also benefit, but participation would be considerably less given the demographics or the very small percentage of customers within those categories.
Estimate that approximately 40% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$1,875.00	
Third Party Costs	$500.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$2,375.00**	/year
Materials Costs		
Annual Materials Budget	$250	/year
Annual Materials	**$250.00**	/year

Notes:

Staff time is estimated at approximately 1/4 hour per participant for scheduling and coordination. Much of the garden is run through volunteer efforts including the classes.

Estimated Annual Cost	**$2,625**	/year
Estimated Cost over Planning Period	**$26,250**	
Cost per 1000 Gallons Saved	**$36.00**	

Customer Water Use Workshops

Windsor is considering starting classes where participants can learn more about wise water use. The Town is currently in the process of hiring staff to assist with this activity.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	0.25%

Customer Category	**Avg. Annual Outdoor Water Use Over the Planning Period** (gal/tap)	***Estimated Annual Water Savings*** *(gal/tap/yr)*	***Annual Program Participants*** *(taps)*
In Town Residential	39,880.7	100	35
In Town Business	46,404.3	116	2
In Town Industrial	148,289.5	371	2
Residential Dual System	3,478.3	9	5
Landscape Only	583,453.1	1,459	6

Estimated Annual Water Savings	**0.01**	MG/yr
Estimated Savings over Planning Period	**0.7**	MG

Notes:

Similar to the Demonstration Gardens themselves, this measure affects projected outdoor water usage for the listed Customer Categories. Other customer categories may also benefit, but participation would be considerably less given the demographics or the very small percentage of customers within those categories.
Estimate that approximately 40% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$1,500.00	
Third Party Costs	$500.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$2,000.00**	/year
Materials Costs		
Annual Materials Budget	$250	/year
Annual Materials	**$250.00**	/year

Notes:

Staff time is estimated at approximately 1/4 hour per participant for scheduling and coordination. Much of the garden is run through volunteer efforts including the classes.

Estimated Annual Cost	**$2,250**	/year
Estimated Cost over Planning Period	**$22,500**	
Cost per 1000 Gallons Saved	**$30.86**	

Garden in a Box

Each year Center for ReSource Conservation (CRC) offers an array of do it yourself Xeric garden kits, created by professional landscape designers for sun, shade and everything in between. These plant by number gardens can have a significant conservation impact and are perfect for anyone who wants to beautify their yard while using less water than standard turf.

Planning Period	2024 to 2033	
Years in Planning Period	10	
Program Length	10	years

Estimated Water Savings

Annual Estimated Savings Rate	25%	[1]

Customer Category	**Avg. Annual Outdoor Water Use Over the Planning Period** (gal/tap)	***Estimated Annual Water Savings*** *(gal/tap/yr)*	***Annual Program Participants*** *(taps)*
In Town Residential	39,880.7	374	25
In Town Business	46,404.3	374	2
In Town Industrial	148,289.5	374	2
In Town Church	76,472.3	374	1
Residential Dual System	3,478.3	374	5
Landscape Only	583,453.1	374	5

Estimated Annual Water Savings	**0.01**	MG/yr
Estimated Savings over Planning Period	**0.8**	MG

Notes:

[1] The "Annual Estimated Saving Rate" represents a 25% savings of water for the turf area replaced with the Garden in the Box plants and not a 25% savings overall.

Similar to the Demonstration Gardens themselves, this measure affects projected outdoor water usage for the listed Customer Categories. Other customer categories may also benefit, but participation would be considerably less given the demographics or the very small percentage of customers within those categories.

It is estimated that approximately 40% of total customer use is outdoor use. Each garden is estimated to use up to 60% less water than the same area of turf, but irrigation systems need to be adjusted for benefit to be realized. A garden typically covers 100 sq ft. Assumption was made that same area of turf will be replaced with same area of xeriscaping. Irrigation requirements = approximately two AF/acre for turf = 748 gal/garden saving. This estimate was cut in half due to other potential problems.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	10	/year
Hourly Cost	$150.00	/hour
Annual Staff Costs	$1,500.00	
Third Party Costs		/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$1,500.00**	/year
Materials Costs		
Associated Costs	$65.00	/garden
Number of Participants	40	/year
Annual Materials	**$2,600.00**	/year

Notes:

Staff cost include approximately 1/4 hour per participant. CRC offers end consumers a discount through the water provider.

CRC's price is $4,370 for 80 gardens. An assumed 20% mark-up was made for smaller quantity.

Estimated Annual Cost	**$4,100**	/year
Estimated Cost over Planning Period	**$41,000**	
Cost per 1000 Gallons Saved	**$49.83**	

APPENDIX E

Town of Windsor Supplementary Documents

WATER FEES AND CHARGES								
CODE SECTION	**DESCRIPTION**							**RES/ORD NUMBER**
	WATER PLANT INVESTMENT FEE							
13-2-70	**Water Meter Size**				**Fee**			Res 2014-37
	3/4"				$8,063.00			
	1"				$13,062.00			
	1 1/2"				$30,801.00			
	2"				$50,716.00			
	3"				$111,753.00			
	4"				$192,464.00			
	Taps over 4" will be considered individually				-			
	MONTHLY WATER CHARGES							
13-2-90								Res 2014-80
	Meter Size	Monthly Base Fee	1st Tier Usage Charge	1st Tier Threshold	2nd Tier Usage Charge	2nd Tier Threshold	3rd Tier Usage Charge	3rd Tier Threshold
			per 1,000 gal	gal / month	per 1,000 gal	gal / month	per 1,000 gal	gal / month
	¾" Single family residential	$14.81	$3.62	16,000	$5.40	22,500	$8.05	> 22,500
	¾" residential with dual system	$14.81	$3.62	9,700	$5.40	> 9,700	N/A	N/A
	1" residential with dual system	$23.93	$3.62	9,700	$5.40	> 9,700	N/A	N/A
	1.5" residential with dual system	$49.00	$3.62	9,700	$5.40	> 9,700	N/A	N/A
	¾" multi-family residential	$9.57	$3.62	157,000	$5.40	> 157,000	N/A	N/A
	¾" commercial, industrial, school	$14.81	$3.62	157,000	$5.40	> 157,000	N/A	N/A
	1" commercial, industrial, school	$23.93	$3.62	157,000	$5.40	> 157,000	N/A	N/A
	1.5" commercial, industrial, school	$49.00	$3.62	157,000	$5.40	> 157,000	N/A	N/A
	2" commercial	$77.49	$3.62	493,000	$5.40	> 493,000	N/A	N/A
	2" industrial	$77.49	$3.62	783,000	$5.40	> 783,000	N/A	N/A
	2' school	$77.49	$3.62	157,000	$5.40	> 157,000	N/A	N/A
	3" school	$148.87	$3.62	306,700	$5.40	> 306,700	N/A	N/A
	4" industrial	$243.25	$3.62	2,461,000	$5.40	> 2,461,000	N/A	N/A
	RAW WATER FEES							
	Consult Engineering Department for fees – varies by subdivision							
	MISCELLANEOUS WATER CHARGES							
13-2-90	Out of Town customers			1.5 times in-town rate				Res 2000-13
13-2-150	Reconnect following termination due to non-payment – regular hours			$30.00				Res 1992-18
13-2-150	Reconnect following termination due to non-payment – after regular hours			$60.00				Res 1992-18
13-2-150	Turning water on – routine circumstances			$10.00				Res 1992-18
13-2-150	Fee for multiple trips			$15.00				Res 1992-18
1992-839	Utility bill delinquent charge			$20.00				Res 1992-60
	Tank (bulk) water			$3.50 / 1,000 gallons				Res 2000-13
	Hydrant Meter			$2,100.00 refundable deposit + $12.00 / day rental fee + $7.40 / 1,000 gallons used				Ord 2012-1432

SEWER FEES AND CHARGES						
CODE SECTION	**DESCRIPTION**		**FEE**			**RES/ORD NUMBER**
	MONTHLY SEWER CHARGES					
	Single-family dwelling units		$20.00			Res 2001-39
	Commercial/Industrial without separate meter for outdoor usage (irrigation)					Res 2000-49
	Water Meter Size	**Winter Usage** in gallons	**Base Fee**	**PLUS Commodity Charge**	**= TOTAL Monthly Charge**	
	¾"	3,750	$19.00	$6.10	$25.10	
	¾"	5,625	$19.00	$9.15	$28.15	
	¾"	7,500	$19.00	$12.20	$31.20	
	¾"	11,250	$19.00	$18.30	$37.30	
	¾"	21,000	$19.00	$34.61	$53.61	
	¾"	50,100	$19.00	$81.50	$100.50	
	1.0"	2,250	$31.00	$3.66	$34.66	
	1.0"	4,500	$31.00	$7.32	$38.32	
	1.0"	19,500	$31.00	$31.72	$62.72	
	1.0"	28,500	$31.00	$46.36	$77.36	
	1.0"	40,500	$31.00	$65.88	$96.88	
	1.5"	25,500	$61.00	$41.48	$102.48	
	1.5"	45,000	$61.00	$73.20	$134.20	
	1.5"	112,500	$61.00	$183.00	$244.00	
	1.5"	63,000	$61.00	$102.48	$163.48	
	2.0"	502,500	$97.00	$817.40	$914.40	
	4.0"	1,657,500	$301.00	$2,696.20	$2997.20	
	Commercial/Industrial with separate meter for outdoor usage (irrigation)					
	Water Meter Size		**Base Fee**	**PLUS Commodity Charge** per 1,000 gallons		
	¾"		$19.00	$1.63		
	1"		$31.00	$1.63		
	1.5"		$61.00	$1.63		
	2"		$97.00	$1.63		
	3"		$181.00	$1.63		
	4"		$301.00	$1.63		
	Kodak site			$1.63		Res 1997-32
	SEWER PLANT INVESTMENT FEE					
13-1-10	**Water Meter Size**		**Ratio with ¾"**	**Sewer Plant Investment Fee**		Res 2014-37
	3/4"		1.00	$4,400.00		
	1"		1.62	$7,128.00		
	1 1/2"		3.82	$16,808.00		
	2"		6.29	$27,676.00		
	3"		13.86	$60,984.00		
	4"		23.87	$105,028.00		
	Taps over 4" will be considered individually			-		

STORM DRAINAGE FEES			
CODE SECTION	**DESCRIPTION**		**RES/ORD NUMBER**
	NEW GROWTH BASIN IMPACT FEE		
13-3-50	Collected when there is to be construction of more than 350 square feet of impervious surface on any property New Growth Basin Impact Fee = (Impervious Rate Factor) X (New Growth Basin Impact Fee Factor) X (Area) where Impervious Rate Factor is based on the following table of values		Ord 2003-1148
	Category of Development	Impervious Rate Factor	
	very low density Single-Family residential 1.5 acres	0.10	
	very low density Single-Family residential 2.5 acres	0.10	
	Single-Family residential high density	0.40	
	Single-Family residential medium density	0.40	
	Light Industrial	0.80	
	Heavy Industrial	0.90	
	Commercial	0.95	
	Multi-Family residential	0.70	
	Residential Mixed Use	0.50	
	New Growth Basin Impact Fee Factor = $0.1838 / square foot Area = net area in square feet of the property		
	MONTHLY BASIN USER FEE		
13-3-50	Monthly Basin User Fee = [(Operations and Maintenance Rate) X (Impervious Rate Factor) X (Area) + $2.20] + [(Monthly Basin Improvement Rate) X (Area) X (Impervious Rate Factor)] where Impervious Rate Factor is based on the above table of values Operations and Maintenance Rate = $0.00009 / square foot Monthly Basin Improvement Rate = $0.00046 / square foot Area = net area in square feet of the property		Ord 2007-1292

EXCAVATION, BUILDING MOVING AND DRIVEWAY FEES			
CODE SECTION	**DESCRIPTION**	**FEE**	**RES/ORD NUMBER**
Chapter 11			
Article II	**Excavation Permit**		Res 1992-18
	Type I	$10.00	
	Type II	$50.00	
Article IV	**Building Moving Permit**	$25.00	Res 1992-18
Article VI	**Driveway Permit**	$5.00	Res 1992-18

APPENDIX F

Public Comments and Response

APPENDIX G

Colorado Water Conservation Board Cover Letter and Approval