TOWN OF WINDSOR

2008 WATER CONSERVATION PLAN

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EXECUTIVE SUMMARY

The Town of Windsor is a thriving community situated between the Cities of Fort Collins, Loveland and Greeley that is experiencing the high growth trend found along the Front Range of Colorado. Windsor has been careful to plan for its future growth by coordinating with the planning efforts of the surrounding municipalities and Larimer and Weld Counties as well as incorporating the vision and desires of its existing community. Part of that planning has been directed at providing quality water service according to the land use plan laid out in the Town of Windsor 2006 Comprehensive Plan.

Purpose

A key component in water resource planning includes water conservation, particularly for the drier western United States. In order to optimize its water supplies and system through practical water conservation practices, Windsor has developed a Water Conservation Plan 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.

By the end of 2007, Windsor was serving 4,583 residential, business, industrial, landscape, and public water users within its 25 square-mile boundary and Growth Management Area. By 2017, which is the end of the planning horizon for this Plan, it is projected that Windsor will be serving 7,044 taps for a total annual water demand of 3,353 acre-feet (AF). Water savings from this water conservation planning effort is estimated to save the Town 276 AF per year. This savings will make a considerable contribution toward the water supplies needed to serve the 2017 demand.

This report documents Windsor's water system, past and future water use, planned capital improvement projects, and the water conservation planning process used in accordance with CWCB's Water Conservation Plan guidelines and policies.

Water Conservation Goals

Windsor began implementing water conservation practices in 2003 as a result of severe drought conditions that illustrated the need for efficient water use. The Town's conservation practices have included:

- Public information sent out as bill stuffers
- Ads posted in the newspaper

- Lawn water restrictions established
- Water wasting ordinance established
- Regular leak detection and repair
- An inclining block water rate structure
- Xeriscape gardening classes and demonstration area
- Educational trailer that is used at schools and Town events

Additionally, Windsor established a policy of requiring dual water systems for new development in certain areas that overgrow agriculture. It is uncertain the exact reduction in water use that the Town has seen as a result of these efforts. Tracking efforts will be increased for this planning period to quantify water savings and costs of the Plan.

Water savings goals were established for this Water Conservation Plan by making an initial water savings goal estimate, selecting conservation measures or programs to meet those goals, and comparing the expected water savings to the original goals. The goal for this Water Conservation Plan is to reduce the overall water use by 12% or 2,923 acre-feet (AF) over a ten-year planning period from 2008 to 2017. This savings will come from water use categories that were identified through the planning process for potential water savings: Residential and Business (regular and dual use systems), Industrial, Public, Landscape Only, and Unaccounted-for System Losses. The original estimated reduction in water use of 11.5% was adjusted to 12% after evaluating the selected measures for Windsor. The Town's water conservation goals are shown in Table ES-1 below.

Table ES-1 – Water Conservation Goals

Water Use Categories:	Total Projected Water Use (2008 to 2017)	Reduction Goals for Planning Horizon		Total Water Savings from Selected Programs	Resulting Reduction	Adjusted Reduction Goals for Planning Horizon	
	(AF)	(%)	(AF)	(AF)	(%)	(%)	(AF)
Residential	11,065	10%	1,106				
Residential Dual System	4,647	3%	139	1,332	8.5%	8.0%	1,257
Business	1,986	15%	298				
Business Dual System	152	10%	15	316	14.8%	15.0%	321
Industrial	2,312	5%	116	130	5.6%	6.0%	139
Public (schools & churches)	364	10%	36	38	10.6%	11.0%	40
Landscape Only	1,578	15%	237	297	18.8%	16.0%	252
Unaccounted-for Losses (currently 9.5%)	2,320	3.5%	855	867	3.6%	3.6%	867
Total Water Production:	24,423						
Total Demand Reduction:			2,802	2,981			2,876
Total Percent Reduction:			11.5%			12%	

Evaluation and Selection of Conservation Measures and Programs

In order to select water conservation measures and programs to meet the water savings goals, a universal list of measures and programs was subject to an initial screening, cost-benefit analysis and final screening. This process pared the universal list down to the final selection of measures/programs that Windsor will implement. The screening criteria used consisted of the following:

1. Financial implications
2. Staff availability
3. Staff and Board approval
4. Existing or planned Town projects

The Town has also committed to implement two measures to reduce its non-potable water use for irrigation on Town owned properties. Metering six of the park wells and installing wind and rain sensors on all Town irrigation systems is expected to reduce the Town use by five percent. This is the only non-potable water use reduction for this Plan.

Implementation Plan

All of the proposed water conservation measures and programs chosen will require staff and financial resources for implementation. This will require some strategy in implementing the most beneficial measures first. The proposed implementation of this Water Conservation Plan will occur over the next three years, provided the necessary resources are available.

Windsor is committed to implementing the selected water conservation programs and will budget money and pursue CWCB water-efficiency grant money to accomplish this goal. Table ES-2 shows the implementation schedule of the selected measures/programs, the cost to implement and maintain each one, the percent each measure/program contributes to the overall water savings, and those that have been identified for grant money.

Implementation will begin upon approval of this Plan according to the following schedule. Monitoring of the Plan will be completed on an annual basis and a formal update is required by CWCB within seven years. Public feedback is an integral part of this Plan and comments were solicited and incorporated into the final Plan.

Table ES.2 – Implementation Plan for Windsor Water Conservation Plan

Measure/Program	Cost to Implement	Annual Cost without Lost Revenue	% of Total Water Savings	Implementation Considerations	Grant Request
2009					
Non-Potable Park Well Meters	$6,300		0.4%	Staff time, Funding	Yes
Leak Detection & Repair		$7,000	17.6%	Funding, obtaining 3rd Party	
Water Rate Changes	$40,000		16.0%	Funding	Yes
Total 2009 Cost	**$53,300**				
2010					
Leak Detection & Repair		$7,000	See above	2nd Year of Program, obtaining 3rd Party	
Regulatory Standards Program			11.3%	Staff time	
Irrigation System Standards for New Development	$400	$6,250			
Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation	$400	$6,250			
New Car Wash Standards (New Construction)	$400	$1,000			
Audit Program			10.3%	Staff time, Funding	Yes
Residential Water Audit Kits	$8,775	$800			
Business and Industrial Water Audits		$4,100			
Educational Program			1.2%	Staff time, funding	Yes
Xeriscape Demonstration Garden	$5,000	$2,500			
Total 2010 Cost	**$42,875**				
2011					
Leak Detection & Repair		$7,000	See above	3rd Year of Program, obtaining 3rd Party	
Rebate Program			2.8%	Staff time, Public participation, Advertising, Funding	
Irrigation System Efficiency Device Rebates	$400	$2,306			
Educational Program			13.3%	Staff time, Obtaining 3rd Party, Funding	Yes
Website Water Use Calculator	$600	$100			
Send ET Irrigation Scheduling in Water Bill	$600	$500			
Public Education - Bill Stuffers & Website	$2,000	$6,053			
Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	$600	$729			
Meter Testing and Replacement		$33,250	8.8%	Funding	Yes
Total 2011 Cost	**$54,138**				
Total Costs	**$186,225**	**$84,838**			
Total Combined Cost	**$271,063**				

CHAPTER 1 - INTRODUCTION

The Town of Windsor is located along Highway 392 in the middle of a triangle created by the Cities of Fort Collins, Loveland and Greeley in Northern Colorado. It lies partially in western Weld County and partially in eastern Larimer County and is approximately 50 miles north of Denver. Windsor was founded in 1882 and maintained a stable base in agriculture until the mid to late 1950's when it became a popular location for manufacturing. 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 Vision 2025 emphasizes land and growth management that enhances residential, commercial and recreational diversity and ensures that the growth is sustainable.

Water conservation is a key component of water resource planning and fits with Windsor's sustainable concept for all of its natural resources. A meaningful and effective Water Conservation Plan is a key element to accomplishing efficient water delivery while minimizing system costs and protecting a valuable and limited resource. Windsor encourages the use of native, non-potable water through dual systems in new developments and its own Town irrigation, however, the majority of conservation efforts for this Plan will be for potable water uses.

Growth on the Front Range of Colorado has slowed since the ten percent annual growth rates we experienced in the 1990's. However, it continues to increase at an average rate of three percent. Due to its convenient location, Windsor remains at a five percent growth rate and is situated to stay that way for the planning horizon to 2025.

The Colorado Revised Statute 37-60-126 prompted by the Water Conservation Act of 2004, declares that water providers delivering over 2,000 acre-feet (AF) of water are required to have a State-approved Water Conservation Plan on file with the Colorado Water Conservation Board (CWCB), Office of Water Conservation and Drought Planning. A State-approved Water Conservation Plan must be in place to qualify for funding from CWCB or the Colorado Water Resources and Power Development Authority to build water projects.

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 Conservation Plan is to guide Windsor in the process of water conservation planning and

implementation. The planning horizon for this plan is ten years, from 2008 to 2017.

Windsor's service area is approximately 25 square miles and is shown in Figure 1.1. The Town of Windsor receives its treated water from three separate 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 they transfer to the water suppliers on an annual basis for treatment and delivery.

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

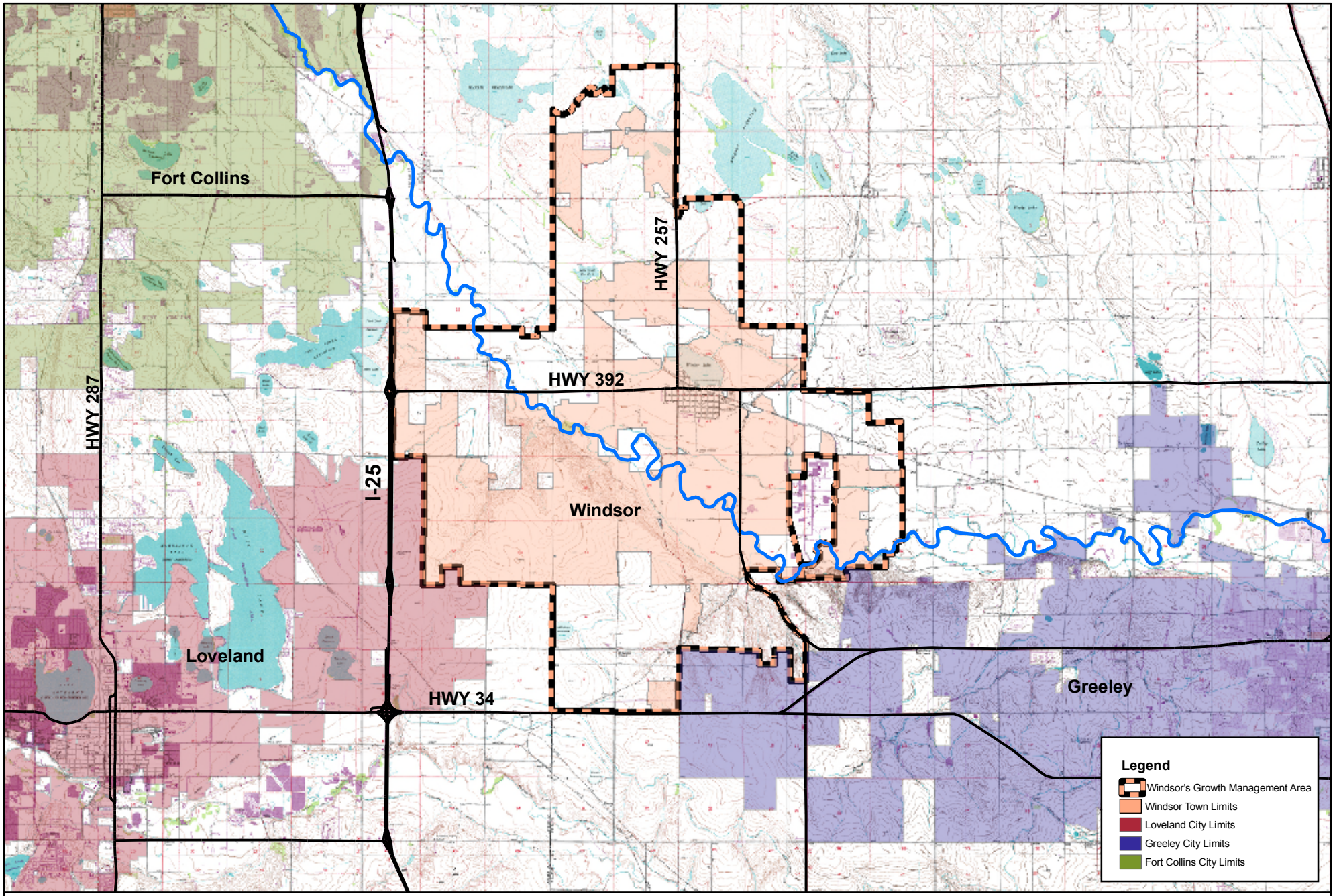

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Figure 1.1
WINDSOR VICINITY MAP

CHAPTER 2 - PROFILE EXISTING WATER SYSTEM

Characteristics of Town of Windsor Water Supply System

Population and Service Area

The water service area for the Town encompasses approximately 25 square miles and is centrally located between the cities of Fort Collins, Loveland, and Greeley in western Weld County. Based on 2000 Census data, Windsor averages approximately 2.76 people per dwelling. Windsor currently serves a population of approximately 18,670. This estimate was provided by the Town and is based on issued building permits from April 2000 to January 31, 2007.

The Town grew at a rapid rate in the 1990's, almost doubling its population. The growth has tapered off since 2002 with the slowdown in growth along the Front Range, but still remains higher than some areas. The average growth rate over the last five years is five percent. The populations according to the Colorado Department of Local Affairs (CDOLA) are shown in Table 2.1. The Town considers building permits issued when estimating population. This can be higher than CDOLA numbers, so some discrepancy may be observed. Both methods provide a good description of population trends for the Town, and the number of building permits issued gives an indication of the near future growth.

Table 2.1 – Town of Windsor Historical Population

Year	Population	Change in Population	Population Growth
1990	5,062		
1991	5,162	100	2%
1992	5,292	130	3%
1993	5,550	258	5%
1994	5,874	324	6%
1995	6,288	414	7%
1996	6,897	609	10%
1997	7,371	474	7%
1998	8,082	711	10%
1999	9,115	1033	13%
2000	9,896	781	9%
2001	11,172	1276	13%
2002	11,876	704	6%
2003	12,193	317	3%
2004	12,716	523	4%
2005	13,542	826	6%
2006	14,205	663	5%
2007	14,915	710	5%
Average (1991 to 2007)		**580**	**7%**
Average (1998 thru 2007)		**754**	**7%**
Average (2003 thru 2007)		**608**	**5%**

Population Data: 1990 - 1999 from NISP. 2000 - 2006 CDOLA

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. It is estimated that approximately 20 to 25 percent of the population of Windsor receives their water supply directly from one of these water providers. These residents are not included in any past or future water use presented in this report. The Town does not have regulatory authority over these areas, so regulatory conservation measures implemented will not affect these customers or lead to water savings.

Water Distribution System

Three separate water providers serve the Town of Windsor through master meters: FCLWD, NWCWD and the City of Greeley. Long-term contracts with these water providers establish the terms of service including amount, duration and payment. Windsor owns its water rights and turns needed water over to the providers each year for treatment and delivery. A surcharge of water is required in addition to the projected use for the year to cover losses from treatment and delivery to Windsor.

Future water needs have been negotiated to be supplied by NWCWD. Table 2.2 shows the contracted flows from each water provider.

Table 2.2 – Contracted Flow from Windsor Water Suppliers

Name of Supplier	Annual Contracted Flow (Million Gallons per Year)
FCLWD	110
NWCWD (existing)	120 - 355
NWCWD (future)	120 - 1,800
Greeley	131 - 195

FCLWD supplies the Town with treated water through a 24-inch metered transmission main west of Windsor. The second water supplier, NWCWD, supplies treated water through a 14-inch metered transmission main from a connection with NWCWD's main line, 2.5 miles north of Town.

The third water supplier, City of Greeley, supplies Windsor with treated water through a 16-inch metered transmission main from a connection with Greeley's 20-inch transmission line on the east side of Town. Additional water is supplied to Windsor from Greeley through an eight-inch meter that is connected to Greeley's two transmission lines that run parallel to U.S. Highway 34. This connection is used as water supply for the South Gate Business Park area to the west of WCR 17.

Windsor has one treated-water storage tank and a booster pump station that delivers water to elevations above that which can be delivered by gravity. The existing two-million gallon (MG) water storage tank provides 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 tank. The pump station is necessary to supply water to future development above elevation 4,940 feet.

The current storage volume meets the State's recommendations for operating levels and emergency storage. The guideline requires the equivalent of at least 25 percent of the maximum daily demand for operating levels plus at least one average-day demand for an emergency supply.

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 the end. Windsor maintains 97 miles of pipeline within their system.

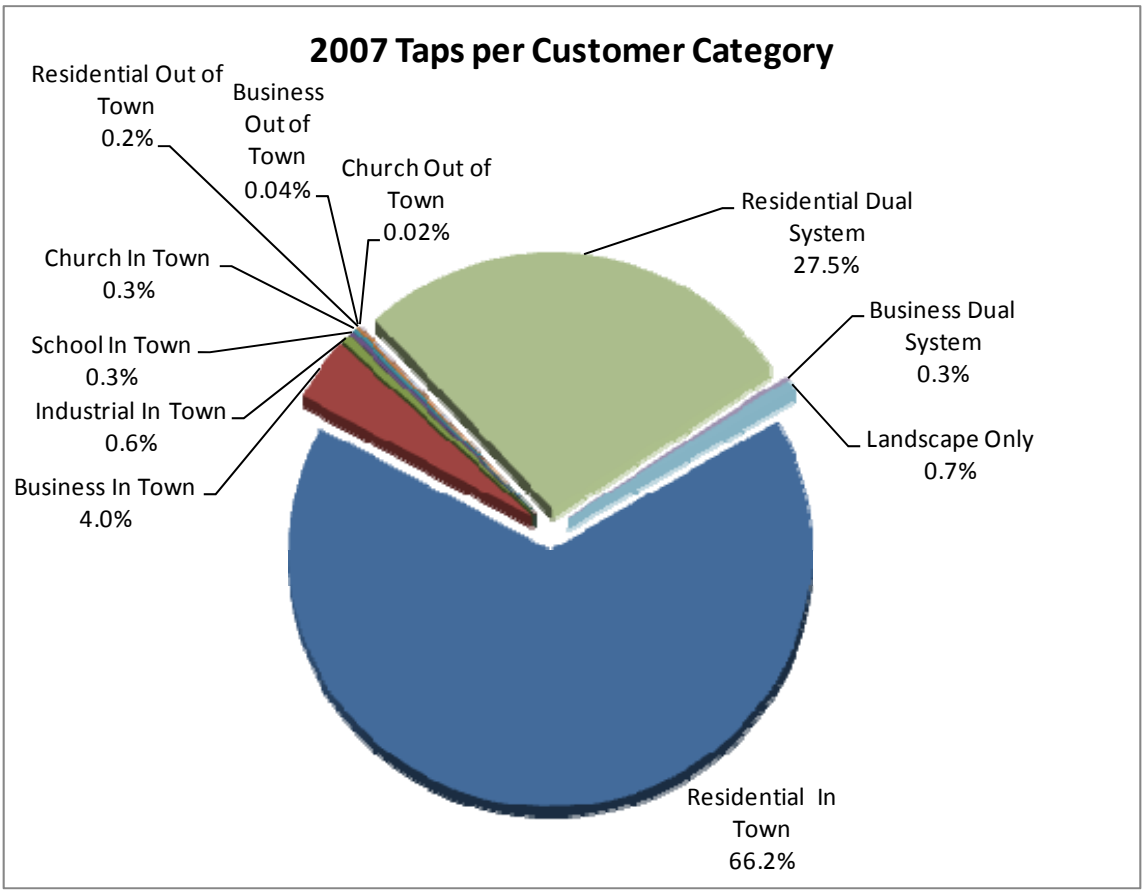
Service Connections and Water Demand

By the end of 2007, Windsor was serving 4,583 taps. The tap categories include "in town" and "out of town" users for Residential, Business and Public (schools and churches) customer categories. The Residential and Business categories are

separated into dual use and single use customers. This level of tracking allows the Town to follow the unique treated water using habits of each of those customer types. Each of the customer categories are shown in Figure 2.1 below with the coinciding percentage of total taps. The out of town users make up a very small portion of the customers.

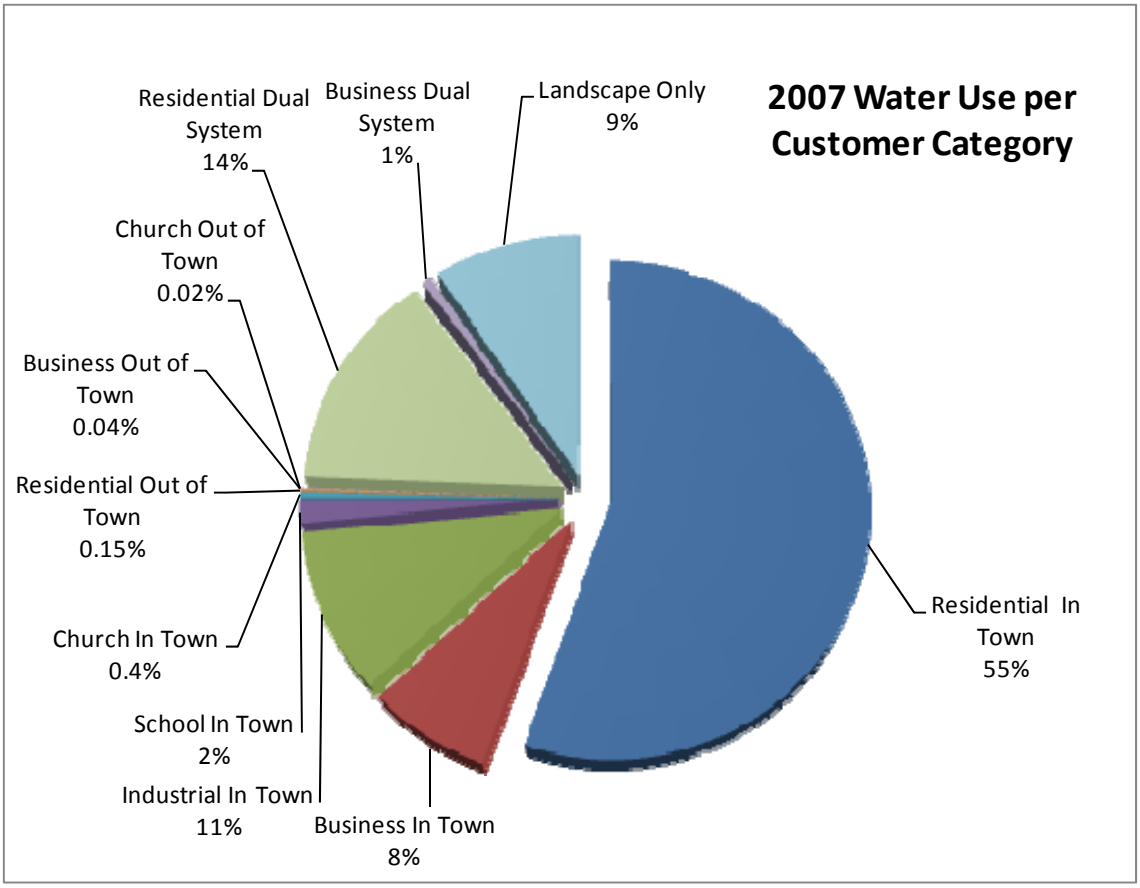
Currently the non-potable component of the dual use customers is tracked by a homeowners association or other type of private group, and the Town does not have any jurisdiction or reporting requirements. Town parks are served by wells and other non-potable water sources that are not fully metered.

Figure 2.1 –Percentage of Taps per Customer Category



The water use distribution for the same customer categories looks a little different than the tap distribution and is shown below in Figure 2.2. While Residential in-town users consist of 66.2 percent of the taps, they only contribute 55.3 percent of the water use. Similarly, while Industrial taps only consist of 0.6 percent of the taps, they contribute 10.7 percent of the water use. This is helpful to consider when selecting conservation measures to target certain categories.

Figure 2.2 – Percentage of Water Use per Category



Sources of Water Supply

The water supplies owned by Windsor are shown in Table 2.3 with a brief description of each source following the table. The descriptions of the Town's non-potable water are for reference purposes. This plan does not address savings from non-potable supplies.

Table 2.3 – Town of Windsor Water Rights

Source	Shares or Units	Average Yield per Share (AF)	Firm Yield per Share (AF)	Total Average Supply (AF)	Total Firm Supply (AF)
Potable Sources					
Colorado-Big Thompson Project - Fixed Quota	2,101.0	0.7	0.5	1,470.7	1,050.5
Colorado-Big Thompson Project - Variable Quota	1,348.0	0.7	0.6	943.6	808.8
North Poudre Irrigation Company (NPIC)	350.5	2.4	2.0	841.2	701.0
Total Available for Treated Use				3,255.5	2,560.3
Total Available for Non-Potable Use				1,022.0	

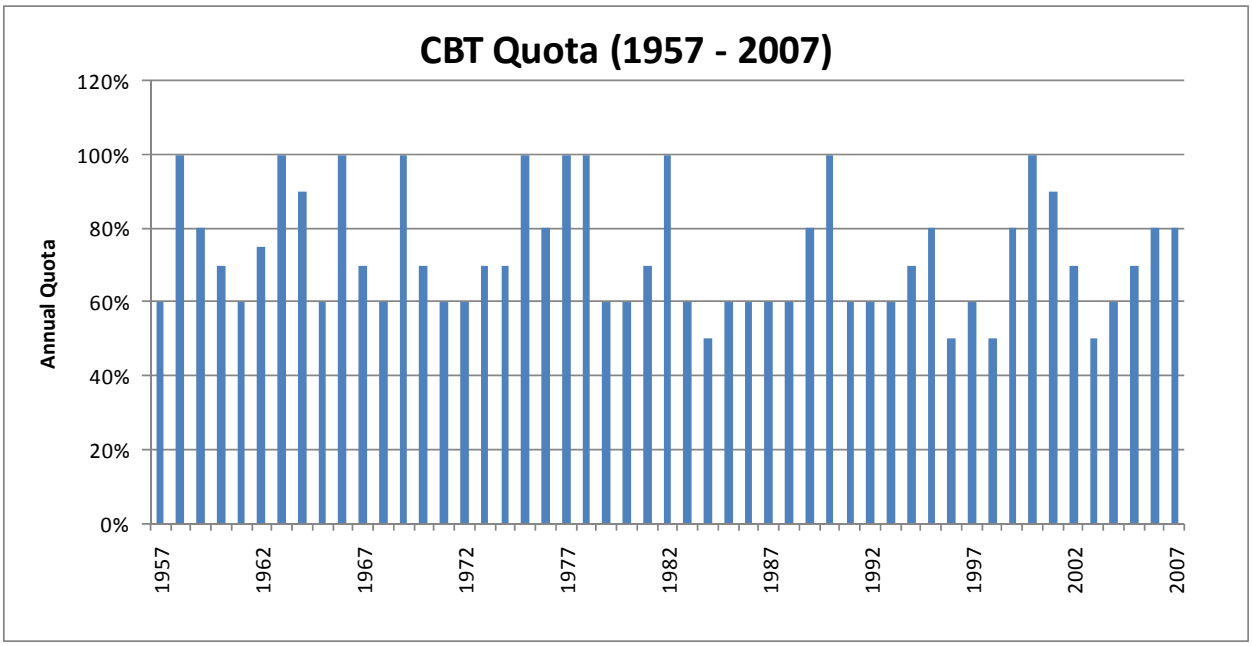
Potable Supply

- *Colorado-Big Thompson Project Water* - Colorado-Big Thompson Project (CBT) facilities divert water from the western slope of Colorado to the Front Range to supplement the region's native water supplies. It is the largest trans-mountain water diversion project in Colorado. It was constructed by the Bureau of Reclamation between 1938 and 1957 and is maintained by the Northern Colorado Water Conservancy District (Northern Water). The Project imports an average of 213,000 AF of water each year to many public and private water users along the northern Front Range and northeastern Colorado for agricultural, municipal and industrial uses.

  The yield of CBT units is established each year by the Northern Water Board through what is known as the quota setting process. The basis for setting the quota is to attempt to make every year look like an average year. The Northern Water Board examines the region's native supplies and local storage before declaring a quota that meets the supplemental need of the region as a whole. As a result, the quota is typically lower in wet years because native supplies are plentiful and local reservoirs are full, so less CBT water is required to satisfy water demands. As CBT continues to transfer from agricultural to municipal use, the landscape of using the Project as a supplemental supply is changing.

  In over fifty years of operation, the average yield has been 0.73 AF per unit and the commonly used average quota is 70 percent. The yield has never been less than 0.50 AF per unit (50 percent quota) or more than 1.0 AF per unit (100 percent quota). The annual quota established by the Northern Water Board over the years is shown in Figure 2.3.

Figure 2.3 – Annual CBT Quota History



- *North Poudre Irrigation Company* - NPIC owns 40,000 CBT units, so its shares include a CBT portion and a native agricultural portion. The CBT water is delivered equally among the 10,000 shares within the NPIC system for agricultural, municipal and industrial use. Delivery of the CBT portion can be taken anywhere that CBT units can be delivered, so an entity outside of the NPIC service area can actually own NPIC shares and lease the native portion back to shareholders in the service area.

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: NPIC, B.H. Eaton Ditch Company, Whitney Ditch Company and Louden Ditch Company. These water rights are decreed for agricultural uses only and are used to irrigate the Town's parks and open spaces. If there is any excess above the Town's non-potable water demands, the water rights may be rented for agricultural use. The NPIC native portion cannot be physically delivered to Windsor and is therefore always rented back to shareholders within that system.

- *Reservoir Storage* - Kern Reservoir is located within the municipal limits of the Town of Windsor. As Windsor has grown in recent decades, they have acquired all 100 shares in the Kern Reservoir & Ditch Company (KRDC). The Town is submitting a change of use application that is inclusive of all 100 shares to include well augmentation and other municipal uses.

Windsor plans to use KRDC to augment depletions associated with their irrigation wells and to provide augmentation water needed to fulfill a long-term lease agreement with Front Range Energy. In addition, Windsor will continue to use KRDC water directly for irrigation at additional public facilities and for municipal and recreation uses.

- *Alluvial Wells* - Windsor currently operates three alluvial groundwater wells, which are used for landscape irrigation at public parks, recreation facilities, and open space areas, that are metered.

  Additionally, the Town operates six wells to irrigate parks and other Town facilities such as the cemetery. One of these wells is currently not operational and all six wells are not metered. The Town desires to track water use from them more closely in the future.

System Limitations

Along with areas of high water use, system limitations can provide insight into how and where to set water conservation goals. Discussions here will include both current and potential system limitations. Ideally, conservation can help mitigate a portion of the limitations and improve the reliability and efficiency of the system.

Growth

The location of Windsor makes it attractive as a place to live as well as a place for new development and industry to locate. The population growth rates over the past two decades have reflected this trend, and even in the current slower economy, the growth rate is still at five percent. Future water demand is projected using one percent for 2008, three percent for 2009 and then five percent until 2025. Besides the slow down for 2008 and 2009, this projection is consistent with other planning efforts and reflects planned developments and building permits that have been sold to date.

Careful planning is required to provide adequate water supply for future growth. The projected water demand is 4,797 AF in 2025 and 9,700 AF at build-out. This leaves a shortage of 1,542 AF in 2025 and 6,400 AF at build-out from the current available treated water supplies owned by the Town (3,255 AF). These shortages will need to be met through water acquisition, participation in new water supply projects, and water conservation.

Statewide Water Supply Initiative

In 2003, the Colorado General Assembly authorized CWCB to implement the Statewide Water Supply Initiative (SWSI) as a result of growing pressure on water supplies in Colorado and the 2002 drought. The study identified current and future water demands, available water supplies, and existing and planned water supply projects in eight major river basins in the State.

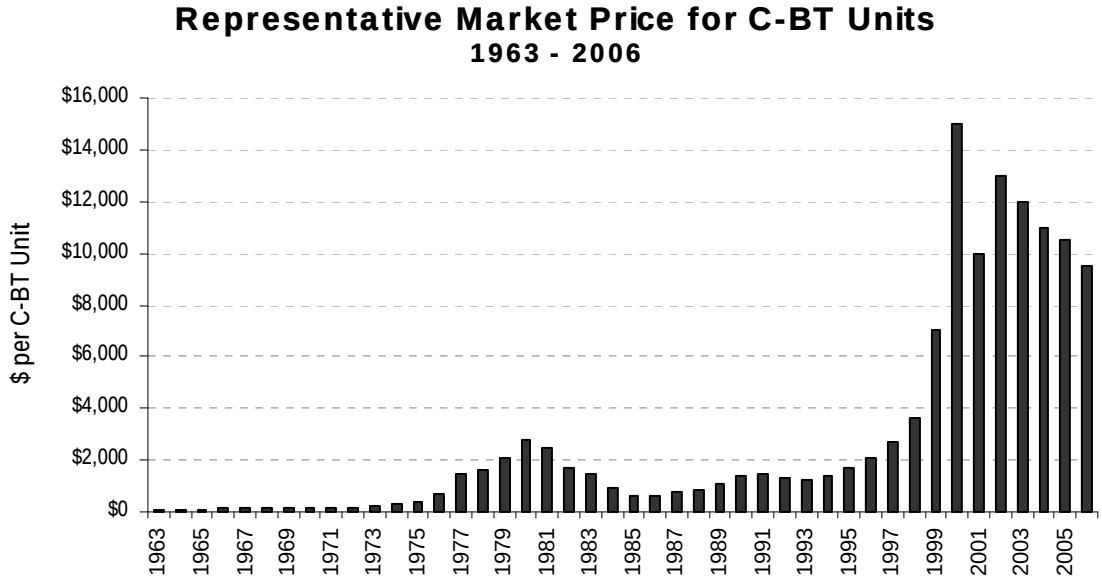
The SWSI study found a state-wide water supply gap of 118,200 AF by 2030 between projected demands and fully implemented water supply processes and projects, which are 20 percent of the 2030 demand. The gap in the South Platte Basin, where the Poudre River and Windsor is located, is 90,600 AF or 22 percent of the South Platte Basin 2030 demand. This makes pursuit of possible future water supplies and water conservation very important for Windsor.

Future Water Supply

Increasing pressure on water from population growth in the Front Range has driven the price of water up significantly in the last ten to 15 years. The primary water sources that Windsor is considering for future supply are CBT, native Poudre River water, and a new water supply project called the Northern Integrated Supply Project (NISP). Windy Gap water could also be used by Windsor.

In 1963, CBT water could be purchased for $100 per unit from farmers that felt they had more water than they could use. Since CBT water is so versatile, the market value of its shares has increased and is a good indication of the price for municipal water. The current market price for CBT is approximately $9,500 per unit or $13,600 per AF assuming a 70 percent quota. Figure 2.4 shows how the price of CBT units has varied from 1963 to 2006.

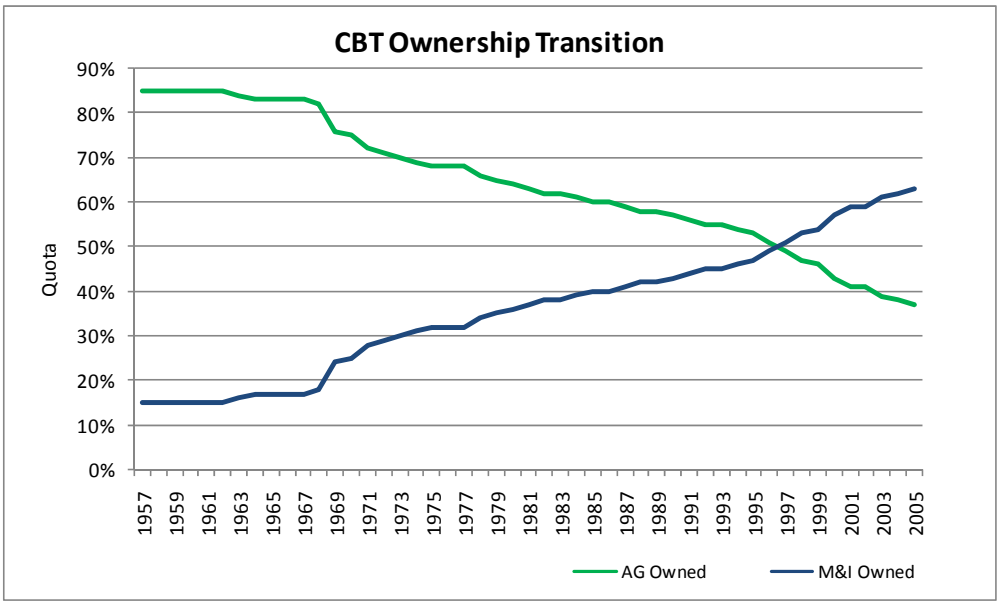
Figure 2.4 – Price of CBT Units



CBT water can still be purchased from farmers and ditch companies, but it rarely represents a farmer's surplus water supply like it did historically. It is usually sold to finance continued agricultural operations, settle an estate or accommodate development of farmland. In 1957, 85 percent of the CBT units were owned by individual farmers and mutual ditch companies. By the end of 2005, only 35 percent of

the CBT units were owned by individuals and mutual ditch companies. Figure 2.5 shows the transfer of CBT units from agricultural ownership to municipal and industrial ownership over the life of the CBT Project.

Figure 2.5 – CBT Ownership Transfer



At the current rate of acquisition by cities and water districts, it is projected that few if any CBT units will be available for purchase by the year 2020. However, the construction of other regional projects such as the Windy Gap Firming Project and NISP may take some pressure off of the CBT system. If so, CBT supplies could be available through 2025 or 2030.

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 land. This works if developers buy farms that still have water attached. However, many times the native shares of water sold off long before the land is developed. The market for these native supplies has also increased.

NISP is a regional project that is being financed and will be owned by 15 municipalities and water districts in northern Colorado. It includes two reservoirs, water rights on the Poudre River and an exchange with two local ditch companies. This is a good example of the kind of projects identified to fill the water need gap described in the SWSI Report. The project is in the permitting phase of the National Environmental Policy Act process. If all environmental issues are address satisfactorily, a permit will be issued and the project can be built. This will involve a large capital outlay from participating entities in the short term, but will provide water supply well past 2025 for Windsor.

Change of Use

Conversion of Windsor's Poudre River water rights from agricultural to municipal use requires detailed engineering analyses and applications to Water Court. The easiest change cases take at least three to five years before a decree is entered. The more complicated change cases can take as much as ten years and could cost tens of thousands of dollars.

The engineering analyses required in Water Court applications that change the use of agricultural water focuses on the historical consumptive use of the crops grown with the water right and return flows resulting from irrigation of those crops. Determination of the consumptive use and identifying the amount, location and timing of return flows makes change cases increasingly complicated and costly. Windsor currently has one change case before Water Court. Additional applications may be necessary if the location or type of use changes for any future native water acquired by Windsor.

Water Treatment

As stated previously, Windsor receives its treated water by contract from three other entities processing water at two separate water treatment facilities. This leaves the Town reliant on capacity upgrades and delivery according to the timing of those entities needs. Currently contracts with FCLWD and Greeley are at capacity and additional capacity will be provided through NWCWD.

Included in the contract for water delivery from these entities is a water surcharge to cover treatment and delivery losses. This surcharge varies among the entities but averages 17 percent of the annual water requested by Windsor. This volume of water must be included in planning for future water supply.

Unaccounted-for Water Use

There are many types of water losses that occur in water utilities. Losses can be paper losses caused by customer meter inaccuracies, billing system data errors or unauthorized consumptions. Other losses are those that are physically lost within the distribution system, including the water treatment process.

Windsor's total system losses have averaged slightly over nine percent for the last five years. Windsor has actively pursued leak detection in the past and would like to bolster its efforts with leak detection and meter testing and replacement to reduce those losses to six percent.

Water Costs and Pricing

Water Fund

The water fund for Windsor is used to finance the cost of service for current and future water delivery. It is made up of raw water fees, plant investment fees and monthly water sales. Raw water fees can be made through water dedication or cash in lieu according to the dedication policy and are paid at the time a building permit is issued. This fee ensures adequate water supply for delivery. Plant investment fees are also paid when a building permit is issued and cover the expenses of the new tap and associated system upgrades. Monthly water sales cover the Town's cost of water service.

Fees and water rates are evaluated yearly to ensure that water supply and cost of service is not jeopardized. The rising cost of water has prompted the Town to require raw water dedication instead of taking cash in lieu, but will still use the five year average dedication cost to estimate the water fund. The plant investment fee covers costs associated with connection to the Town's system as well as a fee associated with treatment costs for NWCWD. Fees are adjusted for taps larger than a ¾" residential tap according to ratios of water used per tap size calculated by the Town. This is called a residential tap equivalent. The plant investment fee for a ¾" residential tap for 2008 is $6,875 and the raw water fee is $8,092.

Water sales have increased as the number of customers has increased. In 2003, Windsor adopted a tiered water rate structure for the first time to encourage water conservation in the drought. Windsor has retained the tiered rate structure and would like to evaluate additional structure changes through a rate study to encourage more water conservation and cover the reduction in water sales as a result. The water sales in 2007 were estimated at $2,709,547.

Charges for Water Service

Table 2.4 shows the rates and base charge for each customer category. A threshold is established for the tiered structure based on one CBT unit dedication for each ¾" residential tap equivalent and an average of 0.7 AF/CBT Unit allotment.

Table 2.4 – Town of Windsor Water Rates

Meter Size	User Description	Threshold (HCF)	Threshold (Gallons)	Base Charge	Rate under Threshold (per HCF)	Rate under Threshold (per 1,000 gal.)	Rate above Threshold (per HCF)	Rate above Threshold (per 1,000 gal.)
3/4"	In-Town Residential	21	15,710	$14.30	$2.23	$2.98	$3.41	$4.56
3/4"	Dual Use Residential	13	9,725	$14.30	$2.23	$2.98	$3.41	$4.56
1"	Dual Use Residential	13	9,725	$24.31	$2.23	$2.98	$3.41	$4.56
1.5"	Dual Use Residential	13	9,725	$47.19	$2.23	$2.98	$3.41	$4.56
3/4"	Multi-Family Residential	21	15,710	$9.30	$2.23	$2.98	$3.41	$4.56
3/4"-1.5"	Commercial, Industrial and School	210	157,101	$14.30 - $47.19	$2.23	$2.98	$3.41	$4.56
2"	Commercial	659	492,998	$75.79	$2.23	$2.98	$3.41	$4.56
2"	Industrial	1047	783,261	$75.79	$2.23	$2.98	$3.41	$4.56
2"	School	210	157,101	$75.79	$2.23	$2.98	$3.41	$4.56
3"	School	410	306,721	$167.31	$2.23	$2.98	$3.41	$4.56
4"	Industrial	3290	2,461,249	$344.63	$2.23	$2.98	$3.41	$4.56

Note: HCF = Hundred Cubic Feet

Policies and Planning Initiatives Affecting Water Use

Municipal Code

Lawn watering restrictions are incorporated into the municipal code for Windsor. The Town restricts lawn watering from May 1st to September 30th between 10:00 a.m. and 6:00 p.m. Town residents can use well water or privately owned water without restriction if a permit is obtain from the Town and posted.

Areas within the Urban Growth Boundary have been identified and designated by the Town Board as suitable for the construction of non-potable, secondary water systems. Developments in these areas are required to install a non-potable system subject to regulatory review by the Town. Management of the non-potable system must be performed by a private entity and water rights used in the system must be available to the Town in case of failure of the managing entity.

Previous Studies

A Water Master Plan was completed by the Town in June of 2002. This plan addresses system upgrades and alternatives for distribution lines, storage tanks and pumping facilities to meet the future demands to build-out. It also suggests water supply needs based on delivery from NWCWD.

A Comprehensive Plan for the Town was updated in 2006/2007 and released in January 2007. The Plan outlines policies to help guide the Town in establishing goals for land use, recreation, housing, public utilities, cultural resources and transportation.

The NISP Draft Environmental Impact Statement was made available to the public for comment in April 2008. A supporting document, Water Supplies and Demands for Participants in the Northern Integrated Supply Project, outlines the future water needs and existing resources for the Town. The purpose of the document is to show the need for NISP.

Current Water Conservation Activities

Windsor has considered water conservation in its planning for the last ten years and has developed a number of measures to promote efficient water use. Dual systems have been encouraged and then required since the early 2000's due to the unique location of Windsor in the vicinity of native water rights and its situation of obtaining treated water from other entities. While this measure does not necessarily conserve water, it does help people be more aware of their water source and eases the burden on the Town potable supplies.

Water wasting ordinance and water restrictions have been in place since the 2003 drought. These policies have remained and are part of Windsor's conservation climate. The Town is a close knit community with a mobile staff that can police some of this activity. However, as the Town grows, a designated water conservation and policy enforcing staff position would help monitor these measures.

The Town has an interactive, educational 32-foot trailer it uses to travel to schools, community and civic events to raise the awareness of water by demonstrating the importance, function and uses of water. This "conservation wagon" is primarily used to teach water conservation to school kids 3rd through 5th grades. The presentation is conducted by Town staff and is shown in the picture below.

A demonstration area has been dedicated to the local master gardeners group for the purpose of creating a Xeriscape garden. The dedication to date includes land only and the lack of funding has resulted in a process of adding a few plants per year. This area is located along a well traveled paved path and Town desires to make it a strong educational tool for the Town's residents.

The forestry department for the Town offers Xeriscape landscaping classes two to three times per year. These classes, combined with the demonstration area, educate the public on the benefits and water savings through Xeriscaping. The classes have been well attended in the past and will continue to be offered.

2007 Water Use

Use by Customer Category

The Town of Windsor supplied 2,019 AF of potable water in 2007 to customers within Residential (in town and out of town customers), Business (in and out of town), Dual System (both Residential and Business), Industrial, Public (churches and schools), and Landscape categories. Billed water delivery to customers in these categories totaled 1,909 AF in 2007. There is also some annual fire hydrant usage, although data is not complete for the last five years. We will account for this hydrant water use in system loss calculations. Table 3.1 summarizes the water use per customer category.

Table 3.1 – 2007 Water Use by Customer Category

Water Use Category	Water Use (CF)	Water Use (MG)	Water Use (AF)	Percent of Total
Residential	46,116,068	345.0	1,059	55%
Residential Dual System	11,979,887	89.6	275.0	14%
Business	6,295,952	47.1	144.5	8%
Business Dual System	511,351	3.8	11.7	1%
Industrial	8,907,326	66.6	204.5	11%
Public (schools & churches)	1,586,417	11.9	36.4	2%
Landscape Only	7,771,978	58.1	178.4	9%
Total	**83,168,979**	**622.1**	**1,909.3**	**100%**

Residential Water Uses

Residential water use, which includes both indoor and outdoor uses, constitutes the largest water use in Windsor at 55 percent of all water used. Residential water use is currently 1,059 AF per year.

Included within the Residential water use category are users in and out of town. The Residential water use category does not include non-potable water use or dual water use systems.

Business Water Uses

Business water users in the Town of Windsor include office buildings, hotels, retail stores, restaurants, car washes, and other similar businesses. The 2007

use for this category is 144.5 AF, which constitutes eight percent of the total water supplied by the Town.

The largest Business water users in the Town of Windsor include grocery stores, institutional facilities and restaurants.

Industrial Water Uses

The 2007 use for the Industrial water user category is 204.5 AF, which constitutes 11 percent of the total water supplied by the Town. The larger industrial water users include manufacturing plants for bottles, metal containers, forest products, and other packaging.

Public Water Uses

Churches and schools make up the Public water user category. In 2007, Public water use totaled 36.4 AF, which is two percent of the total water amount supplied by Windsor. In 2007, one tap was established for an out of town church customer. Many of the Town's schools are included in the list of the largest water users, while churches tend to be low water users.

Residential and Business Dual System Water Uses

Dual system water uses includes the potable (indoor) portion and non-potable (outdoor) portion of water supplied to Residential communities. Dual use customers are responsible for providing their own outdoor irrigation water through lakes and ditch systems. Residential dual system potable water use in the Town of Windsor is currently 275.0 AF per year and constitutes approximately 14 percent of the total water demand.

Business dual system water use is operated identical to Residential dual systems. In 2007, Windsor provided 11.7 AF of potable water to Business dual system customers, which is one percent of the total amount supplied by the Town.

Landscape Uses

The Town of Windsor currently supplies 178.4 AF of potable water per year to landscape only customers. This accounts for nine percent of the total water demand. These customers are primarily commercial businesses with outdoor landscaping and do not include open spaces within residential developments.

Taps per Customer Category

The total number of taps per customer category is shown in Table 3.2. The number of new taps added annually averaged 145 from 2003 to 2007 and peaked in 2004 and 2006 at 160 taps.

Table 3.2 – Town of Windsor Taps by Customer Category

Town of Windsor Taps											
Year	Residential			Business			Industrial	Public		Landscape Only	
	In Town	Out of Town	Dual System	In Town	Out of Town	Dual System	In Town	School In Town	Church		**Total**
2003	3,006	2	759	161	1	2	20	12	17	23	**4,003**
2004	3,022	7	879	168	2	6	22	12	16	29	**4,163**
2005	3,040	6	973	168	2	9	24	13	16	26	**4,277**
2006	3,035	7	1,115	181	2	12	26	13	12	34	**4,437**
2007	3,033	8	1,259	183	2	12	26	13	13	34	**4,583**

Note: Taps shown above are the total end of year taps reported for December of the appropriate year.

Table 3.3 shows the water use for each customer category and the total water use for Windsor. Water restrictions were implemented in 2003 due to the drought. The effect of the restrictions lingered into 2004 and beyond, but is gradually tapering off.

Table 3.3 - Town of Windsor Water Use

Water Use in AF											
Year	Residential			Business			Industrial	Public		Landscape Only	**Total AF**
	In Town	Out of Town	Dual System	In Town	Out of Town	Dual System	In Town	School In Town	Church		
2003	1,010	1	138	206	1	3	140	23	2	31	**1,555**
2004	920	2	202	125	1	4	142	19	6	91	**1,513**
2005	1,023	2	234	130	1	6	165	21	9	115	**1,707**
2006	1,127	4	240	132	1	13	193	22	9	152	**1,894**
2007	1,056	3	275	144	1	12	204	28	8	178	**1,909**

The water use per tap is shown in Table 3.4. The average Residential use is 0.34 AF per tap for in town customers and slightly higher, 0.39 AF per tap, for out of town water customers. This is a relatively low water use compared to others along the Front Range. Residential dual system water users averaged 0.22 AF per tap. Commercial use averaged 0.74 AF per tap for out of town Business customers, 0.86 AF per tap for in town Business customers, and 1.01 AF per tap for dual system Business water users. Industrial water users average the highest water use per tap at 7.12 AF per tap with Landscape water use the second highest use category at 3.72 AF per tap. Schools averaged 1.8 AF per tap while churches in and out of town average 0.49 AF per tap and 0.41 AF per tap, respectively.

Table 3.4 – Town of Windsor Historic Water Use per Tap

Water Use (AF/Tap)											
Year	Residential			Business			Industrial	Public		Landscape Only	**Total AF/Tap**
	In Town	Out of Town	Dual System	In Town	Out of Town	Dual System	In Town	School In Town	Church		
2003	0.34	0.40	0.18	1.28	1.08	1.72	7.00	1.90	0.13	1.33	0.39
2004	0.30	0.28	0.23	0.74	0.75	0.61	6.45	1.62	0.37	3.14	0.36
2005	0.34	0.38	0.24	0.77	0.71	0.69	6.88	1.60	0.57	4.43	0.40
2006	0.37	0.52	0.22	0.73	0.75	1.08	7.43	1.71	0.72	4.48	0.43
2007	0.35	0.36	0.22	0.79	0.41	0.98	7.86	2.17	0.53	5.25	0.42
AVG	0.34	0.39	0.22	0.86	0.74	1.01	7.12	1.80	0.46	3.72	0.40
WEIGHTED AVG	0.34		0.22	0.86		1.01	7.12	1.12		3.72	

Per Capita Water Use

Per capita water use, both system-wide and Residential only, is a commonly used way to gauge an entity's water use habits. System-wide per capita use can vary significantly between entities depending on the type of non-Residential customers within the system.

The system-wide per capita water use for the Town of Windsor is shown in Table 3.5. The per capita use for in town and out of town Residential water users is also shown. The per capita Residential use does not include any Residential dual system water customers.

Table 3.5 – Town of Windsor per Capita Water Use

Year	Total Water Use	Residential Water Use	Population*	System Wide GPCD	Residential GPCD
	(AF)	(AF)			(does not include Dual Use Customers)
2003	1,555	1,011	12,193	114	74
2004	1,513	922	12,716	106	65
2005	1,707	1,025	13,542	113	68
2006	1,894	1,131	14,205	119	71
2007	1,909	1,059	14,915	114	63
Avg	1,716	1,029	13,514	113	68

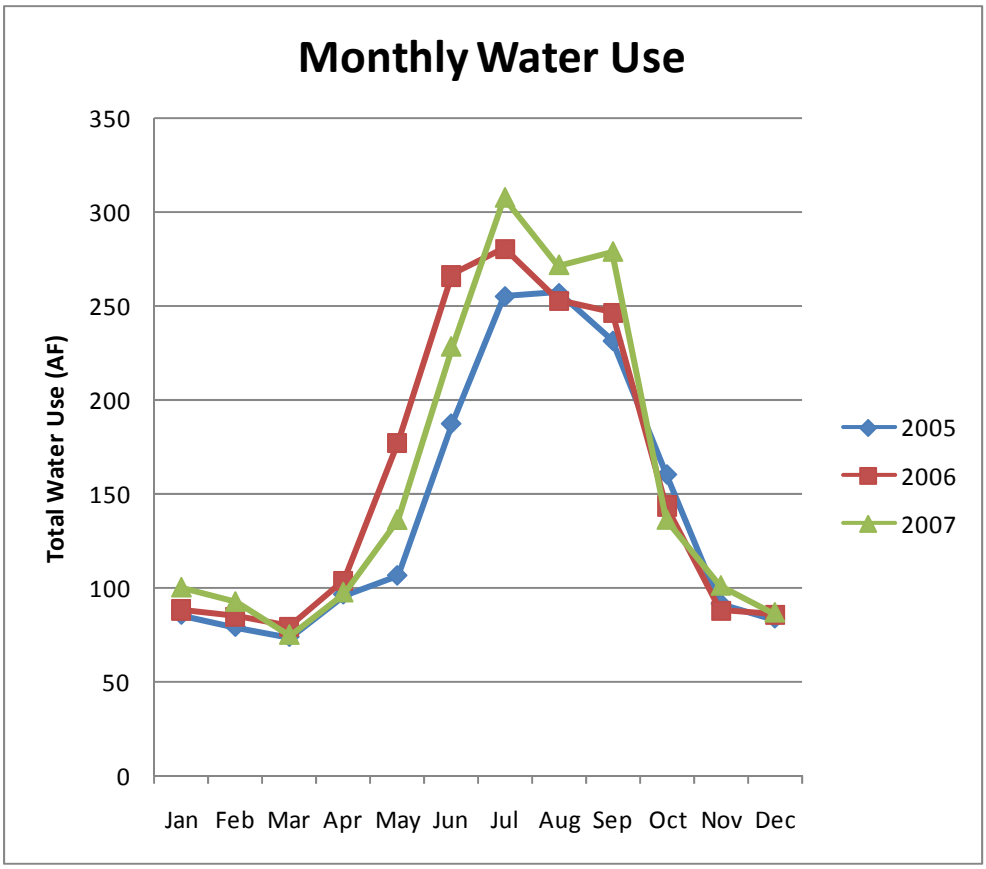
* Population from CDOLA with exception of 2007 which is 5% increase from 2006

Seasonal Variation

The annual water use pattern for 2005 through 2007 is shown in Figure 3.2. Monthly customer water use data was used to illustrate the seasonal variation of water use for the Town. The 2005 use is lower than the other years, likely due to higher precipitation and some lingering impacts from drought restrictions.

Outdoor use can be determined by first estimating indoor use, which is the average monthly use from December to March. Indoor use is subtracted from the total use between April and November to determine outdoor use. The average percent of outdoor use from 2005 to 2007 is approximately 50 percent and was fairly consistent year to year.

Figure 3.2 – Town of Windsor Monthly Water Use



Demand Forecast

A water demand forecast can be calculated using tap growth, population growth or land use planning. For this study, tap growth and population growth are the main factors used to project the future water demand.

Windsor's tap growth rate averaged six percent over the past ten years (1998 – 2007) and approximately three percent the over the last five years (2003 – 2007). This is shown in the table below.

Table 3.6 – Historic Tap Growth

Year	Total Taps per Year	Taps Added per Year	Tap Growth
1997	2,463	204	9%
1998	2,800	337	14%
1999	3,100	300	11%
2000	3,460	360	12%
2001	3,654	194	6%
2002	3,948	294	8%
2003	4,003	55	1%
2004	4,163	160	4%
2005	4,277	114	3%
2006	4,437	160	4%
2007	4,583	146	3%
Average (1998 thru 2007)	**3,843**	**212**	**6%**
Average (2003 thru 2007)	**4,293**	**127**	**3%**

In order to calculate future tap growth among the different customer categories, the percentage of taps per customer category was determined based on 2007 tap data. Table 3.7 summarizes the total number of taps per customer category.

Table 3.7 – 2007 Taps per Customer Category

Tap Category	2007 Taps	Sub-Category Percent	Total Percent
Residential (in town and out of town)	3,041	66%	94%
Residential Dual System	1,259	28%	
Business (in town and out of town)	185	4.0%	4.3%
Business Dual System	12	0.3%	
Industrial	26	0.6%	0.6%
Public (schools & churches)	26	0.6%	0.6%
Landscape Only	34	0.7%	0.7%
Total	4,583	100%	100%

While the average tap growth rate over the last five years has been three percent, the population growth rate is five percent. The planned development applications to the Town and past activity indicate the rate of development will continue at a higher rate than for other areas of the State. A five percent growth rate has been used for other planning studies and is reasonable for this study as well. To project water demands for

all of Windsor's customer categories, a one percent tap growth rate is used for 2008 due to lower permit sales that the Town is currently experiencing. A three percent tap growth rate will be used to forecast growth for 2009 and a five percent tap growth rate through the 2025 planning horizon.

In June 2002, the Town of Windsor prepared water demand projections based upon assumptions developed as part of its Water Master Plan. The Water Master Plan assumed that 80 percent of future growth will occur in dual water systems and 20 percent will occur in areas that require potable irrigation. For the purposes of this Water Conservation Plan, we applied this same ratio to Residential dual and non-dual systems. We assumed that the tap growth of dual and non-dual Business systems should be identical and therefore the 80/20 split was not applied to Business dual and non-dual water systems categories. The tap growth projections are shown in Table 3.8.

Table 3.8 – Town of Windsor Tap Projection through 2025

Year	Total Number of Taps*	94% Residential **		4.3 % Business		0.6 % Industrial	0.6% Public	0.7% Landscape Only
		66% In & Out of Town	28% Dual System	4% In & Out of Town	0.3% Dual System	In Town	Schools & Churches	
2008	4,629	3,050	1,293	187	12	26	26	34
2009	4,768	3,076	1,398	192	13	27	27	35
2010	5,006	3,120	1,577	202	13	28	28	37
2011	5,256	3,167	1,764	212	14	30	30	39
2012	5,519	3,217	1,962	223	14	31	31	41
2013	5,795	3,268	2,169	234	15	33	33	43
2014	6,085	3,323	2,386	246	16	35	35	45
2015	6,389	3,380	2,615	258	17	36	36	47
2016	6,709	3,440	2,854	271	18	38	38	50
2017	7,044	3,503	3,106	284	18	40	40	52
2018	7,396	3,569	3,371	299	19	42	42	55
2019	7,766	3,638	3,648	313	20	44	44	58
2020	8,154	3,711	3,940	329	21	46	46	60
2021	8,562	3,788	4,246	346	22	49	49	63
2022	8,990	3,868	4,567	363	24	51	51	67
2023	9,440	3,952	4,904	381	25	54	54	70
2024	9,912	4,041	5,259	400	26	56	56	73
2025	10,407	4,134	5,631	420	27	59	59	77

*Estimated tap growth rate is 1% in 2008, 3% in 2009, and 5% from 2010 to 2025.

**80% of new residential customers are predicted to be dual use and 20% non-dual use.

Residential Water Demand

Based on 2003-2007 Residential water use measured by the Town, Windsor has an average in town Residential water use of 0.34 AF/tap and out of town Residential water use of 0.39 AF/tap. For the purposes of this Water Conservation Plan, a weighted average of the in town and out of town water use of 0.34 AF/tap was used to project Residential demand. The water use per tap was weighted by the total number of in town taps as compared to the total out of town taps. For dual water use systems, the 2003-2007 average use of 0.22 AF/tap was used to estimate future demand. The total Residential water usage is projected to reach 2,644 AF by 2025. This is an increase of approximately 1,310 AF from 2007 use. The projected Residential water demands are shown in Table 3.9.

Table 3.9 – Projected Residential Water Demand

Year	Tap Growth Rate Percent	Residential Tap Growth		Water Use Per Tap*		Total Residential Water Use
		In & Out of Town	Dual System	In & Out of Town *(0.34 af/tap)*	Dual System *(0.22 af/tap)*	
				(AF)	(AF)	(AF)
2008	1%	3,050	1,293	1,037	285	**1,321**
2009	3%	3,076	1,398	1,046	307	**1,353**
2010	5%	3,120	1,577	1,061	347	**1,408**
2011	5%	3,167	1,764	1,077	388	**1,465**
2012	5%	3,217	1,962	1,094	432	**1,525**
2013	5%	3,268	2,169	1,111	477	**1,588**
2014	5%	3,323	2,386	1,130	525	**1,655**
2015	5%	3,380	2,615	1,149	575	**1,724**
2016	5%	3,440	2,854	1,170	628	**1,798**
2017	5%	3,503	3,106	1,191	683	**1,874**
2018	5%	3,569	3,371	1,213	742	**1,955**
2019	5%	3,638	3,648	1,237	803	**2,040**
2020	5%	3,711	3,940	1,262	867	**2,129**
2021	5%	3,788	4,246	1,288	934	**2,222**
2022	5%	3,868	4,567	1,315	1,005	**2,320**
2023	5%	3,952	4,904	1,344	1,079	**2,423**
2024	5%	4,041	5,259	1,374	1,157	**2,531**
2025	5%	4,134	5,631	1,406	1,239	**2,644**

*Please refer to Table 3.4. A 0.34 af/tap figure is used as an average for in and out of town residential category. For dual Systems, 0.22 af/tap is used.

Business Water Demand

Between 2003-2007, Business water use averaged 0.86 AF/tap for in town Business water users and 0.74 AF/tap for out of town Business customers. For the purposes of this Water Conservation Plan, we used a weighted average of 0.86 AF/tap to project Business demand, as most Business growth will likely occur within the Town limits and growth boundary. The water use per tap was weighted by the total number of in town taps as compared to the total out of town taps. For Business dual water use systems, the 2003-2007 average use of 1.01 AF/tap was used to estimate future demand. The total Business water usage is projected to reach 389 AF by 2025. This is an increase of approximately 232 AF from 2007 use. The projected Business water demands are shown on the following table.

Table 3.10 – Projected Business Water Demand

Year	Tap Growth Rate Percent	Business Tap Growth		Water Use Per Tap*		Total Business Water Use
		In & Out of Town Taps	Dual System Taps	In & Out of Town *(0.86 af/tap)*	Dual System *(1.01 af/tap)*	
				(AF)	(AF)	(AF)
2008	1%	187	12	161	12	**173**
2009	3%	192	13	166	13	**178**
2010	5%	202	13	174	13	**187**
2011	5%	212	14	182	14	**196**
2012	5%	223	14	192	15	**206**
2013	5%	234	15	201	15	**217**
2014	5%	246	16	211	16	**227**
2015	5%	258	17	222	17	**239**
2016	5%	271	18	233	18	**251**
2017	5%	284	18	245	19	**263**
2018	5%	299	19	257	20	**276**
2019	5%	313	20	270	21	**290**
2020	5%	329	21	283	22	**305**
2021	5%	346	22	297	23	**320**
2022	5%	363	24	312	24	**336**
2023	5%	381	25	328	25	**353**
2024	5%	400	26	344	26	**370**
2025	5%	420	27	361	28	**389**

*Please refer to Table 3.4. A conservative 0.86 af/tap figure was used for both in and out of town residential category.

Industrial Water Demand

Between 2003 and 2007, the Industrial water use averaged 7.12 AF/tap and is used to project future Industrial water demand. The total Industrial water usage is projected to reach 421 AF by 2025. This is an increase of approximately 217 AF from 2007 use. The projected Industrial water demands are shown on the following table.

Table 3.11 - Projected Industrial Water Demand

Year	Tap Growth Rate Percent	Industrial Tap Growth	Water Use Per Tap* (7.12 af/tap)	Total Industrial Water Use
			(AF)	(AF)
2008	1%	26	187	**187**
2009	3%	27	193	**193**
2010	5%	28	202	**202**
2011	5%	30	212	**212**
2012	5%	31	223	**223**
2013	5%	33	234	**234**
2014	5%	35	246	**246**
2015	5%	36	258	**258**
2016	5%	38	271	**271**
2017	5%	40	285	**285**
2018	5%	42	299	**299**
2019	5%	44	314	**314**
2020	5%	46	330	**330**
2021	5%	49	346	**346**
2022	5%	51	363	**363**
2023	5%	54	382	**382**
2024	5%	56	401	**401**
2025	5%	59	421	**421**

*Please refer to Table 3.4.

Public Water Demand

The Public water use category includes churches and schools. Between 2003 and 2007, Public water use averaged 1.8 AF/tap for in town schools and churches 0.57 AF/tap for out of town church customers. For the purposes of this Water Conservation Plan, we used a weighted average of 1.12 AF/tap to project Public demand. Total Public water usage is projected to reach 66 AF by 2025. This is an increase of approximately 30 AF from 2007 use. The projected Public water demands are shown on the following table.

Table 3.12 – Projected Public Water Demand

Year	Tap Growth Rate Percent	Public Tap Growth	Water Use Per Tap* (1.12 af/tap)	Total Public Water Use
			(AF)	(AF)
2008	1%	26	29	**29**
2009	3%	27	30	**30**
2010	5%	28	32	**32**
2011	5%	30	33	**33**
2012	5%	31	35	**35**
2013	5%	33	37	**37**
2014	5%	35	39	**39**
2015	5%	36	41	**41**
2016	5%	38	43	**43**
2017	5%	40	45	**45**
2018	5%	42	47	**47**
2019	5%	44	49	**49**
2020	5%	46	52	**52**
2021	5%	49	54	**54**
2022	5%	51	57	**57**
2023	5%	54	60	**60**
2024	5%	56	63	**63**
2025	5%	59	66	**66**

*Please refer to Table 3.4. A conservative 1.12 af/tap figure was used for both schools and churches in the public category.

Landscape Water Demand

The 2003-2007 Landscape water use averaged 3.72 AF/tap. Total Landscape water usage is projected to reach 287 AF by 2025. This is an increase of approximately 109 AF from 2007 use. The projected Landscape water demands are shown on the following table.

Table 3.13 – Projected Landscape Water Demand

Year	Tap Growth Rate Percent	Landscape Tap Growth	Water Use Per Tap* (3.7 af/tap)	Total Landscape Water Use
			(AF)	(AF)
2008	1%	34	128	**128**
2009	3%	35	132	**132**
2010	5%	37	138	**138**
2011	5%	39	145	**145**
2012	5%	41	152	**152**
2013	5%	43	160	**160**
2014	5%	45	168	**168**
2015	5%	47	176	**176**
2016	5%	50	185	**185**
2017	5%	52	194	**194**
2018	5%	55	204	**204**
2019	5%	58	214	**214**
2020	5%	60	225	**225**
2021	5%	63	236	**236**
2022	5%	67	248	**248**
2023	5%	70	260	**260**
2024	5%	73	273	**273**
2025	5%	77	287	**287**

*Please refer to Table 3.4. A 3.72 af/tap figure was used for the Landscape category.

Total Future Water Demand

Total water usage is projected to reach 3,807 AF by 2025. This is an increase of approximately 1,898 AF from 2007 use. The projected water demand is for water delivered to customers and does not account for system losses and additional water required by the Town's water suppliers. The total projected water demand for the Town, including the surcharge, is 4,797 AF and is shown in the last column of Table 3.14. The demand at build out has been projected in previous planning and is 9,700 AF.

Table 3.14 – Total Projected Water Demand

Year	Total Residential Water Use	Total Business Water Use	Total Industrial Water Use	Total Public Water Use	Total Landscape Water Use	Total Water Use	Total Water Requirement*
	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
2008	1,321	173	187	29	128	**1,839**	**2,317**
2009	1,353	178	193	30	132	**1,886**	**2,376**
2010	1,408	187	202	32	138	**1,967**	**2,479**
2011	1,465	196	212	33	145	**2,052**	**2,586**
2012	1,525	206	223	35	152	**2,142**	**2,699**
2013	1,588	217	234	37	160	**2,236**	**2,817**
2014	1,655	227	246	39	168	**2,335**	**2,942**
2015	1,724	239	258	41	176	**2,438**	**3,072**
2016	1,798	251	271	43	185	**2,547**	**3,209**
2017	1,874	263	285	45	194	**2,661**	**3,353**
2018	1,955	276	299	47	204	**2,781**	**3,504**
2019	2,040	290	314	49	214	**2,907**	**3,663**
2020	2,129	305	330	52	225	**3,040**	**3,830**
2021	2,222	320	346	54	236	**3,178**	**4,005**
2022	2,320	336	363	57	248	**3,324**	**4,189**
2023	2,423	353	382	60	260	**3,477**	**4,382**
2024	2,531	370	401	63	273	**3,638**	**4,584**
2025	2,644	389	421	66	287	**3,807**	**4,797**

* This includes 17% surcharge to the water suppliers and 9% system losses

CHAPTER 4 - WATER CONSERVATION GOALS

Goal Development Process

The development of water-savings goals for Windsor was a collaborative process involving Clear Water Solutions and Town staff. Information was gathered from billing records and existing planning documents to properly characterize the system, resources and water use. Development of this data showed Windsor's largest water use customer categories, seasonal usage, system limitations and losses, and outlined the Town's existing conservation efforts and their estimated effectiveness.

Once the water use for each customer category was identified, we met with staff to discuss water-savings goals and the potential methods to reach those goals. Initial reduction percentages were established and a universal list of measures and programs were compiled for consideration. The goals focused on the water use areas that could be successfully impacted considering factors such as water savings potential, costs, control, and public acceptance.

Water Conservation Goals

Establishing water conservation goals is an iterative process that begins with quantifying the future demand for water based on current water-use habits and identifying areas water use can feasibly and effectively be reduced. From 1990 to 2000, the Town of Windsor nearly doubled its population. This substantial increase in population is reflective of growth along the entire North Front Range. While population growth has slowed in the last several years, a population boom is likely to occur again in the future. Reduction of future water demand through water conservation can potentially delay planned water supply acquisition and the need for infrastructure improvements.

Discussions with Town staff focused on the desire to continue and potentially expand Windsor's water education programs. Educational programs encourage Residential category water conservation and may also impact Business category customers as well. In addition, Town staff discussed the need for a water rate study which would ensure that the Town has a fair rate structure that also provides incentive for customers to save water. The call for Business and Industrial category water audits was also discussed as large water customers have already expressed an interest in audits of their systems to identify possible leaks and opportunities for water savings.

In setting initial water savings goals for the Town, we looked at the current water use per customer category and the limitations of the water supply system. Table 4.1 shows initial goals established for each customer category.

Table 4.1 – Windsor's Water Conservation Goals

Water Use Categories:	Total Projected Water Use (2008 to 2017)	Reduction Goals for Planning Horizon	
	(AF)	(%)	(AF)
Residential	11,065	10%	1106
Residential Dual System	4,647	3%	139
Business	1,986	15%	298
Business Dual System	152	10%	15
Industrial	2,312	5%	116
Public (schools & churches)	364	10%	36
Landscape Only	1,578	15%	237
Unaccounted-for Losses (currently 9.5%)	2,320.2	3.5%	855
Total Water Production:	24,423		
Total Demand Reduction:			2802
Total Percent Reduction:			11.5%

Residential and Residential Dual Systems

The per-capita Residential use in Windsor is fairly low compared to the average in Colorado. This is most likely due to the water conservation measures that the Town of Windsor already has in place. Considering that there are a number of existing water conservation measures that can be improved and new measures that can be introduced, the reduction goal was set at ten percent for Residential and three percent for Residential Dual System. Windsor does not own or maintain any of the non-potable systems. Instead, they are owned by the respective homeowners associations (HOA's) or metropolitan districts.

Business and Business Dual Systems

The Business category includes but is not limited to hospitality, restaurants, retail, healthcare, and grocery stores. Based on the Water Master Plan for the Town of Windsor, water users in the Business category are included within the large water users classification. Town staff believes that there are probable water savings in this category through measures such as water audits. Little is known about the water use habits of these customers and until audits are performed and results from conservation measures have been monitored, the actual savings are difficult to predict. For now, the Town will set a goal of 15 percent for Business customers and ten percent for dual water system Business customers. Savings for the next water conservation plan will be easier to estimate and likely more effective.

Industrial

The goal for the Industrial category was set at five percent. Similar to the Business customer category, the Town staff believes that there are probable water savings in this category through measures such as water audits. Little is known about the water use in this category as well and may be more easily estimated after implementation of this water conservation plan.

Public – Schools and Churches

The Town of Windsor has a special customer category for schools and churches referred to as the Public category. Average water use per tap for this category is approximately 1.12 AF/tap, which is a weighted average between the use for schools (1.8 AF/tap) and the use for churches (0.46 AF/tap). Based on the 2002 Water Master Plan, many of Windsor's public schools are categorized as large water users. The Town believes that a ten percent savings can be achieved through Public water conservation measures.

Landscape Only

The Landscape only category includes water used to irrigate areas surrounding parking lots, medians, and landscaped areas associated with commercial properties. Water use associated with the Landscape category is fairly high at 3.72 AF/tap and therefore the goal for the Landscape category was set at 15 percent.

Unaccounted-for Losses

This category is where the Town may pursue a large water savings. The average loss in the system due to leaks, record keeping errors, theft, or lack of measurement over the last five years is 9.5 percent of the water production. The goal for the Town is to reduce the system losses by 3.5 percent bringing losses to six percent. Unaccounted-for Losses include fire hydrant use.

CHAPTER 5 – CONSERVATION MEASURES AND PROGRAMS

Water Conservation Measures and Programs

We developed a universal list of conservation measures and programs. The measures and programs were placed into five major categories: Utility Maintenance Programs, Regulatory Controls and Standards, Educational Programs, Rebates and Incentive Programs, Audit Programs. The universal list is shown in Table 5.1 with existing measures highlighted in green.

Screening Criteria

The following screening criteria were compiled based on discussions with staff. The criteria were chosen as a general screening to pare down the universal list to a list of measures and programs to evaluate further, including reviewing costs to implement, expected water savings, and loss of revenue from the water savings. Each measure and program in Table 5.1 was screened with the following criteria.

1. Financial implications
2. Staff availability
3. Staff and Board approval

Screening of Conservation Measures and Programs

The purpose of the initial screening was to create a list of measures and programs that *would be evaluated further in the planning process* via a cost-benefit analysis. A meeting was held with Town staff to discuss each measure/program on the universal list and eliminate ones that were not feasible using the established screening criteria.

The list of measures was also evaluated to determine if the CWCB Minimum Required Water Conservation Plan Elements were addressed. The required CWCB elements include:

- Water-efficient fixtures and appliances, including toilets, showerheads, and faucets
- Low water use landscapes, drought resistant vegetation, removal of phreatophytes, and efficient irrigation
- Water-efficient industrial and commercial water use processes
- Water reuse systems
- Distribution system leak identification and repair

- Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations
- Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner
- Regulatory measures designed to encourage water conservation
- Incentives to implement water conservation techniques, including rebates to customers

The screening was completed on October 28, 2008 at Town Hall. The resulting decisions are noted in Table 5.1.

Table 5.1 – Universal List of Conservation Measures and Programs

Conservation Measure or Program		Existing	Further Evaluation	Comment
Supply side measures & programs	**Utility Maintenance Programs**			
	Water Waste Ordinance	Yes	Yes	Included in municipal code. Continue as is.
	Leak Detection & Repair Program	Yes	Yes	The Town has recently signed a contract to have leak detection and repair performed by a third party. Approximately 1/7th of the system will be evaluated each year.
	Billing Software Upgrades	No	No	Windsor has recently updated their billing software.
	Non-Potable Park Well Meters	No	Yes	The Town would like to get a handle on non-potable water use for certain Town parks.
	Leak Detection in Mobile Home Parks	No	No	No new parks are currently planned in the future.
	Meter Testing and Replacement Program	No	Yes	The Town would like to evaluate further.
	Water Reuse System	No	No	Windsor's water sources are only currently only available on a one time use basis.
Demand side measures & programs	**Regulatory Controls and Standards**			
	Water Restrictions-Hours/Days	Yes	Yes	Included in municipal code. Continue as is.
	Removal of Phreatophytes e.g. Cottonwoods	Yes	No	The Town requires the removal of cotton producing trees. Continue as is, but don't include in analysis.
	High Efficiency Appliance Requirements/Standards for New Construction	No	No	Already extensively covered in State and National Plumbing standards and codes.
	Water Rate Structure Changes	No	Yes	A rate study will be conducted to determine a fair structure that will help maximize water savings.
	New Car Wash Standards (New Construction)	No	Yes	The Town would like to evaluate further.
	Decorative Water Feature Requirements and Standards on New Construction	No	Yes	The Town would like to evaluate further.

Conservation Measure or Program		Existing	Further Evaluation	Comment
Demand side measures & programs	**Regulatory Controls and Standards, continued**			
	Turf and Landscape Restrictions/Standards for New Construction	No	Yes	Combined with Irrigation System Requirements/Standards for New Construction measure .
	Irrigation System Requirements/Standards for New Construction	No	Yes	Currently, the Town requires an irrigation system is installed. Town Staff would like to evaluate further additional standards that will increase water savings.
	Laundry and Laundromat Requirements/Standards for New Construction	No	No	Re-evaluate with future planning efforts.
	Low Water Use and Appliance Codes	No	No	Already extensively covered in State and National Plumbing standards and codes.
	New Landscape/Lawn Permits	No	No	Re-evaluate with future planning efforts. Not enough staff resources at this time.
	Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation	No	Yes	The Town would like to evaluate further.
	Restrict High Water-Use Turf on Medians or 6:1 Slopes	No	Yes	The Town would like to evaluate further.
	Restrictive Covenants Ordinance	No	No	Re-evaluate with future planning efforts.
	Soil Amendment Ordinance for New Landscapes	No	No	Re-evaluate with future planning efforts.
	Temporary Irrigation Taps for Native Landscaping	No	No	Re-evaluate with future planning efforts.
	Educational Programs			
	Online Access to Water Bill and History	Yes		Continue as is, but don't include in Cost/Benefit
	School Education Program (K-12 Education and K-12 Teacher Education and Training)	Yes	Yes	The Town would like to continue and grow its school education program.
	Xeriscape Garden Demonstration	Yes	Yes	The Town currently has an area designated for a Xeriscape garden but has not had the resources to establish the garden. The Town would like to evaluate further.
	Xeriscape Gardening Classes	Yes	Yes	The Town has offered Xeriscape Gardening classes and would like to continue and expand this program.
	Website Water Use Calculator	No	Yes	The Town would like to evaluate further.
	Designated Water Conservation Officer	No	No	Not enough staff resources.
	Educational Kits	No	Yes	This effort will be combined with residential audit kits (see below).

Conservation Measure or Program		Existing	Further Evaluation	Comment
Demand side measures & programs	**Educational Programs, continued**			
	Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	No	Yes	The Town would like to evaluate further.
	Professional Irrigator Education and Training	No	Yes	The Town would like to evaluate further.
	Public Education - Bill Stuffers & Website	No	Yes	The Town would like to evaluate further.
	Send ET Irrigation Scheduling in Water Bill	No	Yes	The Town would like to evaluate further.
	Xeriscape Program for Commercial	No	No	Re-evaluate with future planning efforts.
	Xeriscape Program for Open Space (HOAs)	No	No	Re-evaluate with future planning efforts.
	Rebates and Incentive Programs			
	Business Toilet Rebate	No	Yes	The Town would like to evaluate further.
	Distribute Toilet Retrofit Devices	No	Yes	The Town would like to evaluate further.
	Distribute Pre-rinse Spray Heads to Restaurants & Institutions	No	Yes	The Town would like to evaluate further.
	Rebate Programs for Toilets, Clothes Washers, Dishwashers, Faucets and Showerheads	No	Yes	The Town would like to evaluate specific rebate programs further.
	Rebates for ET (SMART) Sprinkler System Controllers	No	Yes	This effort will be combined with Irrigation System Efficiency Device Rebates (see below).
	Turf Replacement and Xeriscape Incentives	No	Yes	The Town would like to evaluate further.
	Irrigation System Efficiency Device Rebates	No	Yes	The Town would like to evaluate further.
	Wind and/or Rain Sensor Rebates for Residential or Commercial	No	No	Re-evaluate with future planning efforts.
	Audit Programs			
	Business & Industrial water audits	No	Yes	The Town would like to evaluate further.
	Residential Audit Kit	No	Yes	Will make this a joint effort between education kits and audit kits.
	Sprinkler System Audit Kit and Instructions	No	No	Re-evaluate with future planning efforts.
	Landscape Customer Category System Audits	No	Yes	The Town would like to evaluate further.

* Shaded cells represent existing measures.

CHAPTER 6 – EVALUATION AND SELECTION

The initial screening of the measures and programs with Town staff resulted in eliminating 16 measures and selecting 29 measures for continuation or further evaluation. An additional measure was added after the initial screening as suggested by CWCB. The Town Building Water Fixture Upgrade measure was added as the 30th measure. The Town has identified nine of the 16 eliminated measures that they would like to evaluate with future planning efforts. Due to Colorado water law restraints, Windsor's raw water sources are available on a one time use only basis and therefore water reuse measures were not considered for the planning effort.

Some of the measures have been combined as noted in Table 5.1. The benefits and costs of the selected measures and programs are shown in Table 6.1. The grouping of the measures enabled us to consider like measures and avoid double counting savings. Details about the cost and benefit evaluation and information about each measure can be found in Appendix A.

Costs and Water Savings of Conservation Options

Prior to evaluating the potential cost effectiveness of the measures/programs, it is important to understand the magnitude of typical indoor and outdoor uses and the contribution of each to total demand. There is a wide range of use related to each indoor and outdoor measure that can affect the potential water savings and cost effectiveness accordingly. The assumptions for calculating water savings used for this analysis were on the conservative end of the ranges found in the available water conservation research to avoid overestimating savings.

Many resources were used to estimate water savings including Amy Vickers Handbook of Water Use and Conservation, studies and papers from California and Arizona, local studies available from the American Water Resources Association, the Environmental Protection Agency, Western Resource Advocates, information from other Colorado municipalities, and the CWCB website.

Table 6.1 provides a cost-benefit analysis for all of the measures and programs previously identified to be evaluated further. A planning horizon of ten years is used to quantify the full benefit of these measures and programs. The costs and water savings over the planning period are calculated assuming the measures/programs all start in year one. This provides an equitable ranking of the measures, so they can be compared on an apples-to-apples basis. In reality, the measures and programs will be implemented according to the implementation schedule developed in Chapters 7 and 8.

The first five columns (Columns A-E) of Table 6.1 identify the conservation measure or program and quantify the costs to the Town. These costs include unit or annual costs for materials, staff time, and one-time start up costs. The table then quantifies water savings annually and for the entire ten-year planning horizon. Annual water savings and projected lost revenue are based on full implementation. This gives the Town of Windsor an idea of the anticipated water savings and estimated revenue impacts after full implementation.

The cost per 1,000 gallons of water saved is found by dividing the total cost by the total water savings for the entire ten-year period. The measures and programs are then ranked by cost per 1,000 gallons saved. This ranking helps to determine which measures will be more effective and to suggest a useful order of implementation.

Table 6.1 – Cost/Savings Analysis of Conservation Measures and Programs

Conservation Measure or Program		Total Cost to Water Provider				# of Participants per Year	Gallons Saved per Unit per Year	Estimated Annual Water Savings (gallons)	Estimated Total Water Savings over Planning Period (gallons)	Annual Revenue Loss Related to Water Savings	Estimated Annual Cost	Estimated Total Cost over Planning Period including Set-up	Cost per 1000 Gallons Saved	Rank
		Rebate (B)	One time Labor and Material Cost (C)	Annual Labor (D)	Annual Materials (E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)	(N)
Supply side measures & programs	**Utility Maintenance Programs**													
	Water Waste Ordinance	$0	$0	$400	$0	0	0	3,979,164	39,791,644	$0	$400	$4,000	$0.10	1
	Leak Detection & Repair Program	$0	$0	$7,000	$0	0	0	15,916,658	159,166,577	$0	$7,000	$70,000	$0.44	2
	Non-Potable Park Well Meters	$0	$0	$2,800	$3,500	7	0	4,016,114	4,016,114	$0	$6,300	$6,300	$1.57	3
	Meter Testing and Replacement Program	$0	$0	$0	$33,250	50	0	7,958,329	79,583,288	$0	$33,250	$332,500	$4.18	11
Demand side measures & programs	**Regulatory Controls and Standards**													
	Watering Restrictions	$0	$0	$850	$0	0	0	13,513,635	135,136,352	$59,047	$59,897	$598,965	$4.43	13
	Water Rate Structure Changes	$0	$40,000	$0	$0	0	0	14,416,810	144,168,096	$51,459	$51,459	$554,594	$3.85	7
	Restrict High Water-Use Turf on Medians and in Parking Lot Plantings	$0	$6,000	$0	$0	0	0	17,995,085	179,950,852	$82,025	$82,025	$826,255	$4.59	16
	Decorative Water Feature Requirements and Standards on New Construction	$0	$400	$1,250	$0	0	0	742,610	7,426,103	$2,366	$3,616	$36,564	$4.92	19
	Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation	$0	$400	$6,250	$0	0	0	4,499,924	44,999,242	$17,960	$24,210	$242,501	$5.39	21
	Irrigation System Standards for New Development	$0	$400	$6,250	$0	0	0	5,405,454	54,054,541	$23,619	$29,869	$299,086	$5.53	22
	New Car Wash Standards (New Construction)	$0	$400	$1,000	$0	0	0	542,938	5,429,375	$2,475	$3,475	$35,148	$6.47	26
	Educational Programs													
	School Education Program (K-12)	$0	$0	$2,200	$1,000	0	0	2,559,918	25,599,175	$8,217	$11,417	$114,173	$4.46	14
	Xeriscape Gardening Classes	$0	$0	$2,400	$2,000		0	2,316,887	23,168,875	$10,561	$14,961	$149,609	$6.46	25
	Xeriscape Demonstration Garden	$0	$5,000	$2,000	$500	80	0	1,158,444	11,584,437	$5,280	$7,780	$82,804	$7.15	28
	Website Water Use Calculator	$0	$600	$100	$0	0	0	1,279,959	12,799,588	$4,109	$4,209	$42,686	$3.33	5
	Send ET Irrigation Scheduling in Water Bill	$0	$600	$500	$0	5,586	0	5,405,454	54,054,541	$23,619	$24,119	$241,786	$4.47	15
	Public Education - Bill Stuffers & Website	$0	$2,000	$2,100	$3,953	5,271	0	5,119,835	51,198,351	$16,435	$22,488	$226,878	$4.43	12
	Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	$0	$600	$500	$229	305	0	393,606	3,936,061	$1,738	$2,467	$25,266	$6.42	24
	Professional Irrigator Education and Training	$0	$0	$6,400	$2,500	100	0	642,912	6,429,122	$3,592	$12,492	$124,920	$19.43	31
	Rebate and Incentive Programs													
	Rebate for Low-Flow Faucet	$5	$100	$625	$0	50	6,850	342,516	18,838,380	$5,616	$6,491	$65,005	$3.45	6
	Distribute Toilet Retrofit Devices	$0	$6,200	$625	$0	50	5,138	256,887	14,128,785	$4,212	$4,837	$54,566	$3.86	9
	Residential Rebate for Low-Flow Toilets	$50	$200	$625	$0	25	12,331	308,264	16,954,542	$5,054	$6,929	$69,490	$4.10	10
	Rebate for Low-Flow Showerhead	$5	$100	$625	$0	50	1,813	90,666	4,986,630	$1,486	$2,361	$23,715	$4.76	17
	Distribute Pre-Rinse Spray Heads to Restaurants and Institutions	$0	$200	$1,600	$1,200	12	109,200	1,310,400	72,072,000	$32,852	$35,652	$356,720	$4.95	20
	Business Toilet Rebate	$50	$200	$625	$0	30	9,125	273,750	15,056,250	$6,863	$8,988	$90,080	$5.98	23
	Irrigation System Efficiency Device Rebates	$15	$400	$625	$0	112	Varies	472,717	25,999,461	$16,051	$18,356	$183,964	$7.08	27
	Rebate for High Efficiency Clothes Washers	$75	$200	$625	$0	25	5,964	149,095	8,200,236	$79,887	$6,238	$62,578	$7.63	29
	Turf Replacement and Xeriscape Incentives	$0	$2,000	$6,000	$0	10	0	3,714,701	204,308,577	$93,128	$208,028	$2,082,282	$10.19	30
	Rebate for High Efficiency Dishwashers	$50	$200	$625	$0	25	655	16,370	900,364	$410	$2,285	$23,054	$25.61	32
	Audit Programs													
	Residential Water Audit Kits	$0	$8,775	$800	$0	125	5,474	684,287	37,635,791	$5,813	$6,613	$74,904	$1.99	4
	Business and Industrial Water Audits	$0	$0	$500	$3,600	12	89,446	1,073,353	59,034,405	$18,658	$22,758	$227,583	$3.86	8
	Landscape Customer Category System Audits	$0	$400	$400	$750	5	241,130	1,205,649	66,310,679	$30,389	$31,544	$315,842	$4.76	18

Column Explanations:

(B) A rebate provided upon approval of customer application
(C) One time labor and material costs involved in set up program or measure
(D) Labor involved each year for operation of measure or program
(E) Materials needed each year for each unit if listed or for the whole measure or program
(F) Number of participants expected to participate and resulting units or audits needed
(G) Gallons of water saved per unit as a result of participating in the program or measure
(H) Total water savings seen in a year from the measure or program
(I) Total water savings seen over entire ten year planning period; could be based on increasing water demand or a fixed use per account
(J) Revenue the water provider will not be paid if the water savings occur.
(K) Total annual cost to water provider plus the annual revenue loss.
(L) Total cost to implement and operate measure or program over entire planning period, including annual operation, one time set up costs and annual revenue lost due to water savings
(M) Cost per 1000 gallons saved = total cost over planning period divided by total water saved over planning period
(N) Ranks the measures and programs according to the price per 1000 gallons of water saved, lowest to highest

Comparison of Benefits and Costs

The resulting rank of measures by cost-benefit is shown in Table 6.2 below. The cost per 1,000 gallons saved ranges from $0.10 to $25.61. The measures are ranked fairly evenly throughout the five categories.

The rankings are a result of the ratio of cost, including lost revenue, to water savings. For instance, rebates for high efficiency dishwashers and clothes washers save a fair amount water, however, the costs of these programs are high, so they rank lower than one might expect. This is only a cost per water saved ranking and there are other factors to consider, which can be accomplished in a second screening.

Table 6.2 – Cost-Benefit Ranking

Conservation Measures and Programs	Rank
Water Waste Ordinance	1
Leak Detection & Repair Program	2
Non-Potable Park Well Meters	3
Residential Water Audit Kits	4
Website Water Use Calculator	5
Rebate for Low-Flow Faucet	6
Water Rate Structure Changes	7
Business and Industrial Water Audits	8
Distribute Toilet Retrofit Devices	9
Residential Rebate for Low-Flow Toilets	10
Meter Testing and Replacement Program	11
Public Education - Bill Stuffers & Website	12
Watering Restrictions	13
School Education Program (K-12)	14
Send ET Irrigation Scheduling in Water Bill	15
Restrict High Water-Use Turf on Medians and in Parking Lot Plantings	16
Rebate for Low-Flow Showerhead	17
Landscape Customer Category System Audits	18
Decorative Water Feature Requirements and Standards on New Construction	19
Distribute Pre-Rinse Spray Heads to Restaurants and Institutions	20
Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation	21
Irrigation System Standards for New Development	22
Business Toilet Rebate	23
Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	24
Xeriscape Gardening Classes	25
New Car Wash Standards (New Construction)	26
Irrigation System Efficiency Device Rebates	27
Xeriscape Demonstration Garden	28
Rebate for High Efficiency Clothes Washers	29
Turf Replacement and Xeriscape Incentives	30
Professional Irrigator Education and Training	31
Rebate for High Efficiency Dishwashers	32

Evaluation Criteria

After each of the conservation measures and programs were ranked by *cost per 1,000 gallons saved*, as shown in Table 6.2, the next step was to select conservation measures and programs for implementation. The criteria used for selection are as follows:

1. Additional staff time required
2. Financial implications
3. Staff and Board approval
4. Existing or planned Town projects

On May 22, 2008, a large tornado hit the Town of Windsor. Since that time, Town staff has been occupied with tornado clean up and repair. Currently, staff time is limited which may make it difficult to find staff time for implementation of certain water conservation programs. Financial implications of programs are also a concern as Town budgets are stretched. Final program selections also hinge on Town staff and Board approval and existing or planned Town projects.

Selected Conservation Measures and Programs

The second screening was accomplished by evaluating each measure/program based on the screening criteria and Windsor's overall goal for this Water Conservation Plan. Table 6.3 shows the final measures selected through the secondary screening process.

Table 6.3 – Final Selection of Conservation Measures and Programs

Conservation Measure or Program	Rank	Final Selection	Criteria for Selecting of Rejecting Measure or Program
Utility Maintenance Programs			
Water Waste Ordinance	1	Yes	The Town of Windsor would like to continue public education for this regulation.
Leak Detection & Repair Program	2	Yes	A leak detection and repair program is necessary to reducing unaccounted for losses.
Non-Potable Park Well Meters	3	Yes	Currently, the non-potable park wells are not metered making it difficult for Town staff to monitor usage and find leaks or problems with the system. Adding meters to these park wells will allow the Town a chance to get a handle on non-potable water usage.
Meter Testing and Replacement Program	11	Yes	Faulty meters may be responsible for apparent losses. Town staff would like to implement a testing and replacement program as staff time allows.
Regulatory Controls and Standards			
Watering Restrictions	13	Yes	Watering restrictions are important for water savings during the lawn watering season. The Town will continue this program and continue public education on the benefits of watering restrictions.
Water Rate Structure Changes	7	Yes	A rate study will be conducted to determine a fair structure that will help maximize water savings.
Restrict High Water-Use Turf on Medians and in Parking Lot Plantings	16	No	Cost rankings are high and there are not enough staff resources to implement this measure at this time.
Decorative Water Feature Requirements and Standards on New Construction	19	No	Cost rankings are high and there are not enough staff resources to implement this measure at this time.
Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation	21	Yes	These measures have a high potential for water savings and will receive positive public perception.
Irrigation System Standards for New Development	22	Yes	
New Car Wash Standards (New Construction)	26	Yes	
Educational Programs			
School Education Program (K-12)	14	Yes	The Town of Windsor would like to grow these existing programs to increase water savings.
Xeriscape Gardening Classes	25	Yes	
Xeriscape Demonstration Garden	28	Yes	
Website Water Use Calculator	5	Yes	Putting a residential water use calculator on a website is an effective way for a customer to calculated their water use and get them thinking about how to save water and money.
Send ET Irrigation Scheduling in Water Bill	15	Yes	ET irrigation schedules can be prepared by the Town prior to the irrigation season and sent out to all customer categories to reference when programming their irrigation systems.
Public Education - Bill Stuffers & Website	12	Yes	Setting up a section on the website, dedicated to water conservation, would add an efficient way to distribute a lot of information and enhance public perception.
Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	24	Yes	
Professional Irrigator Education and Training	31	No	Cost rankings are high and there are not enough staff resources to implement this measure at this time.

Conservation Measure or Program	Rank	Final Selection	Criteria for Selecting of Rejecting Measure or Program
Rebates and Incentive Programs			
Rebate for Low-Flow Faucet	6	No	At this time, Town Staff would like to focus only on the Irrigation System Efficiency Device Rebate Program, due to limited staff time.
Distribute Toilet Retrofit Devices	9	No	
Residential Rebate for Low-Flow Toilets	10	No	
Rebate for Low-Flow Showerhead	17	No	
Distribute Pre-Rinse Spray Heads to Restaurants and Institutions	20	No	
Business Toilet Rebate	23	No	
Rebate for High Efficiency Clothes Washers	29	No	
Rebate for High Efficiency Dishwashers	32	No	
Irrigation System Efficiency Device Rebates	27	Yes	This program will be well received by Windsor residents.
Turf Replacement and Xeriscape Incentives	30	No	Cost rankings are high and there are not enough staff resources to implement this measure at this time.
Audit Programs			
Residential Water Audit Kits	4	Yes	This is a high potential savings area. Online versions will be provided on the website as well as kits available at the Town offices.
Business and Industrial Water Audits	8	Yes	Business and Industrial customers are often the highest water users and have been an area of increasing focus for water conservation. Water audits can be performed by a third party consultant and is an effective way to educate businesses on how they can save water.
Landscape Customer Category System Audits	18	No	Cost rankings are high and there are not enough staff resources to implement this measure at this time.

The following provides further detail on the conservation measures and programs chosen in the final selection. Water savings and cost estimate calculations for each measure are found in Appendix A.

Utility Maintenance Programs

- *Water Waste Ordinance*
  The Town of Windsor currently has a water waste ordinance (No. 13-2-250), which calls for the maintenance of service lines and fixtures, requires that property owners connected to the Town water utility are responsible for the maintenance of the water service line from the property line. The ordinance also states that the owner shall keep this line in good condition and, at his or her expense, shall at all times keep all pipes, fixtures and appliances on his or her property tight and in good working order so as to prevent waste of water. The Town of Windsor would like to continue public education regarding this water saving ordinance. We estimate that this ordinance saves approximately 0.5 percent of the total losses within the Windsor water system.

- *Leak Detection and Repair Program*
  The Town of Windsor has recently contracted for a Leak Detection and Repair program, which entails evaluation of 1/7th of their system each year. The program is restarted approximately every seven years. Current system

leakage/loss rate is estimated at 9.5 percent. Leak detection and repair is estimated to reduce real losses by two percent.

- *Non-Potable Park Well Meters*
  There are six Town wells that are used to irrigate public facilities that are not metered, making it difficult to monitor water use and detect leaks. Adding meters to these wells will enable the Town to get a handle on non-potable water usage. The metering program setup and meter installation would be completed by Town staff.

- *Meter Testing and Replacement Program*
  In this program existing meters are tested periodically for leaks and accuracy and are replaced as necessary. Current system loss rate for Windsor is estimated at 9.5 percent. Implementation of this program could reduce these losses by one percent over the planning period.

- *Town Building Water Fixture Upgrades*
  This program includes indoor upgrades for the Windsor Town Hall building. The building has a number of toilets, faucets and a couple of showers that can be upgraded with low water use options. This program could save the Town approximately 23,500 gallons per year.

Regulatory Controls and Standards

- *Watering Restrictions*
  The Town, through Municipal Code Section 13-2-420, restricts lawn water hours between 10 am and 6 pm from May 1st through September 30th. The Town would like to continue public education regarding this water saving ordinance. We estimate that this ordinance saves approximately five percent of the outdoor losses from water use in the Residential, Business, Public, and Landscape customer categories.

- *Water Rate Structure Changes*
  It has been shown that a properly designed inclining block water rate structure is the most effectively way to encourage efficient water use. The Town of Windsor would like to complete a rate study to ensure maximum water conservation savings without compromising rate revenue. We assume a conservative reduction of two percent of projected total billed water.

- *Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation*
  Wind and rain sensors shut off irrigation systems and prevent the systems from being activated during and after rainfall or in high wind situations. These devices are typically wired to an irrigation system controller and override a scheduled irrigation when the water collection cup or sensor on the shutoff device detects wind or water. Once the wind has died down or the rainwater has evaporated

from the device, scheduled irrigations resume. Rain and wind sensors are simple and economical tools for preventing irrigation that would be wasteful.

We estimate a five percent savings of outdoor usage in new Business, Public, and Landscape customers' water usage. The cost analysis of this measure includes costs for hiring Safe Built to perform sensor inspections. Because Safe Built can perform the inspections, staff time is estimated to be minimal. Staff time for program development can be split between all regulatory standards programs. There are no material costs associated with this measure.

- *Irrigation System Standards for New Development*
  These kinds of standards are usually enforced in the development standards for municipalities. Currently, the Town requires the installation of an irrigation system in new development. Town staff would like to expand this program to require an irrigation clock and rain and/or wind sensors for new development.

  We estimate a two percent savings of outdoor usage in new Residential, Business, Public, and Landscape customers' water usage. Similar to other regulatory programs, the cost analysis of this measure includes costs for hiring Safe Built to perform inspections. Because Safe Built can perform the inspections, staff time is estimated to be minimal. Staff time for program development can be split between all developmental standard programs. There are no material costs associated with this measure.

- *New Car Wash Standards for New Construction*
  The amount of water used by car wash facilities depends primarily on the type of cleaning system used and whether its design includes reclamation. Car washes with reclaimed water systems can reduce water use by more than half. A new car wash development standard will require reclaimed water systems for future car washes. We estimate that four car washes will be established within the next ten years. If those new car washes are constructed with reclaimed water systems, the Town may save up to 500,000 gallons per year.

  Unlike the previously described regulatory programs, staff cost estimates include time for Town staff to inspect new carwash construction. Staff time for program development can be split between all developmental standard programs. There are no material costs associated with this measure.

Educational Programs

- *School Education Program*
  The Town of Windsor would like to grow their existing school education program. Windsor currently has an interactive education display called the Water Wagon. The Wagon is taken to schools and is also displayed at public events. Handicap accessible, the trailer features fun, interactive displays that show children how they can help reduce household water consumption. A winding river painted on the floor of the Water Wagon guides students through each station, including a shower display that demonstrates how shortening shower time can save water and a reservoir that drains according to choices made about outdoor water use. Touch screens with animated video clips provide other simple tips and water trivia, and a "water audit" station allows students to find out how much water their households use.

  This measure will continue and expand the current education program and includes costs for educational materials and staff time spent traveling to schools to present the Water Wagon. We assume a 0.5 percent water savings for Residential water customers.

- *Xeriscape Gardening Classes*
  The Town of Windsor Tree Board currently offers Xeriscape gardening classes, free to the public, two to three times per year. The Town would like to continue and possibly expand this program. We estimate a one percent water savings for Residential and Landscape customer categories. In the cost-benefit analysis, we assumed that costs to the Town will include class preparation and instruction and a material budget of $25 per class participant. We limit class size to 20 participants with four classes offered each year.

- *Xeriscape Demonstration Garden*
  A demonstration area has been dedicated to the local master gardeners group for the purpose of creating a Xeriscape garden. The dedication to date includes land only and the lack of funding has resulted in a process of adding a few plants per year. This area is located along a well traveled paved path and Town desires to make it a strong educational tool for the Town's residents. The Town would like to implement a program that would launch a demonstration garden with the assistance of volunteers and the Weld County Master Gardeners.

  We estimate a 0.5 percent water savings for Residential and Landscape customer categories. In the cost-benefit analysis, we assumed that costs will include garden design (one time cost), some staff time for installation, plants and planting materials, and on-going maintenance.

- *Website Water Use Calculator*
  Putting a residential water use calculator on a website is an effective way for a customer to calculate their water use and get them thinking about how to save

water and money. We estimate water savings of 0.25 percent for Residential customers. Staff hours include time spent setting up the calculator on the Town website, website promotion, and annual maintenance. Website setup costs are split between this measure, the ET scheduling in Water Bill measure, and post Business, Industrial, and Public BMPs on website or as bill stuffer measure.

- *Send ET Irrigation Scheduling in Water Bill*
  Evapotranspiration or ET is the water lost from the surface of plants through evaporation and transpiration, respectively. The rate of ET helps determine how much water a Windsor resident's lawn needs. ET irrigation schedules using historical averages of weather data can be prepared by the Town prior to the irrigation season and sent out to all customer categories to reference when programming their irrigation systems. Northern Water has tools on their website that can aid with this calculation. The schedule could be printed on the bill at the beginning or duration of the irrigation season or included as a bill stuffer.

  This measure affects projected outdoor water usage for all customer categories with the exception of Industrial customers. We estimate a savings of two percent with implementation of this measure. Staff hours include time spent preparing schedules. One-time costs include schedule program set up. Website setup costs are split between this measure, the website water use calculator measure, and post Business, Industrial, and Public BMPs on website or as bill stuffer measure.

- *Public Education - bill stuffers and website*
  Water providers may periodically provide customers with water conservation tips in water bills, on their website, and at the front desk of Town Hall. This measure is anticipated to save one percent of projected Residential water usage. In the cost-benefit analysis we estimated staff hours to include time spent preparing and updating website, and preparing bill stuffers. Over the planning period, we project an average of 5,271 Residential tap accounts each year. The AWWA has bill stuffers available for purchase. Average cost per bill stuffer ranged from $0.50 to $0.75 per item.

- *Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers*
  BMPs regarding Business, Industrial, and Public (schools and churches) can be posted on the Town's website or sent out as bill stuffers to help encourage water conservation. We estimate a savings of 0.25 percent with implementation of this measure for the Business, Industrial, and Public customer categories.

  Material costs include purchase of bill stuffers. The AWWA has bill stuffers available for purchase at an average cost of $0.50 to $0.75 per item. Staff costs for website setup are split between this measure, the website water use calculator measure, and the ET scheduling in Water Bill measure.

Rebate and Incentive Programs

- *Irrigation System Efficiency Device Rebates*
  While there are several rebate programs available, at this time, Town staff would like to focus only on the Irrigation System Efficiency Device Rebate Program, due to limited staff time. Irrigation System Efficiency Devices may include ET (SMART) sprinkler system controllers and wind and/or rain sensors. The Town can offer residents rebates for the purchase and installation of efficiency devices. In the cost-benefit analysis, we estimated a rebate of $15.00 per efficiency device. We estimated that projected outdoor Residential, Business, Public, and Landscape use can be reduced by five percent with implementation of this program.

  Estimated costs include annual staff time to work with residents on rebate program and a one-time labor cost for development of the program. The Town may offer residents $15.00 per irrigation system device, limit one device per household. Annual program participants are estimated to total approximately 112 people per year (see Appendix A for specific participants per customer category).

  Based on the Handbook of Water Use and Conservation by Amy Vickers, wind and rain sensors can save an estimated five percent to ten percent of water used outdoors and costs approximately $15 to $45. The amount of water that can be saved through improved programming of an irrigation system controller varies but is estimated to be at least ten to 15 percent. The cost of automatic irrigation system controllers for residential use ranges from about $50 to $250, depending on the features provided. Commercial-use controllers and central controllers can cost up to several thousand dollars.

Audit Programs

- Residential Audit Kit
  Self-guided residential audit kits can be designed to include items such as leak detection tablets, surveys, and sprinkler testing cones. Instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The guidance offered in the instructions could lead the customer to take part in other conservation programs offered, including rebates. We estimate a savings of three percent with implementation of this measure for projected water use in the Residential customer category.

  Cost estimates include staff time for website and program setup. Online instruction can be set up on the Town's website. Material costs include the purchase of audit kits. Residential audit kits are available at wholesalers like AM Conservation Group, Inc. for $6.70 per unit for a bulk purchase of 900 to 1500 units. Kits can be customized to include the Town of Windsor's logo.

- *Business and Industrial Water Audits*
  Business and Industrial customers are often the highest water users and have been an area of increasing focus for water conservation. Business and Industrial customers who participate in a water audit could identify ways to reduce their operating costs over the long term. Water audits can be performed by a third party consultant and is an effective way to educate businesses on how they can save water. We estimate a savings of ten percent with implementation of this measure for projected water use in the Business and Industrial customer categories.

  Estimated staff hours include time for coordination with third party consultants. Consultants may be hired to perform audits at an average cost of approximately $300 per audit. We assumed that 12 audits will be performed annually.

In Chapter 5, conservation goals were established for eight customer categories:

- Unaccounted-for Losses: 3.5% - 855 AF
- Residential: 10% - 1,106 AF
- Residential Dual System: 3% - 139 AF
- Business: 15% - 298 AF
- Business Dual System: 10% - 15 AF
- Industrial: 5% - 116 AF
- Public (Schools & Churches): 10% - 36 AF
- Landscape Only: 15% - 237 AF

The selected conservation measures/programs and associated water savings were arranged within the targeted customer categories to more easily compare the anticipated savings to the original goals. Table 6.4 shows the water savings for the selected measures, sub-totaled for each category.

Table 6.4 – Combined Water Savings of Selected Conservation Measures and Programs

Conservation Measures and Programs	Estimated Annual Water Savings after full Implementation (gallons)	Estimated Total Water Savings over Planning Period (gallons)
Unaccounted for Losses		
Water Waste Ordinance	3,979,164	39,791,644
Leak Detection & Repair Program	15,916,658	159,166,577
Meter Testing and Replacement Program	7,958,329	79,583,288
Non-Potable Park Well Meters	4,016,114	4,016,114
Subtotal - Gallons	31,870,265	282,557,623
Acre-Feet	98	867
Residential		
Water Restrictions - Hours/Day	9,013,711	90,137,110
Xeriscape Gardening Classes	1,802,742	18,027,422
Xeriscape Demonstration Garden	901,371	9,013,711
School Education Program (K-12)	2,559,918	25,599,175
Water Rate Structure Changes	10,239,670	102,396,701
Public Education - Bill Stuffers & Website	5,119,835	51,198,351
Residential Water Audit Kits	684,287	37,635,791
Irrigation System Standards for New Development	3,605,484	36,054,844
Send ET Irrigation Scheduling in Water Bill	3,605,484	36,054,844
Website Water Use Calculator	1,279,959	12,799,588
Irrigation System Efficiency Device Rebates	276,973	15,233,534
Subtotal - Gallons	39,089,435	434,151,071
Acre-Feet	120	1,332
Business		
Water Restrictions - Hours/Day	1,617,633	16,176,327
Water Rate Structure Changes	1,392,842	13,928,419
Irrigation System Standards for New Development	647,053	6,470,531
Send ET Irrigation Scheduling in Water Bill	647,053	6,470,531
Irrigation System Efficiency Device Rebates	56,280	3,095,394
Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	174,105	1,741,052
Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation	1,617,633	16,176,327
New Car Wash Standards (New Construction)	542,938	5,429,375
Business and Industrial Water Audits	609,341	33,513,755
Subtotal - Gallons	7,304,877	103,001,712
Acre-Feet	22	316
Industrial		
Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	188,344	1,883,444
Water Rate Structure Changes	1,506,755	15,067,550
Business and Industrial Water Audits	464,012	25,520,650
Subtotal - Gallons	2,159,111	42,471,644
Acre-Feet	7	130

Conservation Measures and Programs	Estimated Annual Water Savings after full Implementation (gallons)	Estimated Total Water Savings over Planning Period (gallons)
Public		
Water Restrictions - Hours/Day	311,565	3,115,650
Water Rate Structure Changes	249,252	2,492,520
Irrigation System Standards for New Development	124,626	1,246,260
Send ET Irrigation Scheduling in Water Bill	124,626	1,246,260
Irrigation System Efficiency Device Rebates	18,248	1,003,621
Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	31,157	311,565
Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation	311,565	3,115,650
Subtotal - Gallons	1,171,038	12,531,526
Acre-Feet	4	38
Landscape		
Water Restrictions - Hours/Day	2,570,726	25,707,265
Xeriscape Gardening Classes	514,145	5,141,453
Xeriscape Demonstration Garden	257,073	2,570,726
Water Rate Structure Changes	1,028,291	10,282,906
Irrigation System Standards for New Development	1,028,291	10,282,906
Send ET Irrigation Scheduling in Water Bill	1,028,291	10,282,906
Irrigation System Efficiency Device Rebates	121,217	6,666,911
Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation	2,570,726	25,707,265
Subtotal - Gallons	9,118,759	96,642,338
Acre-Feet	28	297
Grand Total - (Gallons)	**87,383,336**	**916,352,743**
Acre-Feet	**268**	**2,812**

These savings were compared to the original goals set in Chapter 4. As mentioned earlier, water conservation goal setting is an iterative process; original goals are established, conservation measures are evaluated and selected based on appropriate criteria, and the resulting water savings are compared to the original goals. The resulting water savings are close to the original goals.

Table 6.5 compares the anticipated water savings from the selected measures with the original goals and then adjusts the water saving goals for this Plan. For simplicity, non-dual use and dual use water savings from the water conservation measures were combined.

Table 6.5 – Water Conservation Goals Comparison

Water Use Categories:	Total Projected Water Use (2008 to 2017)	Reduction Goals for Planning Horizon		Total Water Savings from Selected Programs	Resulting Reduction	Adjusted Reduction Goals for Planning Horizon	
	(AF)	(%)	(AF)	(AF)	(%)	(%)	(AF)
Residential	11,065	10%	1,106				
Residential Dual System	4,647	3%	139	1,332	8.5%	8.0%	1,257
Business	1,986	15%	298				
Business Dual System	152	10%	15	316	14.8%	15.0%	321
Industrial	2,312	5%	116	130	5.6%	6.0%	139
Public (schools & churches)	364	10%	36	38	10.6%	11.0%	40
Landscape Only	1,578	15%	237	297	18.8%	16.0%	252
Unaccounted-for Losses (currently 9.5%)	2,320	3.5%	855	867	3.6%	3.6%	867
Total Water Production:	24,423						
Total Demand Reduction:			2,802	2,981			2,876
Total Percent Reduction:			11.5%			12%	

Over the ten-year planning period the selected measures/programs provide an overall estimated water savings of 2,981 AF. This is close to, but higher than the initial water savings goals set in Chapter 4. After the goals were adjusted to better reflect the expected water savings, the estimated water use reduction is 2,876 AF or 12 percent. Therefore, Windsor will plan to reduce its water use by 12 percent over the next ten year as a result of implementation of this Plan.

Non-Potable Measures and Programs

Most of the Towns non-potable water use has historically been controlled by Home Owners Associations leaving Windsor without any operational authority. However, the Town does most of its park and open space irrigation with non-potable water which it can control. The Town is also planning a regional non-potable system that will provide more control and consistency for future developments. For this conservation planning effort the Town is looking at its own current non-potable water use to provide a good example of conservation and equality between the Town and its customers. This effort will also provide an introduction to what can be done with the non-potable systems and use and will be explored further in the next water conservation plan.

The Town will implement two water conservation measures to reduce its non-potable water use, metering parks wells and installing wind and rain sensors on all of its irrigation systems. The wind and rain sensors will save at least five percent of the Town's current irrigation of approximately 33 AF or 1.7 AF. Metering the wells will also save approximately five percent of the well use, which at build-out will equate to 12 AF of water savings.

CHAPTER 7 – INTEGRATE RESOURCES AND MODIFY FORECASTS

Windsor operates in a manner to make the most efficient use of its resources. Each year, a budget is carefully developed with the given funding and personnel available. While water conservation has been an effort that has been gradually incorporated, implementation of the measures and programs selected in this plan will require reevaluation of staff resources and pursuit of additional funding in the form of grants.

Implementation Schedule

Water savings resulting from implementation of this Water Conservation Plan will occur gradually as the Town has the resources to implement each selected measure and program and the water users respond to the measures and programs. Grant availability will be crucial in the timing of implementation.

The following table proposes a schedule of implementation that splits the effort over three years and allows time to apply for and possibly obtain grant money. The annual costs are shown to implement the measure and maintain it. Any grant money obtained would reduce these yearly costs. The table also shows the percent of the total water saved over the planning period that each measure contributes.

Table 7.1 – Windsor Water Conservation Plan Implementation Schedule

Measure/Program	Cost to Implement	Annual Cost without Lost Revenue	% of Total Water Savings	Implementation Considerations	Grant Request
2009					
Non-Potable Park Well Meters	$6,300		0.4%	Staff time, Funding	Yes
Leak Detection & Repair		$7,000	17.6%	Funding, obtaining 3rd Party	
Water Rate Changes	$40,000		16.0%	Funding	Yes
Total 2009 Cost	**$53,300**				
2010					
Leak Detection & Repair		$7,000	See above	2nd Year of Program, obtaining 3rd Party	
Regulatory Standards Program			11.3%	Staff time	
Irrigation System Standards for New Development	$400	$6,250			
Requiring Wind and/or Rain Sensors for Business and Open Space Irrigation	$400	$6,250			
New Car Wash Standards (New Construction)	$400	$1,000			
Audit Program			10.3%	Staff time, Funding	Yes
Residential Water Audit Kits	$8,775	$800			
Business and Industrial Water Audits		$4,100			
Educational Program			1.2%	Staff time, funding	Yes
Xeriscape Demonstration Garden	$5,000	$2,500			
Total 2010 Cost	**$42,875**				
2011					
Leak Detection & Repair		$7,000	See above	3rd Year of Program, obtaining 3rd Party	
Rebate Program			2.8%	Staff time, Public participation, Advertising, Funding	
Irrigation System Efficiency Device Rebates	$400	$2,306			
Educational Program			13.3%	Staff time, Obtaining 3rd Party, Funding	Yes
Website Water Use Calculator	$600	$100			
Send ET Irrigation Scheduling in Water Bill	$600	$500			
Public Education - Bill Stuffers & Website	$2,000	$6,053			
Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers	$600	$729			
Meter Testing and Replacement		$33,250	8.8%	Funding	Yes
Total 2011 Cost	**$54,138**				
Total Costs	**$186,225**	**$84,838**			
Total Combined Cost	**$271,063**				

The total cost to implement the conservation plan is $186,225 including the cost to go through the entire system once for leak detection and repair and meter testing and replacement program.

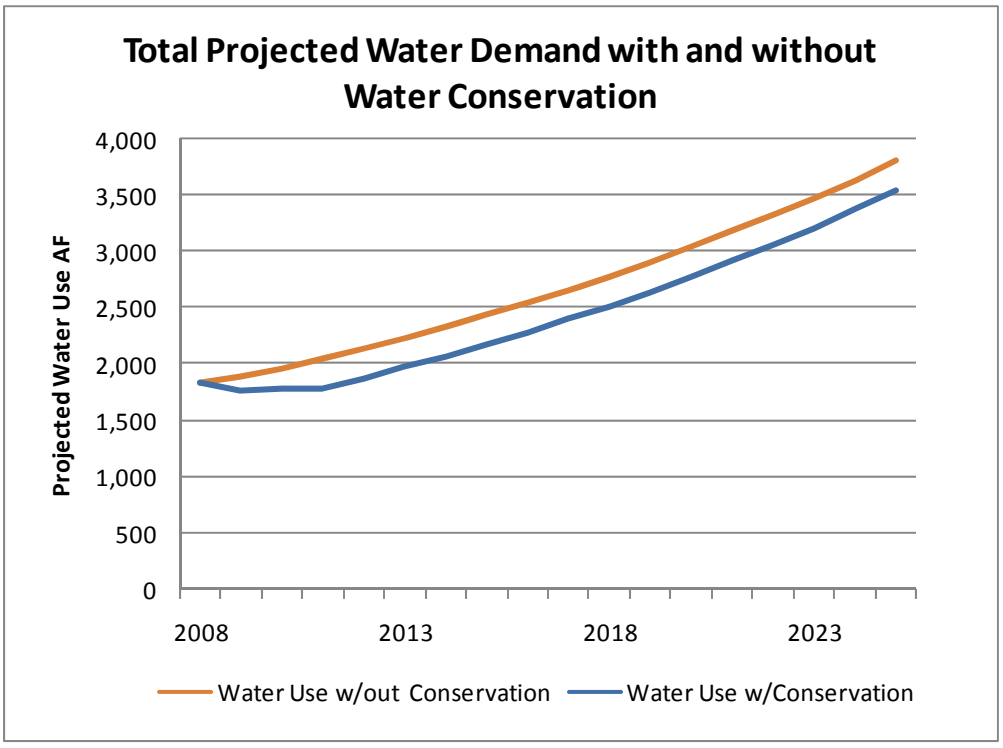
The implementation schedule will be most affected by available staff time and funding. While this schedule may be optimistic, the goal is to allow time for researching and obtaining grants to develop sound programs for a higher probability of success.

Modified Demand Forecast

The total water demands for Windsor are shown in the following graph with and without water conservation. The anticipated water savings follow the implementation schedule. The savings are compiled according to the assumptions used in the cost-benefit analysis and are carried through the end of the planning period. Effects of implementing the water conservation measures will last well beyond the planning horizon.

The annual savings after all of the measures/programs have been implemented is 276 AF per year without considering savings due to measures already in place, like watering restrictions. The goal is to fully realize these savings by 2017.

Figure 7.1 – Comparison of Demand Forecast with and without Conservation



Water Supply and Capacity Upgrade Forecast Modification

Along with lowering the overall demand for water, there are two areas that can be directly affected by water conservation; water supply acquisition and system capacity upgrades. Efforts in these areas may be modified and/or delayed, which could provide substantial financial savings to the conserving entity.

Water Supply

According to the 2025 demand projection for Windsor in this report of 4,797 AF (including the surcharge from the Town's wholesale providers) and the current water supply of 3,255 AF, the water needed by 2025 is 1,542 AF. This projection is a little more conservative than previous planning due to the recent slowdown in development. Water supply planning done for NISP showed a projected water demand at build-out of 6,400 AF with build-out being reached sometime past 2050. These water shortages will need to be met through additional water purchases, participation in new water supply projects, and conservation.

Water savings from the Water Conservation Plan (276 ac-ft per year) can act as a new supply by reducing the need for that amount of new supply and extend the time at which Windsor will reach its build-out water supply.

Capacity Upgrade

Besides regular maintenance and replacing older pipelines, Windsor has an evaluation of capacity upgrades that are outlined in the 2002 Water Master Plan. The upgrades include a new connection to NWCWD, pump stations and treated storage. The Water Master Plan lays out three alternatives and all three involve building a pipeline to the new NWCWD connection in 2014. Two of the alternatives include 0.75 MG of elevated storage for the NWCWD connection in 2014 and 2.25 MG of storage in 2017. The other alternative includes a closed-loop pump station and 3.0 MG of storage in 2010.

Windsor reviews and revises or updates its Capital Improvements Plan (CIP) each year for all of its departments and funding sources according to available Town resources. The Water Fund is what is used for system upgrades and water purchases. The CIP for the Water Fund is planned through 2012 and is shown in Table 7.2. The new connection and storage are not included in this planning horizon and may be delayed due to lower building permit sales than the Town was experiencing in 2002 when the Water Master Plan was developed. The plans for the next four years are maintenance oriented and are driven by age of infrastructure more than capacity concerns.

Table 7.2 – Windsor Water CIP Program

Capital Improvement Program for the Water Fund				
Water Project	**2009**	**2010**	**2011**	**2012**
Water Main Replacements	$151,345	$155,886	$160,562	$165,379
NISP Project	$540,000	$276,000	$5,437,000	$5,437,000
Raw Water Shares Purchase	$420,747	$433,369	$446,370	$459,762
Transmission mains	$692,839	$713,624	$735,033	$757,084
Oversizing South Hill Subdivision	$87,349	$89,970	$92,669	$95,449
Purchase non-potable shares	$160,000	$160,000	$160,000	$160,000

Forecast Modification

In Table 7.2 the only item that could be affected by water savings from this Water Conservation Plan is raw water shares purchases. Table 7.3 shows the annual savings for each year that will result from the Water Conservation Plan and the cumulative savings during the next three years as the Plan is implemented. The savings are shown in MG and AF so a person could compare the savings to either storage capacity or water purchases. The additional water needed in the next three years is also shown in AF. The table shows that if the estimated water savings are achieved, the 261 AF saved at the end of three years almost equals the 269 AF of water needed.

This table illustrates that water purchases could be delay or even eliminated for the next three years without hurting the future water supply for Windsor, however, this isn't recommended until real water savings are recorded and shown.

Table 7.3 – Estimated Water Savings and Water Supply Needs

Savings from Conservation	**2009**	**2010**	**2011**
Cumulative MG Saved per Year	39	58	85
Cumulative MGD Saved per Year	0.1	0.3	0.5
AF Saved per Year	120	59	82
Cumulative AF Saved	120	179	261
Additional AF Needed	60	102	107
Cumulative Additional AF Needed	60	162	269

Of the water supply currently owned by Windsor, average yield is 3255 AF and firm yield is 2,560 AF. This average supply could serve the Town until 2016 and the firm supply through 2010 or 2011. NISP is scheduled to have water available for participants in 2015 if it is permitted. This would provide the Town 3,300 AF of new water supply and would get the Town close to its build-out water supply needs. If water

savings from the conservation plan are realized in the next three years, new purchases could be delayed for those three years and possibly until NISP comes online.

Table 7.4 shows the cost savings from delaying the 2009-2012 raw water purchases shown in Table 7.2 for three years. The formula for the calculation in Table 7.4 is taken from a planning manual produced by the American Water Works Association in 2006 and compares the present value in each year that purchases would be made to those in the delayed year and considers the difference in present value due to the delay as cost savings. This formula doesn't consider annual inflation, which would reduce the actual cost savings somewhat. The resulting total cost savings using this method of delaying water purchases is $276,164.

Table 7.4 – Potential Cost Savings from Delayed Raw Water Purchases

Raw Water Purchases		Present Value of Cost in 2009	Present Value of Cost in 2010	Present Value of Cost in 2011	Present Value of Cost in 2012	Present Value if Purchased in 2012	Present Value if Purchased in 2013	Present Value if Purchased in 2014	Present Value if Purchased in 2015	Cost Savings
2009	$420,747	$400,711				$329,666				$71,045
2010	$433,369		$393,078				$323,387			$69,692
2011	$446,370			$385,591				$317,227		$68,364
2012	$459,762				$378,247				$311,185	$67,062
									TOTAL COST SAVINGS:	**$276,164**

Notes: Water Conservation Programs - A Planning Manual, AWWA Manual M52, pg. 77, formula (4-11)
Assumes 5% interest rate
Present value is for 2008

Another way to consider the value of conservation besides delaying water planned water purchases is to treat the water savings as a new supply that would have had to be purchased at some point and put a market value on it.

If the estimated annual water savings of 276 AF after full implementation of the plan are considered a new supply and that amount of water is not purchased, the cost savings would equal the current market value of the water. A reasonable value of $10,000 per AF can be used, which is slightly less than the cost per AF of NISP water and about $3,000 per AF less than the cost of CBT water. The value of the water savings from conservation is then $2.76 Million (276 AF x $10,000/AF).

Summary of Modifications and Benefits of Conservation

We have shown a cost savings from delaying planned water purchases over the next four years of $276,164 and one of not having to purchase the equivalent of the water saved in the Plan of $2.76 Million. There is also a chance that the new connection to NWCWD and associated storage will be delayed, although the cost savings for that project are not included in this report.

The cost to implement the entire Water Conservation Plan over the next three years is $271,000, which includes $186,000 for implementation of the measures/programs and $85,000 to operate them for three years as they come online.

Comparing the cost to implement water conservation to the potential cost of acquiring the amount of water saved clearly demonstrates the benefit of water conservation.

CHAPTER 8 – PLAN OF IMPLEMENTATION AND MONITORING

The schedule for implementation is presented in Table 7.1 in Chapter 7. The process for implementing the plan and monitoring its success is outlined in this chapter.

Public Participation

One of CWCB's requirements for a State-approved Water Conservation Plan is to solicit public comments on the draft plan for not less than a 60-day period unless otherwise specified by Town policy.

Through this water conservation planning process, the public was notified and given 60 days to comment. The plan was available on Windsor's website and at Town Hall for review. Written comments and responses to those comments are included in Appendix D.

Monitoring and Evaluation

Monitoring the success of this Water Conservation Plan includes measuring water use as well as money spent on the selected conservation measures and programs. Water users receiving audits and rebates can be tracked over the next ten years to determine cost of implementation and water savings. In addition, existing customer water uses will be monitored.

Many of the costs evaluated in the cost-benefit analysis include annual costs for follow-up. This will allow staff to specifically set aside time to monitor and evaluate the success of the conservation measures and programs. Expenditures for conservation will be documented by staff and reported to the Board on a regular basis. This will be valuable information in evaluating the cost-benefit ratio and to validate the success of implementing the selected conservation measures and programs. Since the programs will be implemented in phases, there will be time to evaluate and establish the appropriate method to monitor success of each program and measure.

Plan Updates and Revisions

The required schedule for updating the Water Conservation Plan is seven years. The progress towards achieving the water savings goals will be monitored on an annual basis by Windsor. The Town may choose to update this plan prior to seven years if implementation and actual water savings deviate too much from these projections. This deviation may be caused by several factors including higher or lower than

expected growth, less than anticipated participation and the inability to implement the plan due to lack of funding.

Plan Adoption and Approval

After the public comment period, the comments were incorporated into the plan. The Windsor Town Board formally adopted the plan prior to submittal to CWCB for final approval. The Board resolution is shown in Appendix C.

CWCB provides written notification of approval, conditional approval, or disapproval within 90 days of submittal. Conditions for conditional approval or disapproval are addressed if necessary. Implementation will begin after CWCB approval is received. It is only after final CWCB approval that Windsor will be eligible for a water-efficiency grant through CWCB for plan implementation.

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APPENDIX A

Water Conservation Measures

Water Waste Ordinance - Existing Measure

The Town of Windsor Municipal Code 13-2-250 requires that the property owner keep all pipes, fixtures and appliances on his or her property tight and in good working order so as to prevent waste of water.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Water Production without Savings	795,832,884	gallons/yr
Estimated Water Production over Planning Period without Savings	7,958,328,837	gallons
Annual Estimated Savings Rate	0.50%	
Estimated Annual Water Savings	**3,979,164**	gallons/yr
Estimated Savings over Planning Period	**39,791,644**	gallons

Notes:

Current system leakage/loss rate is estimated at 9.5%. Leak detection and repair is estimated to reduce real losses that occur due to billing system errors by 0.5%.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$0.00	/year
Annual Labor	**$400.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Labor Costs	$0.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Costs include public notification costs (web, newspaper, bill stuffers, etc.).

Estimated Annual Cost	**$400.00**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$4,000.00**	
Estimated Total Cost over Planning Period Including Set-up	**$4,000.00**	
Cost per 1000 Gallons Saved	**$0.10**	

Leak Detection and Repair Program

The Town of Windsor currently has an existing Leak Detection and Repair program which entails evaluation of 1/7th of their system, each year. The program is restarted every seven years.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Water Production without Savings	795,832,884	gallons/yr
Estimated Water Production over Planning Period without Savings	7,958,328,837	gallons
Annual Estimated Savings Rate	2.00%	
Estimated Annual Water Savings	**15,916,658**	gallons/yr
Estimated Savings over Planning Period	**159,166,577**	gallons

Notes:

Current system leakage/loss rate is estimated at 9.5%. Leak detection and repair is estimated to reduce real losses by 2.0%.

The estimated production (without savings) equals the projected water usage plus 9.5%.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	20	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$1,000.00	
Third Party Costs (Leak Detection Consult)	$5,000.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$1,000.00	/year
Annual Labor	**$7,000.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Third Party Costs (Mapping of System)	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Third Party Costs include:
- Leak survey preformed annually by a consultant.

Annual staff costs include coordination with consultants.

Estimated Annual Cost	**$7,000.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$70,000.00**	
Cost per 1000 Gallons Saved	**$0.44**	

Non-Potable Park Well Meters

Currently, the non-potable Town of Windsor Park Wells are not metered making it difficult for Town staff to monitor usage and find leaks or problems with the system. Adding meters to these park wells will allow the Town a chance to get a handle on non-potable water usage.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	1

Estimated Water Savings

Park	Estimated Future CU AF	Estimated Future CU gallons
Diamond Valley Park	136.8	44,576,417
Eastman Park - North	41.3	13,457,646
Poudre Natural Area	5.5	1,792,181
Town Hall and Rec Center Park	9.1	2,965,244
Main Park	18	5,865,318
Cemetery Field	29.9	9,742,945
Windsor West Park	5.9	1,922,521
TOTAL	246.5	80,322,272

Annual Estimated Savings Rate	5.00%	
Estimated Annual Water Savings	**4,016,114**	gallons/yr
Estimated Savings over Planning Period	**4,016,114**	gallons

Notes:

The future uses shown are estimated based on planned future parks.

Estimate that it will only take about 1 year to install meters.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	56	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$2,800.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$2,800.00**	/year
Materials Costs		
Unit Cost	$500.00	/participant
Number of Participants	7	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$3,500.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Program set up	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Costs include time to order and install all meters (7). Estimate that each meter may take about 8 hours total of the staff members time.

The $500 unit cost includes meter testing, replacement costs, and labor.

Estimated Annual Cost	**$6,300.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$6,300.00**	
Cost per 1000 Gallons Saved	**$1.57**	

Meter Testing and Replacement Program

Existing meters are tested periodically for leaks and accuracy and are replaced as necessary. Faulty meters account for apparent losses, or losses due to meter inaccuracies, and real losses also known as physical losses.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Water Production without Savings	795,832,884	gallons/yr
Estimated Water Production over Planning Period without Savings	7,958,328,837	gallons
Annual Estimated Savings Rate	1.00%	
Estimated Annual Water Savings	**7,958,329**	gallons/yr
Estimated Savings over Planning Period	**79,583,288**	gallons

Notes:

Current system loss rate is estimated at 9.5%. A portion of these losses may be attributed to faulty meters. The Town of Windsor would like to reduce these losses by 1% over the planning period.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$50.00	/participant
Number of Participants	665	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$33,250.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Program set up	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Anticipate that by 2017 there will be approximately 6,654 tap customers will need meter testing within the next ten year period. The City estimates that 1/10 of the average tap customer's taps will be tested and/or replaced in one year.

The $150 unit cost includes meter testing, replacement costs, and labor.

Estimated Annual Cost	**$33,250.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$332,500.00**	
Cost per 1000 Gallons Saved	**$4.18**	

Town Building Water Fixture Upgrades

The Town would like to replace old and outdated toilets as well as upgrade sinks and faucets in desingnated city buildings.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Number of Females that Use the Facilities Daily	6	
Number of Males that Use the Facilities Daily	6	
Female Frequency of Daily Toilet Use*	3	uses/day
Male Frequency of Daily Toilet Use*	1	uses/day
Toilet gallons per flush without savings	4	gallons/flush
Toilet gallons per flush with savings	1.6	
Toilet water use without savings	35,040	gallons/year
Toilet water use with savings	14,016	gallons/year
Non-conservation showerhead rate*	3	gallons/min
Conservation showerhead rate*	2.5	
Shower use	520	min/year
Showerhead water use without savings	1,560	gallons/year
Showerhead water use with savings	1,300	gallons/year
Number of faucets to be replaced	5	
Non-conservation faucet flow*	2	gallons/min
Conservation faucet flow*	1.7	gallons/min
Average frequency of faucet use	1,460	min/year
Showerhead water use without savings	14,600	gallons/year
Showerhead water use with savings	12,410	gallons/year
Total Water Use Without Savings	51,200	gallons/year
Estimated Annual Water Savings	**23,474**	gallons/yr
Estimated Savings over Planning Period	**234,740**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Windsor staff estimates that approximately 6 females and 6 males use the facilities (that would be upgraded) at the Town Hall daily. Based on information provided in the "Handbook of Water Use and Conservation" an annual water use and savings was calculated.

For Toilets, savings are 2.4 gal per flush (4.0 gal ave flush rate - 1.6 gal conservation flush rate). A total of 4 toilets will be replaced.

For Faucets, savings are 0.3 gal per minute (2.0 gpm less 1.7 gpm conservation use rate). Average faucet use is estimated at 4 min/day which is about half of household faucet use. A total of 5 faucets are estimated to be replaced.

The Town Hall has 2 showers. Savings are 0.5 gpm (3.0 gpm (rated flow at 80 psi) less 2.5 gpm for conservation use. Average shower use is estimated at 10 min per week.

Town Building Water Fixture Upgrades

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$1,500.00	
One Time Labor Cost	$2,000.00	
Program set up	$0.00	
One Time Labor/Material Cost	**$3,500.00**	

Notes:

The cost estimates include the one time costs for replacement of the 4 toilets, 5 faucets, and 2 showerheads.

Estimated Annual Cost	**$0.00**	/year
Estimated Total Cost over Planning Period Including Set-up	**$3,500.00**	
Cost per 1000 Gallons Saved	**$149.10**	

Watering Restrictions - Existing Measure

The Town, through Municipal Code, restricts lawn water hours, between 10am and 6 pm, from May 1st through September 30th. Municipal Code Section 13-2-420.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate 5.00%

Customer Category	Outdoor Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr*
Residential	180,274,220	9,013,711
Business	32,352,654	1,617,633
Public	6,231,300	311,565
Landscape	51,414,529	2,570,726

Estimated Annual Water Savings **13,513,635** gallons/yr

Estimated Savings over Planning Period **135,136,352** gallons

Notes:

Estimate that approximately 50% of total customer use is outdoor use.

Water Use does NOT include dual use system projected demand.

Industrial outdoor use is assumed to be minimal and therefore not included in the savings calcs for this measure.

Assume a conservative estimate of 5% savings of projected outdoor water usage .

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs	$50.00	/year
Annual Labor	**$850.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Labor Costs	$0.00	
One Time Material Costs	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Costs include public notification costs (web, newspaper, bill stuffers, etc.).

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Watering Restrictions - Existing Measure

Estimated Average Annual Revenue without Water Savings	$1,081,736.66	/year
Estimated Average Annual Revenue with Water Savings	$1,022,690.16	/year
Annual Revenue Loss Related to Water Savings	**$59,046.50**	/year

Estimated Annual Cost	**$59,896.50** /year
Estimated Cost over Planning Period not including Lost Revenue	**$8,500.00**
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$598,965.04**
Cost per 1000 Gallons Saved	**$4.43**

Water Rate Structure Changes

Based on many water conservation studies, an inclining block water rate design most effectively encourages efficient water use. The Town of Windsor currently has an inclining block rate but a rate study may be necessary to ensure maximum water conservation savings.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	2.00%

Customer Category	Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr*
Residential	511,983,506	10,239,670
Business	69,642,094	1,392,842
Industrial	75,337,749	1,506,755
Public	12,462,600	249,252
Landscape	51,414,529	1,028,291

Estimated Annual Water Savings	**14,416,810**	gallons/yr
Estimated Savings over Planning Period	**144,168,096**	gallons

Notes:

Assume a conservative reduction of 2% of projected total billed water. Rate change studies have shown a greater savings (Southwest Florida Water Management District study - 13%).

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$10,000.00	
Rate Study performed by Consultants	$30,000.00	
One Time Labor/Material Cost	**$40,000.00**	

Notes:

Labor costs include estimated staff time for researching water rate options and implementing those options (~200 hours at $50/hour).

Costs also include water rate study completed by a Consultant. Before a new rate structure is adopted, a rate study would need to be completed by an outside consulting firm.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Water Rate Structure Changes

Estimated Average Annual Revenue without Water Savings	$2,376,446.61	/year
Estimated Average Annual Revenue with Water Savings	$2,324,987.23	/year
Annual Revenue Loss Related to Water Savings	**$51,459.38**	/year

Estimated Annual Cost	**$51,459.38**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$40,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$554,593.78**	
Cost per 1000 Gallons Saved	**$3.85**	

Restrict High Water-Use Turf on Medians and in Parking Lot Plantings

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	35.00%

Customer Category	Outdoor Water Use Per Tap gallons	*Estimated Annual Water Savings gallons/yr*
Landscape	51,414,529	17,995,085

Estimated Annual Water Savings	**17,995,085**	gallons/yr
Estimated Savings over Planning Period	**179,950,852**	gallons

Notes:

Median water uses are found predominately in the Landscape water use category.

Estimate that approximately 35% of total Landscape water use can be saved by restricting turf within this customer category.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$0.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$6,000.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$6,000.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Restrict High Water-Use Turf on Medians and in Parking Lot Plantings

Estimated Average Annual Revenue without Water Savings	$223,848.56	/year
Estimated Average Annual Revenue with Water Savings	$141,823.11	/year
Annual Revenue Loss Related to Water Savings	**$82,025.45**	/year

Estimated Annual Cost	**$82,025.45**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$6,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$826,254.52**	
Cost per 1000 Gallons Saved	**$4.59**	

Decorative Water Feature Requirements and Standards on New Construction

Decorative Water Features include outdoor and indoor fountains and ponds. Regulations may restrictions on hours of operation of the water features, sensors for wind and rain, recycling systems, and installation of meters to monitor water use and detect leaks.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	0.25%

Customer Category	Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr*
Residential	255,991,753	639,979
Business	34,821,047	87,053
Public	6,231,300	15,578

Estimated Annual Water Savings	**742,610**	gallons/yr
Estimated Savings over Planning Period	**7,426,103**	gallons

Notes:

Assume a conservative reduction of 0.25% of projected total billed water.

Estimate that approximately 50% of total customer use is outdoor use.

Water Use does NOT include dual use system projected demand.

Industrial outdoor use is assumed to be minimal and therefore not included in the savings calcs for this measure.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$1,250.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$1,250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$400.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$400.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Cost for one time program development are split between all development standards. Total annual labor for all development standards totals $1,600.

Annual cost includes a third party cost for inspection.

Estimate that approximately 25 new taps are added each year and that the third party costs to inspect each tap is approximately $50. Inspections performed by Safe Built.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Decorative Water Feature Requirements and Standards on New Construction

Estimated Average Annual Revenue without Water Savings	$857,888.10	/year
Estimated Average Annual Revenue with Water Savings	$855,521.67	/year
Annual Revenue Loss Related to Water Savings	**$2,366.43**	/year

Estimated Annual Cost	**$3,616.43**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$12,900.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$36,564.29**	
Cost per 1000 Gallons Saved	**$4.92**	

Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	5.00%

Customer Category	Outdoor Water Use Gallons	*Estimated Annual Water Savings gallons/yr*
Business	32,352,654	1,617,633
Public	6,231,300	311,565
Landscape	51,414,529	2,570,726

Estimated Annual Water Savings	**4,499,924**	gallons/yr
Estimated Savings over Planning Period	**44,999,242**	gallons

Notes:

Estimate that approximately 50% of total customer use is outdoor use.

Water Use does NOT include dual use system projected demand.

Industrial outdoor use is assumed to be minimal and therefore not included in the savings calcs for this measure.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$6,250.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$6,250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$400.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$400.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Cost for one time program development are split between all development standards. Total annual labor for all development standards totals $1,600.

Annual cost includes a third party cost for inspection.

Estimate that approximately 250 new taps are added each year and that the third party costs to inspect each tap is approximately $25. Time to inspect each tap is approximately 15 minutes. Inspections performed by Safe Built.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Requiring Wind and/or Rain Sensors for Commercial and Open Space Irrigation

Estimated Average Annual Revenue without Water Savings	$340,645.57	/year
Estimated Average Annual Revenue with Water Savings	$322,685.49	/year
Annual Revenue Loss Related to Water Savings	**$17,960.08**	/year

Estimated Annual Cost	**$24,210.08**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$62,900.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$242,500.79**	
Cost per 1000 Gallons Saved	**$5.39**	

Irrigation System Standards for New Development

Boulder and Weld Counties encourage or require irrigation system standards withing their building permit review process.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	2.00%

Customer Category	Outdoor Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr*
Residential	180,274,220	3,605,484
Business	32,352,654	647,053
Public	6,231,300	124,626
Landscape	51,414,529	1,028,291

Estimated Annual Water Savings	**5,405,454**	gallons/yr
Estimated Savings over Planning Period	**54,054,541**	gallons

Notes:

Estimate that approximatly 50% of total customer use is outdoor use.

Water Use does NOT include dual use system projected demand.

Industrial outdoor use is assumed to be minimal and therefore not included in the savings calcs for this measure.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	0	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$0.00	
Third Party Costs	$6,250.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$6,250.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$400.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$400.00**	

Notes:

Labor costs include estimated staff time for researching and developing requirements and standards and receiving approval and implementing those options.

Cost for one time program development are split between all development standards. Total anual labor for all development standards totals $1,600.

Annual cost includes a third party cost for inspection.

Estimate that approximately 250 new taps are added each year and that the third party costs to inspect each tap is approximately $25. Inspections performed by Safe Built.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Irrigation System Standards for New Development

Estimated Average Annual Revenue without Water Savings	$1,081,736.66	/year
Estimated Average Annual Revenue with Water Savings	$1,058,118.06	/year
Annual Revenue Loss Related to Water Savings	**$23,618.60**	/year

Estimated Annual Cost	**$29,868.60** /year
Estimated Cost over Planning Period not including Lost Revenue	**$62,900.00**
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$299,086.01**
Cost per 1000 Gallons Saved	**$5.53**

New Car Wash Standards (New Construction)

The amount of water used by car wash facilities depends primarily on the type of cleaning system used and whether its design includes reclamation. Car washes with reclaimed water systems can reduce water use by more than half.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Self Service Carwash Water Use*	15	gallons/vehicle
Stationary Automatic Carwash Water Use*	60	gallons/vehicle
Conveyor Carwash Water Use*	65	gallons/vehicle
Average Vehicles Washed per Year	9,125	/carwash/yr
Estimated Average Annual Carwash Facility Usage	310,250	gal/carwash
Carwash Reclamation/Recycle System Savings Rate*	50%	gallons/yr
Estimated Number of Future Carwash operations	3.5	
Estimated Annual Water Savings	**542,938**	gallons/yr
Estimated Savings over Planning Period	**5,429,375**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

The Carwash water use per vehicle does not include any water recycling systems.

Assumed that on average approximately 25 vehicles are cleaned at a single carwash each day.

Assume the 60% of vehicles use the self service, 20% use the Automatic Carwash, and 20% use the Conveyor washes.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	20	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$1,000.00	
Third Party Costs		/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$1,000.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time City Staff Labor	$400.00	
Rate Study performed by Consultants	$0.00	
One Time Labor/Material Cost	**$400.00**	

Notes:

Labor costs include estimated staff time for developing the requirements/standards and acquiring approval from the Town Board.

Cost for one time program development are split between all development standards. Total annual labor for all development standards totals $1,600.

Annual staff costs include inspection of new carwashes and follow up.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

New Car Wash Standards (New Construction)

Estimated Average Annual Revenue without Water Savings	$4,701.87	/year
Estimated Average Annual Revenue with Water Savings	$2,227.04	/year
Annual Revenue Loss Related to Water Savings	**$2,474.83**	/year

Estimated Annual Cost	**$3,474.83**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$10,400.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$35,148.25**	
Cost per 1000 Gallons Saved	**$6.47**	

School Education Program

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Water Use without Savings	511,983,506	gallons/yr
Estimated Water Use over Planning Period without Savings	5,119,835,058	gallons
Annual Estimated Savings Rate	0.50%	
Estimated Annual Water Savings	**2,559,918**	gallons/yr
Estimated Savings over Planning Period	**25,599,175**	gallons

Notes:

This measure only affects Projected Residential water usage.

Assume 0.5% savings of projected Residential water usage.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	44	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$2,200.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$0.00	/year
Annual Labor	**$2,200.00**	/year
Materials Costs		
Annual Materials Budget	$1,000	/year
Annual Materials	**$1,000.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
Project WET teacher scholarship	$0.00	
ion Program Set Up (May be completed by 3rd party)	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Staff hours include time updating an education program, ordering and preparing educational materials, and training educators.

Staff time also includes time spent touring 3rd to 5th grade classes with the Water Wagon. Time for 8 hours at the five Town elementary schools.

Material costs include an annual budget for education materials costs.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

School Education Program

Estimated Average Annual Revenue without Water Savings	$1,562,819.60	/year
Estimated Average Annual Revenue with Water Savings	$1,554,602.31	/year
Annual Revenue Loss Related to Water Savings	**$8,217.29**	/year

Estimated Annual Cost	**$11,417.29**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$32,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$114,172.85**	
Cost per 1000 Gallons Saved	**$4.46**	

Xeriscape Gardening Classes

Planning Period	2008 to 2017
	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate*	1.00%

Customer Category	Outdoor Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr*
Residential	180,274,220	1,802,742
Landscape	51,414,529	514,145

Estimated Annual Water Savings	**2,316,887**	gallons/yr
Estimated Savings over Planning Period	**23,168,875**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

This measure affects projected non-dual use outdoor water usage for Residential and Landscape tap customers.

Estimate that approximately 50% of total customer use is outdoor use.

Residents who attend the classes each year make up approximately 1% of total number of tap accounts through the planning period.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	48	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$2,400.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$2,400.00**	/year
Materials Costs		
Number of Participants	80	/year
Material Cost per Participant	$25.00	/ participant
Annual Materials Budget	$2,000	/year
Annual Materials	**$2,000.00**	/year
Rebates		
Rebate Cost	$0.00	
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Third Party Costs	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Cost includes class preparation and instruction. Limit class size to 20 participants with 4 classes offered each year.

Material budget is approximately $25 per class participant.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Xeriscape Gardening Classes

Estimated Average Annual Revenue without Water Savings	$964,939.66	/year
Estimated Average Annual Revenue with Water Savings	$954,378.79	/year
Annual Revenue Loss Related to Water Savings	**$10,560.87**	/year

Estimated Annual Cost	**$14,960.87**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$44,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$149,608.69**	
Cost per 1000 Gallons Saved	**$6.46**	

Xeriscape Demonstration Garden

Creating a Xeriscape demonstration garden is an excellent way to educate the public to the water savings evident from xericscape.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate*	0.50%

Customer Category	Outdoor Water Use Per Tap gallons/tap	*Estimated Annual Water Savings gallons/yr*
Residential	180,274,220	901,371
Landscape	51,414,529	257,073

Estimated Annual Water Savings	**1,158,444**	gallons/yr
Estimated Savings over Planning Period	**11,584,437**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

This measure affects projected non-dual use outdoor water usage for Residential and Landscape tap customers.

Estimate that approximately 50% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	40	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$2,000.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$2,000.00**	/year
Materials Costs		
Annual Materials Budget	$500	/year
Annual Materials	**$500.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$5,000.00	
Third Party Costs	$0.00	
One Time Labor/Material Cost	**$5,000.00**	

Notes:

Cost is for garden design (one time cost), installation, plants and planting materials, and on-going maintenance.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Xeriscape Demonstration Garden

Estimated Average Annual Revenue without Water Savings	$964,939.66	/year
Estimated Average Annual Revenue with Water Savings	$959,659.22	/year
Annual Revenue Loss Related to Water Savings	**$5,280.43**	/year

Estimated Annual Cost	**$7,780.43**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$30,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$82,804.35**	
Cost per 1000 Gallons Saved	**$7.15**	

Website Water Use Calculator

Putting a residential water use calculator on a website is an effective way for a customer to calculated their water use and get them thinking about how to save water and money. Please refer to www.H2Oconserve.org for an example water use calculator.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Water Use without Savings (residential category)	511,983,506	gallons/yr
Estimated Water Use over Planning Period without Savings	5,119,835,058	gallons
Annual Estimated Savings Rate	0.25%	
Estimated Annual Water Savings	**1,279,959**	gallons/yr
Estimated Savings over Planning Period	**12,799,588**	gallons

Notes:

This measure affects projected water usage for the residential customer category.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	2	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$100.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$0.00	/year
Annual Labor	**$100.00**	/year
Materials Costs		
Unit Cost (cost of Bill Stuffers)	$0.00	/participant
Number of Participants	0	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Costs	$600.00	
One Time Labor/Material Cost	**$600.00**	

Notes:

Staff hours include time spent setting up website, website promotion, and annual maintenance.

Website setup costs are split between this measure, the ET scheduling in Water Bill measure, and post business, industrial, and public BMPs on website or as bill stuffer measure.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Website Water Use Calculator

Estimated Average Annual Revenue without Water Savings	$1,562,819.60	/year
Estimated Average Annual Revenue with Water Savings	$1,558,710.95	/year
Annual Revenue Loss Related to Water Savings	**$4,108.64**	/year

Estimated Annual Cost	**$4,208.64**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$1,600.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$42,686.43**	
Cost per 1000 Gallons Saved	**$3.33**	

Send ET Irrigation Scheduling in Water Bill

ET irrigation schedules using historical averages of weather data can be prepared by the Town prior to the irrigation season and sent out to all customer categories to reference when programming their irrigation systems. Northern Water has tools on their website that can aid with this calculation. The schedule could be printed on the bill at the beginning or duration of the irrigation season or included as a bill stuffer.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	2.00%

Customer Category	Outdoor Water Use	*Annual Water*
Residential	180,274,220	3,605,484
Business	32,352,654	647,053
Public	6,231,300	124,626
Landscape	51,414,529	1,028,291

Estimated Annual Water Savings	**5,405,454**	gallons/yr
Estimated Savings over Planning Period	**54,054,541**	gallons

Notes:

This measure affects projected outdoor water usage for all customer categories with the exception of Industrial tap customers.

Estimate that approximately 50% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$100.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost (cost of Bill Stuffers)	$0.00	/participant
Number of Participants	5,586	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Costs	$600.00	
One Time Labor/Material Cost	**$600.00**	

Notes:

Staff hours include time spent preparing schedules. Send out a schedule one time per year. One time costs include schedule program set up.

Over the planning period, there are projected to be an average of 5,586 affected tap accounts each year.

Website setup costs are split between this measure, the website water use calculator measure, and post business, industrial, and public BMPs on website or as bill stuffer measure.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Send ET Irrigation Scheduling in Water Bill

Estimated Average Annual Revenue without Water Savings	$1,081,736.66	/year
Estimated Average Annual Revenue with Water Savings	$1,058,118.06	/year
Annual Revenue Loss Related to Water Savings	**$23,618.60**	/year

Estimated Annual Cost	**$24,118.60**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$5,600.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$241,786.01**	
Cost per 1000 Gallons Saved	**$4.47**	

Public Education - bill stuffers and website

Water providers may periodically provide customers with water conservation tips in water bills, on their website, and at the front desk of their office.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Water Use without Savings	511,983,506	gallons/yr
Estimated Water Use over Planning Period without Savings	5,119,835,058	gallons
Annual Estimated Savings Rate	1.00%	
Estimated Annual Water Savings	**5,119,835**	gallons/yr
Estimated Savings over Planning Period	**51,198,351**	gallons

Notes:

This measure only affects Projected Residential water usage.

Estimated saving for bill stuffers and website education.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	40	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$2,000.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$100.00	/year
Annual Labor	**$2,100.00**	/year
Materials Costs		
Unit Cost (cost of Bill Stuffers)	$0.75	/participant
Number of Participants	5,271	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$3,953.25**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Water Conservation Website Set Up	$2,000.00	
One Time Labor/Material Cost	**$2,000.00**	

Notes:

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

Over the planning period, there are projected to be an average of 5,271 Residential tap accounts each year.

The AWWA has bill stuffers available for purchase. Average cost per bill stuffer ranged from $0.50 to $0.75 per item.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Public Education - bill stuffers and website

Estimated Average Annual Revenue without Water Savings	$1,562,819.60	/year
Estimated Average Annual Revenue with Water Savings	$1,546,385.03	/year
Annual Revenue Loss Related to Water Savings	**$16,434.57**	/year

Estimated Annual Cost	**$22,487.82**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$62,532.50**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$226,878.20**	
Cost per 1000 Gallons Saved	**$4.43**	

Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers

BMPs regarding business, industrial, and Public (schools and churches) can be posted on a website or sent out as bill stuffers to help encourage commercial water users to conserve.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Average Estimated Water Use without Savings

Business Water Use	69,642,094	gallons/yr
Industrial Water Use	75,337,749	gallons/yr
Public Water Use	12,462,600	gallons/yr
Annual Estimated Savings Rate	0.25%	
Estimated Annual Water Savings	**393,606**	gallons/yr
Estimated Savings over Planning Period	**3,936,061**	gallons

Notes:

This measure affects projected business, industrial, and public water usage customer categories.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Website updates, etc.)	$100.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost (cost of Bill Stuffers)	$0.75	/participant
Number of Participants	305	/year
Gallons Saved per Unit per Year	0	gallons
Annual Materials	**$228.75**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Commercial BMP Website Set Up	$600.00	
One Time Labor/Material Cost	**$600.00**	

Notes:

Over the planning period, there are projected to be an average of 305 business, industrial, and public tap accounts per year.

The AWWA has bill stuffers available for purchase. Average cost per bill stuffer ranged from $0.50 to $0.75 per item.

Website setup costs are split between this measure, the website water use calculator, and ET scheduling in Water Bill measures.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Post Business, Industrial, and Public BMPs on Website or as Bill Stuffers

Estimated Average Annual Revenue without Water Savings	$577,494.96	/year
Estimated Average Annual Revenue with Water Savings	$575,757.08	/year
Annual Revenue Loss Related to Water Savings	**$1,737.88**	/year

Estimated Annual Cost	**$2,466.63**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$7,887.50**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$25,266.34**	
Cost per 1000 Gallons Saved	**$6.42**	

Professional Irrigator Education and Training

This measure includes a seminar style training provided to the profession irrigators and large property managers

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Outdoor Water Use without Savings (business, public, and landscape categories)	64,291,219	gallons/yr
Estimated Water Use over Planning Period without Savings	642,912,191	gallons
Annual Estimated Savings Rate*	1.00%	
Estimated Annual Water Savings	**642,912**	gallons/yr
Estimated Savings over Planning Period	**6,429,122**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

This measure affects projected non-dual system outdoor water usage for Business, Public, and Landscape customer categories.

Estimate that approximately 50% of total customer use is outdoor use.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	128	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$6,400.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$6,400.00**	/year
Materials Costs		
Number of Participants	100	/year
Material Cost per Participant	$25.00	/ participant
Annual Materials Budget	$2,500	/year
Annual Materials	**$2,500.00**	/year
Rebates		
Rebate Cost	$0.00	
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
Third Party Costs	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Cost includes seminar preparation and instruction.

Material budget is approximately $25 per class participant. With an estimated seminar attendance size of 150 participants.

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Professional Irrigator Education and Training

Estimated Average Annual Revenue without Water Savings	$340,645.57	/year
Estimated Average Annual Revenue with Water Savings	$337,053.55	/year
Annual Revenue Loss Related to Water Savings	**$3,592.02**	/year

Estimated Annual Cost	**$12,492.02**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$89,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$124,920.16**	
Cost per 1000 Gallons Saved	**$19.43**	

Low-Flow Faucet Rebate

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

In & Out of Town Annual Use	110,789	gallons/tap
Dual System Annual Use	0	gallons/tap
Total	110,789	gallons/tap

People per Household	2.76	
Estimated Water Use for a 2.75 gpm rated faucet*	14.9	gpcd
Annual residential water use for a 2.75 gpm rated faucet*	15,010	gallons/yr
Estimated Water Use for a 1.5 gpm rated faucet*	8.1	gpcd
Annual residential water use for a 1.5 gpm rated faucet*	8,160	gallons/yr
Gallons Saved per Household per Year	6,850	gallons/yr
Number of low-flow faucets used each year	50	Households/year
Maximum low-flow faucets used over planning period	500	
Estimated Annual Water Savings	**342,516**	gallons/yr
Estimated Savings over Planning Period	**18,838,380**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers. Please refer to Table 2.15 on page 103.*

Notes:

Estimated Water Use is based on a 0.34 AF/tap use for In & Out of Town taps. This is the average tap use for 2003 through 2007. Dual System taps are excluded assuming that these systems service residences that were established after 2003 and therefore probably already have low-flow or water saving faucets.

Average water savings of 6,701 gal. per household per year for 1.5 gpm faucets (1.5gpm vs. 2.75gpm).*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$625.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$625.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	50	/year
Gallons Saved per Unit per Year	6,850	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$5.00	
Number of Units	50	/year
Annual Rebate Cost	**$250.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$100.00	
One Time Labor/Material Cost	**$100.00**	

Notes:

Staff hours include time for program set up (1x cost) and annual staff hours for program implementation.

Low-Flow Faucet Rebate

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$90,818.82	/year
Estimated Average Annual Revenue with Water Savings	$85,203.32	/year
Annual Revenue Loss Related to Water Savings	**$5,615.50**	/year

Estimated Annual Cost	**$6,490.50**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$8,850.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$65,005.04**	
Cost per 1000 Gallons Saved	**$3.45**	

Distribute Toilet Retrofit Devices

Toilet Retrofit devices are used to reduce the amount of water needed to flush high-volume toilets that use 3.5 gpf or more. Toilet Retrofit Devices include toilet bladders (or displacement devices), toilet dams, and early closure devices.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

In & Out of Town Annual Use	110,789	gallons/tap/yr
Dual System Annual Use	0	gallons/tap/yr
Total	110,789	gallons/tap/yr
People per Household	2.76	
Average Flushes per Household*	5.1	flushes
Saving Per Flush with retrofit devices	1	gallons/flush
Gallons Saved per Household per Year	5,138	gallons/yr
Number of retrofit devices used each year	50	/year
Maximum retrofit devices used over planning period	500	
Estimated Annual Water Savings	**256,887**	gallons/yr
Estimated Savings over Planning Period	**14,128,785**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Amy Vicker's book page 60.

Notes:

Estimated Water Use is based on a 0.34 AF/tap use for In & Out of Town taps. This is the average tap use for 2003 through 2007. Dual System taps are excluded assuming that these systems service residences that were established after 2003 and therefore probably already have low-flow or water saving toilets.

Retrofit Devices are not recommended for toilets with less than 3.5 gallons per flush.

A savings of 1 gpf is used assuming that at least one and maybe two of the devices is installed per participant.
Estimated Savings:*
Toilet Bladders: 0.5 to 1.5 gpf
Toilet Damns: 0.5 to 1.0 gpf
Early Closure Devices: 1.0 to 1.5 gpf

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$625.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$625.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	50	/year
Gallons Saved per Unit per Year	5,138	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	50	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
Toilet Tummy (bulk order of 1,000 at $0.89/unit)	$890.00	
Flush Valve Repair Kit w/ early closure flap (bulk order of 1,000 at $3.60/unit)	$3,600.00	
Toilet Dam (bulk order of 1,000 at $1.51/unit)	$1,510.00	

Notes:

Staff hours include time for program set up (1x cost) and annual staff hours for program implementation.

The Town can save money on toilet retrofit devices by ordering them in bulk. The prices and quantities seen in the one time labor and materials costs are from the AM Conservation Group website (www.amconservationgroup.com).

Distribute Toilet Retrofit Devices

One Time Labor Cost	$200.00
One Time Labor/Material Cost	**$6,200.00**

Distribute Toilet Retrofit Devices

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$90,818.82	/year
Estimated Average Annual Revenue with Water Savings	$86,607.20	/year
Annual Revenue Loss Related to Water Savings	**$4,211.63**	/year

Estimated Annual Cost	**$4,836.63**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$12,450.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$54,566.28**	
Cost per 1000 Gallons Saved	**$3.86**	

Residential Low-Flow Toilet Rebate

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

In & Out of Town Annual Use	110,789	gallons/tap
Dual System Annual Use	0	gallons/tap
Total	110,789	gallons/tap
People per Household	2.76	
Average Flushes per Household*	5.1	flushes
Saving Per Flush with a low flow toilet (1.6 gal/flush)	2.4	gallons/flush
Gallons Saved per Household per Year	12,331	gallons/yr
Annual Program Participants	25	/year
Maximum No. of Participants over Planning Period	250	
Estimated Annual Water Savings	**308,264**	gallons/yr
Estimated Savings over Planning Period	**16,954,542**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Estimated Water Use is based on a 0.34 AF/tap use for In & Out of Town taps. This is the average tap use for 2003 through 2007. Dual System taps are excluded assuming that these systems service residences that were established after 2003 and therefore probably already have low-flow or water saving toilets.

*Savings based on 5.1 flushes per person per day *. Saving 2.4 gal per flush (4.0 gal ave flush rate - 1.6 gal conservation flush rate1) and 2.7 people per household.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$625.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$625.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	25	/year
Gallons Saved per Unit per Year	12,331	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$50.00	
Number of Participants	25	/year
Annual Rebate Cost	**$1,250.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Staff hours include time for program set up (1x cost) and annual staff hours for program implementation.

Residential Low-Flow Toilet Rebate

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$45,409.41	/year
Estimated Average Annual Revenue with Water Savings	$40,355.46	/year
Annual Revenue Loss Related to Water Savings	**$5,053.95**	/year

Estimated Annual Cost	**$6,928.95**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$18,950.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$69,489.54**	
Cost per 1000 Gallons Saved	**$4.10**	

Low-Flow Showerhead Rebate

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings		
In & Out of Town Annual Use	110,789	gallons/tap
Dual System Annual Use	0	gallons/tap
Total	110,789	gallons/tap
People per Household	2.76	
Annual residential water use for a 2.75 gpm rated faucet*	10,678	gallons/yr
Estimated Water Use for a 1.5 gpm rated faucet*	8.8	gpcd
Annual residential water use for a 2.5 gpm rated faucet*	8,865	gallons/yr
Gallons Saved per Household per Year	1,813	gallons/yr
Number of showerheads replaced each year	50	/year
Maximum showerheads replaced over planning period	500	
Estimated Annual Water Savings	**90,666**	gallons/yr
Estimated Savings over Planning Period	**4,986,630**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers. Please refer to Table 2.11 on page 88.*

Notes:

Estimated Water Use is based on a 0.34 AF/tap use for In & Out of Town taps. This is the average tap use for 2003 through 2007. Dual System taps are excluded assuming that these systems service residences that were established after 2003 and therefore probably already have low-flow or water saving showerheads.

Average water savings of 1,774 gal. per household per year for 2.5 gpm faucets (2.5gpm vs. 3gpm).*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$625.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$625.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	50	/year
Gallons Saved per Unit per Year	1,813	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$5.00	
Number of Units	50	/year
Annual Rebate Cost	**$250.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$100.00	
One Time Labor/Material Cost	**$100.00**	

Notes:

Staff hours include time for program set up (1x cost) and annual staff hours for program implementation.

The Town my provide $5.00 per showerhead replaced.

Low-Flow Showerhead Rebate

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$90,818.82	/year
Estimated Average Annual Revenue with Water Savings	$89,332.37	/year
Annual Revenue Loss Related to Water Savings	**$1,486.46**	/year

Estimated Annual Cost	**$2,361.46**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$8,850.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$23,714.57**	
Cost per 1000 Gallons Saved	**$4.76**	

Distribute Pre-Rinse Spray Heads to Restaurants & Institutions

Pre-rinse spray heads can be found in most restaurants and institutions. Old pre-rinse spray heads use up to 3 gpm. New spray-head technology is available that only uses 1.4 gpm.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Business Water Use Per Tap without Savings		
In & Out of Town Annual Use	280,232	gallons/tap
Dual System Annual Use	329,110	gallons/tap
Gallons Saved per Business Tap per Year	609,341	gallons/yr
Operating Hours per Day	5	hours/day
Operating Days per Year	260	days/yr
Non-water saving pre-rinse spray head water flow rate	3	gpm
Low-Flow pre-rinse spray valves water flow rate*	1.6	gpm
Non-Water saving pre-rinse spray head water flow rate	234,000	gallons/yr
Low-Flow pre-rinse spray valves water flow rate	124,800	gallons/yr
Gallons Saved per spray head per year	109,200	gallons/yr
Annual Program Participants	12	/year
Maximum No. of Participants over Planning Period	120	
Estimated Annual Water Savings	**1,310,400**	gallons/yr
Estimated Savings over Planning Period	**72,072,000**	gallons

**Based on Western Regional Power Administration's Pre-Rinse Valve Fact Sheet, November 2005. http://www.wapa.gov/ES/pubs/fctsheet/PreRinseValves.pdf*

Notes:

Estimated Water Use is based on a 0.86 AF/tap use for In & Out of Town taps and 1.01 AF/tap for Dual System Taps. This is the average tap use for 2003 through 2007.

Average savings per low-flow spray head is 1.4 gpm.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	32	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$1,600.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$1,600.00**	/year
Materials Costs		
Unit Cost	$100.00	/participant
Number of Participants	12	/year
Gallons Saved per Unit per Year	109,200	gallons
Annual Materials	**$1,200.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	12	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Cost includes 2 hours of spray head installation for each participant and time for ordering spray heads and measure development.

New sprayheads costs about $100.00 per unit.

This is not a rebate program.

Distribute Pre-Rinse Spray Heads to Restaurants & Institutions

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$166,961.80	/year
Estimated Average Annual Revenue with Water Savings	$134,109.84	/year
Annual Revenue Loss Related to Water Savings	**$32,851.96**	/year

Estimated Annual Cost	**$35,651.96**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$28,200.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$356,719.61**	
Cost per 1000 Gallons Saved	**$4.95**	

Business Customer Category Toilet Rebate

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Business Water Use Per Tap without Savings

In & Out of Town Annual Use	280,232	gallons/tap
Dual System Annual Use	0	gallons/tap
Gallons Used per Business Tap per Year	280,232	gallons/yr
Saving Per day with a commercial low flow toilet*	25	gpd
Gallons Saved per toilet per Year	9,125	gallons/yr
Annual Number of Business Toilets Replaced	30	/year
Maximum No. of Toilets over Planning Period	300	
Estimated Annual Water Savings	**273,750**	gallons/yr
Estimated Savings over Planning Period	**15,056,250**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers - analysis of water billing records for non-residential sites in the Metropolitan Water District of Southern California*

Notes:

Estimated Water Use is based on a 0.86 AF/tap use for In & Out of Town taps. This is the average tap use for 2003 through 2007. Dual System taps are excluded assuming that these systems service businesses that were established after 2003 and therefore probably already have low-flow or water saving toilets.

Average savings per toilet for commercial accounts is 25 gpd.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$625.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$625.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	30	/year
Gallons Saved per Unit per Year	9,125	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$50.00	
Number of Participants	30	/year
Annual Rebate Cost	**$1,500.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Staff hours include time for program set up (1x cost) and annual staff hours for program implementation.

The Town my offer $50.00 for each high flow toilet replaced with a low-flow toilet. Old toilets cannot be resold.

Business Customer Category Toilet Rebate

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$169,879.48	/year
Estimated Average Annual Revenue with Water Savings	$163,016.52	/year
Annual Revenue Loss Related to Water Savings	**$6,862.96**	/year

Estimated Annual Cost	**$8,987.96**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$21,450.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$90,079.61**	
Cost per 1000 Gallons Saved	**$5.98**	

Irrigation System Efficiency Device Rebates

Irrigation System Efficiency Devices may include ET (SMART) Sprinkler system controllers and Wind and or Rain sensors.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate: 5.00%

Customer Category	Outdoor Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
Residential (non-dual systems)	55,395	100.0	276,973
Business	140,116	8.0	56,280
Public	182,477	2.0	18,248
Landscape	1,212,166	2.0	121,217

Estimated Annual Water Savings **472,717** gallons/yr

Estimated Savings over Planning Period **25,999,461** gallons

Notes:

Estimate that approximately 50% of total customer use is outdoor use.

Also assume that industrial outdoor use is minimal and therefore not included in the savings calcs for this measure.

Wind and Rain Sensors can save an estimated 5% to 10% of water used outdoors and costs approximately $15 to $45. The amount of water that can be saved through improved programming of an irrigation system controller varies but is estimated to be at least 10% to 15%. The cost of automatic irrigation system controllers for residential use ranges from about $50 to $250, depending on the features provided. Commercial-use controllers and central controllers can cost up to several thousand dollars.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$625.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$625.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	112	/year
Gallons Saved per Unit per Year	Varies	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$15.00	
Number of Participants	112	/year
Annual Rebate Cost	**$1,680.50**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$400.00	
One Time Labor/Material Cost	**$400.00**	

Notes:

Costs include annual staff time to work with residents on rebate program. The one time labor costs include time to develop this program.

The Town may offer residents $15.00 per irrigation system device, limit 1 device per household.

Annual program participants will total approximately 112 people per year (see table above for specific participants per customer category.

Irrigation System Efficiency Device Rebates

Water Rates

Rate Category	**Current Rates** (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$208,284.12	/year
Estimated Average Annual Revenue with Water Savings	$192,233.25	/year
Annual Revenue Loss Related to Water Savings	**$16,050.87**	/year

Estimated Annual Cost	**$18,356.37**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$23,455.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$183,963.73**	
Cost per 1000 Gallons Saved	**$7.08**	

High Efficiency Clothes Washer Rebate

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

In & Out of Town Annual Use	110,789	gallons/tap
Dual System Annual Use	71,687	gallons/tap
Total	182,477	gallons/tap
People per Household	2.76	
Laundry loads per person per day*	0.37	
Saving Per Load with a high efficiency washer	16	gallons/load
Gallons Saved per Household per Year	5,964	gallons/yr
Annual Program Participants	25	/year
Maximum No. of Participants over Planning Period	250	
Estimated Annual Water Savings	**149,095**	gallons/yr
Estimated Savings over Planning Period	**8,200,236**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Estimated Water Use is based on a 0.34 AF/tap use for In & Out of Town Taps and 0.22AF/tap use for Dual System taps (2003-2007).

*Savings based on 0.37 loads per person per day *. Saving 16 gal per load (43 gal/load ave. rate - 27 gal/load conservation rate*) and 2.7 people per household.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$625.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$625.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	25	/year
Gallons Saved per Unit per Year	5,964	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$75.00	
Number of Participants	25	/year
Annual Rebate Cost	**$1,875.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Staff hours include time for program set up (1x cost) and annual staff hours for program implementation.

High Efficiency Clothes Washer Rebate

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$80,297.66	/year
Estimated Average Annual Revenue with Water Savings	$76,559.82	/year
Annual Revenue Loss Related to Water Savings	**$3,737.84**	/year

Estimated Annual Cost	**$6,237.84**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$25,200.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$62,578.43**	
Cost per 1000 Gallons Saved	**$7.63**	

High Efficiency Dishwasher Rebate

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings

In & Out of Town Annual Use	110,789	gallons/tap
Dual System Annual Use	71,687	gallons/tap
Total	182,477	gallons/tap

People per Household	2.76	
Dishwasher loads per person per day*	0.1	
Saving Per load with a high efficiency dishwasher (1.6 gal/flush)	6.5	gallons/load
Gallons Saved per Household per Year	655	gallons/yr

Annual Program Participants	25	/year
Maximum No. of Participants over Planning Period	250	

Estimated Annual Water Savings	**16,370**	gallons/yr
Estimated Savings over Planning Period	**900,364**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Estimated Water Use is based on a 0.34 AF/tap use for In & Out of Town Taps and 0.22AF/tap use for Dual System taps (2003-2007).

Annual savings is based on a 4.5 gallon per load dishwasher vs. a 10 to 12 gpl dishwasher, 0.1 loads per day per person.*

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	12.5	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$625.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$625.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	25	/year
Gallons Saved per Unit per Year	655	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$50.00	
Number of Participants	25	/year
Annual Rebate Cost	**$1,250.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$0.00	
One Time Labor Cost	$200.00	
One Time Labor/Material Cost	**$200.00**	

Notes:

Staff hours include time for program set up (1x cost) and annual staff hours for program implementation.

High Efficiency Dishwasher Rebate

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$80,297.66	/year
Estimated Average Annual Revenue with Water Savings	$79,887.26	/year
Annual Revenue Loss Related to Water Savings	**$410.41**	/year

Estimated Annual Cost	**$2,285.41**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$18,950.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$23,054.05**	
Cost per 1000 Gallons Saved	**$25.61**	

Turf Replacement and Xeriscape Incentives

Turf areas can be replaced with Xeriscape landscaping.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Average Turf Net Irrigation Requirement	2.28	AF/acre/yr
Acres of Turf replaced each year with Xeriscape Landscape	10	acres/yr
Water use for Turf	7,429,403	gallons/yr
Annual Estimated Savings Rate*	50.00%	gallons
Estimated Annual Water Savings	**3,714,701**	gallons/yr
Estimated Savings over Planning Period	**204,308,577**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

*Studies have shown that implementing Xeriscape landscaping practices can achieve at least a 50 % reduction in water use **

Average Turf Net Irrigation Requirement was estimated based on similar use figures for the area.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	120	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$6,000.00	
Third Party Costs	$0.00	/year
Evaluation and Follow-up Costs (Labor/Consultant)	$0.00	/year
Annual Labor	**$6,000.00**	/year
Materials Costs		
Annual Materials Budget	$0	/year
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.25	/square foot
Square feet of Turf replaced each year with Xeriscape Landscape	435600	/year
Annual Rebate Cost	**$108,900.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost	$2,000.00	
Third Party Costs	$0.00	
One Time Labor/Material Cost	**$2,000.00**	

Notes:

Costs include annual staff time, a rebate of $0.25/square foot of turf replaced and a one time program set up cost.

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Turf Replacement and Xeriscape Incentives

Estimated Average Annual Revenue without Water Savings	$184,893.64	/year
Estimated Average Annual Revenue with Water Savings	$91,765.41	/year
Annual Revenue Loss Related to Water Savings	**$93,128.22**	/year

Estimated Annual Cost	**$208,028.22**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$1,151,000.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$2,082,282.25**	
Cost per 1000 Gallons Saved	**$10.19**	

Landscape Customer Category System Audits

This measure only affects the large Landscape customers who irrigate HOA areas, medians, and areas in parking lots.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Landscape Water Use Per Tap without Savings	1,205,649	gallons/tap
Total	1,205,649	gallons/tap
Annual Estimated Savings Rate	20.00%	
Annual Program Participants	5	/year
Maximum No. of Participants over Planning Period	50	
Estimated Annual Water Savings	**1,205,649**	gallons/yr
Estimated Savings over Planning Period	**66,310,679**	gallons

**Based on "Handbook of Water Use and Conservation" by Amy Vickers*

Notes:

Estimated Water Use is based on a 3.7 AF/tap (2003-2007).

*Studies show water and estimated water savings of 20-50%.**

Estimate that by 2017, there will be approx. 49 Landscape tap customers. Assume annual participation of 5 tap customers.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours (Website updates, etc.)	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$400.00**	/year
Materials Costs		
Unit Cost	$150.00	/participant
Number of Participants	5	/year
Gallons Saved per Unit per Year	241,130	gallons
Annual Materials	**$750.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	5	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
Initial program set up	$400.00	
Training	$0.00	
One Time Labor/Material Cost	**$400.00**	

Notes:

Staff hours include time for program set up (1x cost) and annual staff hours for program implementation.

Consultants may be hired to perform audits at an average cost of approximately $150.00 per audit.

Landscape Customer Category System Audits

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$145,131.98	/year
Estimated Average Annual Revenue with Water Savings	$114,742.77	/year
Annual Revenue Loss Related to Water Savings	**$30,389.21**	/year

Estimated Annual Cost	**$31,544.21**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$11,900.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$315,842.10**	
Cost per 1000 Gallons Saved	**$4.76**	

Residential Audit Kit

Self-guided residential audit kits can be designed to include items such as leak detection tablets, surveys, and sprinkler testing cones. Instructions for conducting the audit and evaluating the results can give residential customers insight and direction on how they can save water and money. The guidance offered in the instructions could lead the customer to take part in other conservation programs offered, including rebates.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Residential Water Use Per Tap without Savings		
In & Out of Town Annual Use	110,789	gallons/tap
Dual System Annual Use	71,687	gallons/tap
Total	182,477	gallons/tap
Annual Estimated Savings Rate	3.00%	
Annual Program Participants	125	/year
Maximum No. of Participants over Planning Period	1250	
Estimated Annual Water Savings	**684,287**	gallons/yr
Estimated Savings over Planning Period	**37,635,791**	gallons

Notes:

Estimated Water Use is based on a 0.34 AF/tap use for In & Out of Town Taps and 0.22AF/tap use for Dual System taps (2003-2007).

Estimate that by 2017, 20% of residential accounts will have participated (approx. 1,250). Assume annual participation of 125 and 3% savings of average household use.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours (Website updates, etc.)	16	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$800.00	
Evaluation and Follow up Costs	$0.00	/year
Annual Labor	**$800.00**	/year
Materials Costs		
Unit Cost	$0.00	/participant
Number of Participants	125	/year
Gallons Saved per Unit per Year	5,474	gallons
Annual Materials	**$0.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	125	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Materials Cost (Bulk Purchase of 1,250 Audit Kits)	$8,375.00	
Water Audit Website Set Up	$400.00	
One Time Labor/Material Cost	**$8,775.00**	

Notes:

Online instruction can be set up on Town Website.

Residential audit kits are available at wholesalers like AM Conservation Group, Inc. for $6.70 per unit for a bulk purchase of 900 to 1500 units. Kits can be customized to include the Town of Windsor's logo.

Residential Audit Kit

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$193,762.29	/year
Estimated Average Annual Revenue with Water Savings	$187,949.42	/year
Annual Revenue Loss Related to Water Savings	**$5,812.87**	/year

Estimated Annual Cost	**$6,612.87**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$16,775.00**	
Estimated Total Cost over Planning Period Including Set-up and Lost Revenue	**$74,903.69**	
Cost per 1000 Gallons Saved	**$1.99**	

Business and Industrial Water Audits

Business and Industrial customers are often the highest water users and have been an area of increasing focus for water conservation. Business and Industrial customers who participate in a water audit could identify ways to reduce their operating costs over the long term. Water audits can be performed by a third party consultant and is an effective way to educate businesses on how they can save water.

Planning Period	2008 to 2017
Years in Planning Period	10
Program Length	10

Estimated Water Savings

Annual Estimated Savings Rate	10.00%

Customer Category	Water Use Per Tap gallons/tap	Annual Program Participants	*Estimated Annual Water Savings gallons/yr*
In & Out of Town Annual Use	280,232	10.0	609,341
Dual System Annual Use	329,110		
Industrial	2,320,059	2.0	464,012

Estimated Annual Water Savings	**1,073,353**	gallons/yr
Estimated Savings over Planning Period	**59,034,405**	gallons

Notes:

Estimated Water Use is based on a 0.86 AF/tap use for In & Out of Town taps and 1.01 AF/tap for Dual System Taps. Industrial water use is based on a 7.12 AF/tap use. This is the average tap use for 2003 through 2007.

Estimated Savings over Planning Period is calculated by compounding the estimated annual water savings per the total number of audit participants for each given year. For example, in the first year of the program, there are 20 participants. In the second year of the program, there are water savings from the 20 participants from last year's program, and new participants thereby compounding the savings.

Costs

Total Cost to Water Provider

Labor Costs		
Staff Hours	8	/year
Hourly Cost	$50.00	/hour
Annual Staff Costs	$400.00	
Third Party Costs	$0.00	/year
Evaluation and Follow up Costs	$100.00	/year
Annual Labor	**$500.00**	/year
Materials Costs		
Unit Cost	$300.00	/participant
Number of Participants	12	/year
Gallons Saved per Unit per Year	89,446	gallons
Annual Materials	**$3,600.00**	/year
Rebates		
Rebate Cost	$0.00	
Number of Participants	12.0	/year
Annual Rebate Cost	**$0.00**	/year
One Time Labor and Material Costs		
One Time Program Training	$0.00	
One Time Labor Cost (program setup assistance through 3rd party)	$0.00	
One Time Labor/Material Cost	**$0.00**	

Notes:

Staff hours include time for coordination with third party consultants.

Consultants may be hired to perform audits at an average cost of approximately $300.00 per audit.

Business and Industrial Water Audits

Water Rates

Rate Category	Current Rates (per hundred cubic feet or 748.1 gallons)
Tier 1 - Residential monthly charges **includes first 15,709 gallons*	$2.23
Tier 2 - Residential monthly charges **Over 15,709 gallons*	$3.41
Tier 1 - Business and Public monthly charges **includes first 157,091 gallons*	$2.23
Tier 2 - Business and Public monthly charges **Over 157,091 gallons*	3.41
Tier 1 - Industrial **includes first 783,210 gallons*	$2.23
Tier 2 - Industrial **Over 783,210 gallons*	3.41

Notes:

The annual revenue loss was estimated based on: The In-Town Residential Rates for 3/4" meters; Business, Landscape, and Public rates for 3/4"-1.5" Commercial, Industrial, and School (& Church) meters; and 2" Industrial meter rates.

Estimated Revenue assumes that the current rates will not change over the planning period.

Estimated Average Annual Revenue without Water Savings	$159,365.90	/year
Estimated Average Annual Revenue with Water Savings	$140,707.58	/year
Annual Revenue Loss Related to Water Savings	**$18,658.32**	/year

Estimated Annual Cost	**$22,758.32**	/year
Estimated Cost over Planning Period not including Lost Revenue	**$41,000.00**	
Revenue	**$227,583.21**	
Cost per 1000 Gallons Saved	**$3.86**	

APPENDIX B

Public-Review Process

Public Review Process

The Town of Windsor held its public-review period from December 26, 2008 through February 24, 2009. Notification was posted in the Greeley Tribune and Windsor Now on December 26, 2008, announcing the review period and that a draft plan would be available for the public to review at the Town's office. An announcement asking for public comments and draft plan was also posted on the Windsor website on December 29, 2008.

Town of Windsor Water Conservation Plan

Official Notice in Windsor Now (to be posted on 12-26-08)

The Town of Windsor has completed a draft Water Conservation Plan. The goal of the plan is for Windsor to develop programs for efficient and sustainable water use. Windsor has implemented a variety of water conservation measures over the last ten years including:

* Required dual systems
* Water wasting ordinance
* Watering restrictions
* Educational "Water Conservation Wagon" trailer
* Xeriscape demonstration garden
* Xeriscape classes

Before finalizing the water conservation plan, Windsor welcomes input from its customers and will conduct a 60-day public review period beginning the date of this notice through February 24, 2009. A complete draft copy will be kept at Town Hall located at 301 Walnut Street for you to review and will also be posted on the website at www.ci.windsor.co.us.

All written comments are due at the front desk prior to February 24, 2009 and can be dropped off or mailed to 301 Walnut St, CO 80550 Attn: Terry Walker.

Submitted by: Curtis Templeman, PE, Civil Engineer, Town of Windsor, Engineering Department
ctempleman@windsorgov.com

Windsor Now
December 26, 2008

Affidavit of Publication

STATE OF COLORADO

ss.

County of Weld,

I, Jennifer Usher

of said County of Weld, being duly sworn, say that I am an advertising clerk of

THE TRIBUNE

that the same is a daily newspaper of general circulation and printed and published in the City of Greeley, in said county and state; that the notice or advertisement, of which the annexed is a true copy, (days): that the notice was published in the regular and entire issue of every number of said newspaper during the period and time of publication of said notice, and in the newspaper proper and not in a supplement thereof; that the first publication of said notice was contained in the, issue of the said newspaper - bearing date the Twenty-sixth day of December AD. 2008, and the last publication thereof: in the issue of said newspaper bearing date the Twenty-sixth day of December AD. 2008; that said The Tribune has been published continuously and uninterruptedly during the period of at least six months next prior to the first issue there of contained said notice or advertisement above referred to; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the Act of March 3, 1879, or any amendments thereof; and that said newspaper is a daily newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado.

December 26, 2008

Total Charges: $7.00

Jennifer Usher
Advertising Clerk

26th day of December, 2008

My Commission Expires 06/14/2009

Notary Public

APPENDIX C

Town of Windsor Board Plan Adoption

TOWN OF WINDSOR

RESOLUTION NO. 2009-22

A RESOLUTION APPROVING AND ACCEPTING THE TOWN OF WINDSOR WATER CONSERVATION PLAN

WHEREAS, the Windsor Town Board recognizes the need to conserve water in order to maximize the effectiveness of its water resources and water infrastructure; and

WHEREAS, the Windsor Town Board desires to prepare a plan outlining and establishing water-saving goals and setting forth strategies to achieve those goals; and

WHEREAS, the Windsor Town Board has retained the services of Clear Water Solutions, Inc., to prepare the Town's Water Conservation Plan; and

WHEREAS, the Town has complied with all statutory requirements for public comment and publication; and

WHEREAS, the proposed Water Conservation Plan has been completed in conjunction with the Town's Treated Water Master Plan, Purpose and Need document for the Northern Integrated Supply Project and the Colorado Water Conservation Board guidance documents; and

WHEREAS, the Windsor Town Board desires to approve and accept the Town of Windsor Water Conservation Plan, a copy of which is attached hereto and incorporated herein by this reference as if set forth fully.

NOW, THEREFORE, BE IT RESOLVED BY THE WINDSOR TOWN BOARD that the attached Windsor Water Conservation Plan is hereby approved and accepted.

Upon motion duly made, seconded and carried, the foregoing Resolution was adopted this 23rd day of March, 2009.

TOWN OF WINDSOR, COLORADO

John S. Vazquez, Mayor

ATTEST:

Patti Garcia, Town Clerk

WINDSOR COLO SEAL

APPENDIX D

Public Comments and Response

The Town of Windsor has completed its 60-day public review period for the Water Conservation Plan beginning on December 26, 2008 and ending on February 24, 2009. A public notice was posted in the following newspapers, Greeley Tribune and Windsor Now and on the Town's website. No public comments were received on the Water Conservation Plan during the public comment period.

The notice that was posted on the website for notification of the comment period is included as follows.

Website Notice:

The Town of Windsor has completed a draft water conservation plan that is available for review from December 26, 2008 to February 24, 2009 as part of a public review process. The draft can be viewed on the website as attached or a hard copy is available for review in the office of the Town Clerk. Written comments are due at Town Hall by February 24, 2009. Please address comments to Dennis Wagner or Terry Walker, Town of Windsor, 301 Walnut Street, Windsor CO, 80550.