5. Conservation Program

5.1. Introduction

This Comprehensive Water Plan Chapter has four purposes: 1) review compliance with conservation planning requirements, 2) describe historical conservation measures, 3) document historical conservation savings, and 4) describe the conservation program that will be implemented in the Everett Water Service Area (EWSA) from 2007 through 2012.

The City of Everett (Everett) has a long-standing commitment to water conservation. Everett's conservation program began in the early 1980's and has evolved significantly since then. Everett administers both a regional conservation program implemented throughout the EWSA, as well as conservation elements that pertain exclusively to the Everett retail service area. The goal of these conservation efforts is to maximize the benefits of the Sultan River resource by encouraging the efficient use of water.

The conservation program initially focused on school education and promotional activities to foster a conservation ethic. Today, the program also includes a wide array of conservation measures aimed at residential and commercial customers.

The first major expansion of the conservation program occurred in 1994, when the Washington State Department of Health began requiring water systems to include conservation plans in their water system plans. Everett compared the cost of various conservation strategies to the system cost of providing water. Based on this "least-cost" analysis, several demand-side activities were added to the conservation program that targeted residential water consumption.

The second major program expansion occurred as part of the 2000 Comprehensive Water System Plan Update, when a more rigorous least-cost analysis was conducted. A committee of Everett staff and wholesale water customers evaluated over 20 conservation strategies. Based on cost effectiveness, market potential, consumer acceptance and other criteria, additional elements were added to the program that significantly strengthened the conservation effort.

A progressive conservation program has been developed for the next six years through a collaborative process involving Everett staff, wholesale water customers, and the Everett City Council. This program builds on the success of the previous conservation efforts and includes a range of conservation measures in Everett's retail and wholesale service areas.

5.2. Objectives/Goals

The City of Everett is in a unique position. The City enjoys an abundance of water with a delivery system that is capable of meeting the near-term water demand in the EWSA with relatively modest capital improvements. Thus, there is little financial motivation for conducting an aggressive water conservation program. However, the City and its' wholesale purveyors also recognize the importance of being prudent stewards of the regional water resource. This includes funding activities that promote water conservation and assist consumers with installing measures that increase water end-use efficiency. The

goal of the 2007-2012 regional water conservation program is to fund about $600,000 a year in regional water conservation activities that will reduce the 2012 demand for water by about 3 percent. The program is also designed to meet, or exceed, the requirements of the new Municipal Water Law.

5.3. Compliance with Conservation Planning Requirements

The conservation planning requirements that must be addressed in water system plans are contained in the following Washington State Department of Health (DOH) documents:

- Conservation Planning Requirements: Guidelines and Requirements for Public Water Systems Regarding Water Use Reporting, Demand Forecasting Methodology, and Conservation Programs (March 1994)
- Water System Planning Handbook (April 1997)
- Municipal Water Law: Interim Planning Guidance For Water System Plan / Small System Management Program Approvals (March 2004)

The State of Washington has recently revised water conservation planning requirements as a result of the 2003 Municipal Water Law. An outgrowth of that law is the Water Use Efficiency Rule (Rule), which was finalized in January 2007. The Rule has several requirements and corresponding compliance dates. This Comprehensive Water Plan is not technically subject to the new requirements, since it is being submitted prior to the compliance dates in the Rule. However, it is anticipated that Everett's conservation program will meet the requirements of the Rule.

Table 5-1 lists the current state conservation guidelines for public water systems of Everett's size (i.e., medium water systems of 1,000 to 25,000 connections) and shows that Everett is in full compliance, except where Everett's flat rate single-family customers (i.e., non-metered customers) allow for only partial compliance. There are three main categories of a conservation plan: 1) data collection, 2) demand forecasting and 3) a conservation program.

Table 5-1 Conservation Requirements and Recommendations for Public Water Systems Serving 1,000 - 25,000 Direct Connections or Regional Systems [(1)]

Category	Sub-Category	Element	Required or Recommended	Everett In Compliance?
1. Data Collection	a) Production/ Purchases	Production	Required	Yes
		Wholesale Amount Imported	Required	Yes
		Emergency Interties Imported	Required	Yes
		Peak Day / Peak Month	Required	Yes
	b) Sales	Single-Family Sales	Required	Partially [(4)]
		Multi-Family Sales	Required	Yes
		Commercial, Government, Industrial Sales	Required	Yes
		Agriculture Sales	Required	n/a
		Wholesale Amount Exported	Required	Yes

Category	Sub-Category	Element	Required or Recommended	Everett In Compliance?
		Emergency Interties Exported	Required	Yes
	c) Non-Revenue Water	Accounted For Water	Required	Yes
		Unaccounted For Water	Required	Yes
	d) Connections	Number of Connections and Customers	Required	Yes
	e) Rates	Water Rates	Required	Yes
2. Demand Forecast	a) Demand Forecasts With and Without Conservation		Required	Yes
3. Conservation Program	a) Objectives		Required	Yes
	b) Public Education	School Outreach	Recommended (2)	Yes
		Speakers Bureau	Recommended (2)	Yes
		Program Promotion	Required	Yes
		Theme Shows and Fairs	Recommended (2)	Yes
	c) Technical Assistance	Purveyor Assistance	Recommended	Yes
		Customer Assistance	Recommended	Yes
		Technical Studies	Recommended (2)	Yes
		Bill Showing Consumption History	Recommended (3)	Partially (4)
	d) System Measures	Source Meters	Required	Yes
		Service Meters	Recommended	Partially (4)
		Leak Detection (If Unaccounted Water >20%)	Recommended	Yes
	e) Incentives/Other Measures	Single-Family / Multi-Family Kits	Recommended	Yes
		Nurseries / Agriculture	Recommended	n/a
		Landscape Management / Playfields	Recommended	Yes
		Conservation Pricing	Recommended	Partially (4)
		Utility Financed Retrofit	Recommended (2)	Yes
		Seasonal Demand Management	Recommended (2)	Yes
		Recycling/Reuse	Recommended (2)	Yes

(1) Based on the 1994 DOH Conservation Planning Requirements.
(2) Recommended for regional systems but not "medium" systems (i.e., systems with 1,000-25,000 connections).
(3) Recommended for "medium" systems (1,000-25,000 connections) but not regional systems.
(4) Everett's flat rate single-family customers do not meet these recommendations.

The data collection and demand forecasting information is supplied primarily in Chapter 3, "Planning Data and Demand", although the rate information is provided later in this chapter.

For the conservation program category, there are five sub-categories: objectives, public education, technical assistance, system measures and incentives or other measures. DOH guidelines recommend that Everett evaluate all the measures listed in these subcategories and implement those that are cost effective for the Everett water system. Everett is actively implementing all measures, except where the existence of Everett's flat rate single-family customers (non-metered customers) allows for only partial implementation. Everett's

conservation objectives, the analysis of measures and Everett's implementation plans are discussed in other parts of this chapter.

5.4. Historical Conservation Programs

5.4.1. Overview

A summary of the conservation measures Everett has implemented in the last six years is shown in Table 5-2. For each measure, the table indicates the category type (based on the Washington State Department of Health's conservation program planning requirements), the years it has been implemented, and whether the measure includes Everett's wholesale customers. The details of each measure are discussed in the subsequent sections.

Table 5-2 Conservation Program Overview

Category	Measure	2000	2001	2002	2003	2004	2005	Includes Wholesale Customers?
Public Education	School Outreach	X	X	X	X	X	X	Yes
	Speakers Bureau	X	X	X	X	X	X	No
	Program Promotion	X	X	X	X	X	X	Yes
	Theme Shows & Fairs	X	X	X	X	X	X	No
Technical Assistance	Purveyor Assistance	X	X	X	X	X	X	Yes
	Customer Assistance	X	X	X	X	X	X	No
	Bill Showing Consumption History	X (1)	X (1)	X (1)	X (1)	X (1)	X (1)	No
System Measures	Source Meters	X	X	X	X	X	X	No
	Service Meters	X (2)	X (2)	X (2)	X (2)	X (2)	X (2)	No
	Leak Detection	X	X	X	X	X	X	No
Incentives /Other Measures	Single-Family/ Multi-Family Kits		X	X	X	X	X	Yes
	Landscape Mgmt: Outdoor Kits		X	X	X	X	X	Yes
	Landscape Mgmt: Irrigation Audits & Rebates			X	X	X	X	Yes
	Landscape Mgmt: Lawn Watering Calendar	X	X	X	X	X	X	Yes
	Landscape Mgmt: Demonstration Garden	X	X	X	X	X	X	No
	Conservation Pricing	X (3)	X (3)	X (3)	X (3)	X (3)	X (3)	No
	Utility Financed Retrofits: Indoor and Outdoor Kits		X	X	X	X	X	Yes
	Utility Financed Retrofits: Irrigation Audits & Rebates			X	X	X	X	Yes
	Utility Financed Retrofits: Pre-Rinse Sprayheads						X	Yes
	Utility Financed Retrofits: Commercial Audits & Rebates			X	X	X	X	No
	Seasonal Demand Management	X	X	X	X	X	X	Yes
	Recycling and Reuse						X	No
	Non-Residential Audits			X	X	X	X	No

(1) Partial. Bills for single-family flat rate customers do not show consumption due to lack of meters.

(2) Partial. Single-family flat rate customers are not metered.

(3) Partial. Rate structures contain some elements that encourage conservation and other elements that do not.

5.4.2. Public Education

School Outreach

This measure is defined by DOH as "education programs targeted to increase awareness of local water resources and encourage water conservation practices."

Everett's school outreach program consists of classroom presentations, teacher workshops, and classroom educational materials, all of which are made available throughout the EWSA.

Everett's classroom presentations are facilitated by trained instructors with curriculum designed for elementary, middle school and high school students. The presentations are marketed to teachers through newsletters and other communications. The presentations were redesigned in 2005 to keep the content fresh and relevant. This has resulted in a significant increase in the number of presentations.

Everett offers teacher workshops to assist teachers in educating students about water resource issues, including conservation. Teachers participate in activities, experiments and field trips and can receive continuing education credits or clock hours.

Everett provides teachers with a broad collection of classroom educational materials including books, videos, posters and other supplies.

Speakers Bureau

This measure is defined by DOH as "seeking speaking opportunities and making speakers available to a wide cross-section of service, community, and other groups."

Everett provides staff to groups requesting presentations on water resource issues, including conservation. Everett offers this service exclusively in its retail service area.

Program Promotion

This measure is defined by DOH as "publicizing the need for water conservation through television and radio public service announcements, news articles, public water system bill inserts, or other means."

In addition to program-specific outreach, Everett engages in general program promotion intended to build and reinforce a water conservation ethic among customers throughout the EWSA.

Everett has developed and distributes several educational brochures. For example, the "Everyday Conservation" brochure provides conservation tips for inside and outside the home, the "Smart Watering" brochure contains information on efficient lawn and garden watering techniques, and the "Growing Healthy Soil" brochure has information on how soil can be improved as a means of reducing watering.

In terms of marketing efforts, Everett has used transit advertising to help convey conservation messaging. Billboards promoting various conservation themes have been posted on buses during the summer months when demand peaks. It is estimated these billboards are seen by over 75 percent of the residents of the EWSA each year. Since 2003, Everett has also participated in tri-county (Snohomish, King, and Pierce) water conservation marketing campaigns which utilize radio and/or television messages.

Everett plays an active role in regional organizations that promote water conservation. For over a decade, Everett has been involved in the Water Conservation Coalition of Puget Sound (Coalition). Everett is a founding member of the newly formed Partnership for Water Conservation, which the Coalition recently merged with.

Theme Shows and Fairs

This measure is defined by DOH as "preparing a portable display on water conservation and selected written material."

Everett exhibits displays, along with other education materials, at a variety of special events within its retail service area.

5.4.3. Technical Assistance

Purveyor Assistance

This measure is defined by DOH as "assistance from wholesale suppliers to aid wholesale customers in developing and implementing conservation programs tailored to their needs, and in carrying out the wholesale suppliers' conservation program."

Everett staff has led the development and implementation of the conservation program that is utilized throughout the EWSA. This includes the development of informational and promotional materials that can be used by purveyors to promote activities within their individual service areas.

Customer Assistance

This measure is defined by DOH as "providing assistance and information to customers which facilitates water conservation."

Everett provides technical assistance to its retail customers on an ongoing basis, including leak detection and strategies for reducing water use.

Bill Showing Consumption History

This measure is defined by DOH as "showing the percentage increase or decrease in water use over the same period from the previous year."

Everett includes consumptive history on customer bills for all retail customers, except for the single-family flat rate customers. It is not possible to provide this information for those customers because they do not have meters.

5.4.4. System Measures

Source Meters

This measure is defined by DOH as "installing master source meters for all sources and maintaining a periodic meter testing and repair program."

Everett meters its source water at the water filtration plant, including both the raw water entering the facility and the finished water leaving the facility. Everett periodically tests these meters for accuracy.

Service Meters

This measure is defined by DOH as "installing individual meters for all water uses and maintaining a periodic meter testing and repair program."

Since 1991, Everett has required that all new connections are serviced through meters, per municipal codes 14.16.100 Metered Service and 14.16.090 Fixed Rate Service.

Everett does provide service to some unmetered connections that predate the 1991 service meter requirement. All of the unmetered connections are retail single-family accounts. While this represents 54 percent of Everett's total connections, the volume of water estimated for those connections is only 6 percent of the total water supplied by the Everett water system. Therefore, the majority of the water provided by Everett is metered.

Everett has an ongoing meter repair and replacement program.

Leak Detection

This measure is currently defined by DOH as "conducting a regular and systematic program of finding and repairing leaks" and is currently required if unaccounted water is in excess of 20 percent.

Two changes are on the horizon related to this measure. First, the American Water Works Association (AWWA) is moving away from using the term unaccounted water. Second, the draft water use efficiency rule requires calculating the distribution system leakage and requires a water loss control action plan if the leakage number exceeds 10 percent.

As detailed in Sections 3.2.6 and 3.4, Everett's 2005 water balance shows non-revenue water at 5.5 percent of water production. Therefore, the distribution system leakage would be 5.5 percent or less, which is well below the draft rule requirement of 10 percent or less. The percentage of non-revenue water is calculated by subtracting wholesale deliveries and retail sales from total water production at the Water Filtration Plant. This value represents a combination of non-revenue uses and losses in Everett's distribution system and non-revenue losses in the transmission system that serves the entire region (retail plus wholesale). This value does not include non-revenue uses and losses in individual water systems that purchase water from Everett.

Everett is proactive about leak control, even though it is not required to have a water loss control action plan since its leakage is low. Everett relies on system break history, pipeline condition assessments, and future demand needs to identify and prioritize rehabilitation and replacement projects. In addition to these practices, periodic leak detection surveys are conducted to monitor performance of various parts of the system.

5.4.5. Incentives / Other Measures

Single-Family/Multi-Family Kits

This measure is defined by DOH as "distributing kits containing easily installed water saving devices to single-family residential homes and the owners and managers of apartment buildings and condominiums."

Since 2001, Everett has offered free indoor and outdoor water conservation kits to residential customers throughout the EWSA. The kits are marketed through advertisements in local newspapers and bill inserts. From 2001 to 2003, the indoor kits were only distributed to Class A water systems in the EWSA due to the limited number of the kits. Since 2004, the kits have also been distributed to Class B systems.

The indoor conservation kits target homes constructed prior to 1993 and are designed to encourage consumers to upgrade their fixtures to the 1993 efficiency standards. In 1993, the National Plumbing Code of 1991 was adopted in Washington State and increased the efficiency standards for household water fixtures.

The indoor kits include a low-flow showerhead, a kitchen faucet aerator, two bathroom faucet aerators, a toilet tank water displacement bag, toilet leak detection tablets, a gauge to measure losses from household leaks, and a conservation brochure. The indoor conservation kits are estimated to save 34 gallons of water per day. These estimates are conservative and do not attribute any savings to leak reduction or behavioral changes, both of which are likely to occur. Over 34,000 indoor kits have been distributed to date.

The outdoor conservation kits target households with irrigated landscape areas, primarily single-family homes that do not have automatic irrigation systems. The outdoor kits are designed to encourage consumers to reduce watering and other outdoor water use. Studies indicate most households overwater their landscape areas by 15 to 20 percent.

The outdoor kits include an automatic shut-off watering timer, a hose nozzle, a gauge to measure rainfall and/or sprinkler output, a package of hose washers to reduce leaks, and a conservation brochure. The outdoor conservation kits are estimated to save an average of 40 gallons of water per day. Nearly 37,000 kits have been distributed to date.

Landscape Management/Playfields

This measure is defined by DOH as "promoting low water demand landscaping in all retail customer classes."

Everett has several programs that support this measure including residential outdoor conservation kits (described above), school irrigation audits and upgrades, and a residential lawn watering calendar, all of which are offered throughout the EWSA. Additionally, Everett maintains several water conservation demonstration gardens, which target its retail customers.

The school irrigation audit and upgrade program began in 2002 and is targeted at schools with large irrigation demands. Most schools have large sports fields that require significant watering in the summer. The irrigation demand at schools with multiple fields can account for three-quarters of their annual water consumption. The irrigation audits are designed to improve the efficiency of irrigation systems, resulting in significant water savings.

The audits are conducted by a professional irrigation system auditor and identify equipment upgrades and/or operational changes that will result in decreased water use. Average savings are estimated to be 20 to 25 percent of the annual irrigation demand. Financial assistance, in the form of a 50 percent cost share, is available to provide incentives to the schools to follow through on the audit recommendations.

Everett develops a summer watering calendar each year that encourages residential customers to water every third day (staggered, based on their street address). This effort helps to reduce the daily peak demand for water in the summer by reducing the amount of watering that occurs on a given day. Approximately 150,000 calendars are distributed each year in the EWSA.

Everett maintains several water conservation demonstration gardens that showcase and promote the use of native, drought tolerant plants which require minimal to no watering once established.

Conservation Pricing

This measure is defined by DOH as "implementing rate design techniques to provide economic incentives to conserve water."

Everett has differing rate structures in different customer categories. The commodity portion of Everett's current pricing structure is shown in Table 5-3.

Table 5-3 Commodity Portion of Rates

Consumption Block	Single-Family Flat Rate	Standard Residential	Commercial	Irrigation
Up to 600 cubic feet	$15.50 regardless of quantity consumed	$9.30	$9.30	$10.66
600 - 3,000 cubic feet		$1.55 per ccf	$1.55 per ccf	$1.77 per ccf
3,000 - 15,000 cubic feet		$1.55 per ccf	$0.96 per ccf	$0.96 per ccf
Over 15,000 cubic feet		$1.55 per ccf	$0.53 per ccf	$0.82 per ccf

Utility Financed Retrofits

This measure is defined by DOH as "installing water efficient fixtures in existing residences and commercial/industrial facilities."

Everett has several programs that support this measure including residential indoor and outdoor conservation kits (described above), commercial irrigation audits and upgrades (described above), and food service pre-rinse sprayhead retrofits, all of which are implemented throughout the EWSA. Additionally, Everett has a commercial audit and rebate program it offers exclusively in its retail service area.

In 2005, Everett participated in a program to replace pre-rinse sprayheads in food service establishments. The program was a joint effort with Puget Sound Energy and the Snohomish County PUD and was modeled after a similar, successful effort in Seattle/King County. Under the program, a contractor was hired to market the program and install the sprayheads. The contractor also installed aerators on other faucets at the participating

facilities. The program was jointly funded by the three sponsoring agencies. Each sprayhead is estimated to save about 100 gallons of water a day. Each faucet aerator installed is estimated to save 30 gallons of water a day. Through the end of 2005, 1,340 sprayheads and 520 aerators were installed.

Everett has implemented a commercial audit and rebate program since 2002. The program has been modified over the years in an attempt to obtain the highest participation and savings. The program was piloted in 2002, with a professional audit of city owned facilities. 350 fixtures were then replaced that were determined to be cost effective for the City. In 2003, Everett began offering free water audits to selected businesses. Six audits were conducted in 2003 and 11 in 2004 including a hospital, a large laundry operation, a YMCA facility, a hotel and a restaurant. Due to the low number of businesses that implemented the audit recommendations, the program was modified in 2005 to focus on toilet retrofits. Under this program an audit is conducted to verify the flow rate of existing toilets and rebates are calculated based on expected water savings. To date, approximately 400 toilets have been replaced under the program.

Seasonal Demand Management

This measure is defined by DOH as "implementing measures aimed at controlling peak seasonal demand."

Everett has several programs that support this measure including outdoor conservation kits, school irrigation audits and upgrades, and a lawn watering calendar, all of which are implemented throughout the EWSA. Additionally, Everett's water conservation demonstration gardens and conservation pricing elements, applicable to its retail service area, are also aimed at controlling peak seasonal demand. All of these measures have been described above.

Recycling/Reuse

This measure is defined by DOH as "examining opportunities for water reuse and recycling as an approach to providing additional water."

Everett began providing reclaimed water in its retail service area in 2005. Reclaimed water is treated effluent from a wastewater treatment plant that is suitable for certain non-potable uses. Reclaimed water has the potential to substitute for potable or unfiltered water, thereby reducing Sultan River Basin diversions and providing an environmental benefit. Currently, Everett provides reclaimed water to the Kimberly-Clark mill for industrial purposes. This offsets a portion of the unfiltered water historically used by the mill. Section 3.5 discusses reclaimed water including federal and state regulations, distribution, current demand, and projected demand, including noting that Everett's reclaimed water program is currently the largest in the state.

5.5. Historical Conservation Savings

The conservation savings Everett has achieved the past six years are shown in Table 5-4. As of the end of 2005, it is estimated that 2.0 mgd (peak season) have been saved by the regional EWSA conservation program and an additional 0.08 mgd (peak season) in Everett's retail area, for a total of 2.08 mgd peak season savings. These numbers were compiled by Everett staff based on conservation program planning and empirical data.

Table 5-4 Estimated Savings Achieved (Peak Season MGD)

	2001	2002	2003	2004	2005	2006	Total
Regional EWSA Program							
Indoor Conservation Kits	0.04	0.11	0.14	0.17	0.13	0.13	0.70
Outdoor Conservation Kits	0.04	0.05	0.08	0.11	0.10	0.10	0.50
Irrigation Audits & Rebates	0.00	0.02	0.01	0.02	0.02	0.00	0.07
Education & Marketing	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Pre-Rinse Sprayheads	0.00	0.00	0.00	0.00	0.15	0.00	0.15
Subtotal	*0.91*	*1.01*	*1.05*	*1.13*	*1.23*	*1.06*	*2.25*
Everett Retail-Only Program							
Commercial Audits & Rebates	0.05	0.004	0.00	0.02	0.01	0.00	0.08
Subtotal	*0.05*	*0.00*	*0.00*	*0.02*	*0.01*	*0.00*	*0.08*
Total	0.96	1.01	1.05	1.15	1.24	1.06	2.33

5.6. Conservation Program for 2007-2012

5.6.1. Avoided Cost of Supply Analysis

An analysis of the avoided cost of supply was performed to help define the cost-effectiveness of water conservation measures. When water is saved through conservation actions, certain costs associated with the water and wastewater systems are avoided. This can include operational costs such as pumping drinking water and wastewater, as well as capital costs associated with capacity of facilities. Collectively these are termed “avoided costs.” Conservation measures whose cost per unit is below the avoided cost are deemed cost effective.

The results of the avoided cost analysis are shown in Table 5-5. The total avoided cost is $0.35/ccf. A technical memorandum detailing the information gathered, the analysis methodology, and the results of the avoided cost analysis can be found in Appendix 5-1.

Table 5-5 Summary of Avoided Costs from Water Conservation

Item	Description	Relation to Conservation	Avoided Cost ($/CCF)
Water System Operations			
Regional WFP Chemicals	Treatment process chemicals	Direct	$0.02
Regional WFP Energy	Energy use at WFP. Less estimate of costs for heating/lighting.	Direct	$0.01
Local Distr. Pumping	Energy for pumping water in local distribution systems	Direct	$0.08
Local re-chlorination	Chemical additions to maintain Cl residual in wholesale cust. systems	Unknown	$0.00
Subtotal			$0.11
Wastewater System Operations			
Regional WPCF Chemicals	Wastewater treatment process chemicals. Cost based on loading, not volume.	None	$0.00
Regional WPCF Energy	Energy use at WPCF Less estimate of costs for heating/lighting.	Direct	$0.05
Local lift station pumping	Energy for pumping wastewater at local lift stations	Direct	$0.02
Subtotal			$0.07
Water System Capital Facilities			
WFP Improvements - Everett	Phase II Improvements from 2002 WFP Facilities Plan	Direct	$0.02
Transmission Pipelines - Everett	Improvements not tied to capacity needs.	None	$0.00
Local pump stations - Everett	Conservation would likely only delay capacity improvements by a year or two.	None	$0.00
Local storage tanks - Everett	Conservation would likely only delay capacity improvements by a year or two.	None	$0.00
Local water mains - Everett	Main sizing is dictated by fire flow requirements, which conservation does not impact.	None	$0.00
Local improvements - wholesale area	Extrapolation from wholesale customer Water System Plans	Direct	$0.06
Lake Chaplain Reservoir	None identified. Capacity not constrained.	None	$0.00
Jackson Project Reservoir	None identified. Capacity not constrained.	None	$0.00
Subtotal			$0.08
Wastewater System Capital Facilities			
WPCF Improvements	Capacity driven by stormwater and I/I, not base sewage flows	None	$0.00
Conveyance line to outfall	Capacity driven by stormwater and I/I, not base sewage flows	None	$0.00
Local collection pipes - Everett	N. End capacity driven by stormwater. S. end projects not needed until 2020s.	Minimal	$0.01
Local lift stations - Everett	N. End capacity driven by stormwater. S. end projects not needed until 2020s.	Minimal	$0.005
Collection pipes - other systems	Extrapolation from figure for Everett wastewater service area	Partial	$0.03
Lift stations - other systems	Extrapolation from figure for Everett wastewater service area	Partial	$0.02
Subtotal			$0.07
Environmental Benefits			
Estimated Avoided Cost Factor	Assumption: 10% of all other avoided costs	Direct	$0.03
Subtotal			$0.03
Total Avoided Cost			**$0.35**

5.6.2. Conservation Measure Analysis

An analysis of several measures was conducted in order to determine the most appropriate measures for inclusion in the regional conservation program implemented throughout Everett's retail and wholesale service area. The analysis included consideration of demographics, participation, savings, and costs. The analysis covered 18 measures, applied to the single-family, multi-family, and commercial sectors as appropriate, as shown in Table 5-6. It should be noted that this was not an exhaustive analysis of all potential measures, but rather a focused analysis of measures considered applicable to Everett and its wholesale customers.

Table 5-6 Measures Analyzed

#	Measure	Single-Family	Multi-Family	Commercial
1	Toilets - 1.6 gpf ultra low flow toilets (ULFT)	X	X	X
2	Toilets - 1.0 gpf high efficiency toilets (HET)	X	X	X
3	Toilets - leak detection	X	X	X
4	Urinals – 1.0 gpf			X
5	Urinals – 0.5 gpf			X
6	Showerheads - 2.0 gpm	X	X	
7	Faucet aerators bathroom - 1.0 gpm	X	X	
8	Faucet aerators bathroom - 0.5 gpm			X
9	Faucet aerators kitchen - 2.2 gpm	X	X	
10	Hot Water - on demand recirculating systems	X		
11	Clothes washers - residential capacity (in unit)	X	X	
12	Clothes washers - residential capacity (in common areas)		X	
13	Clothes washers - commercial capacity (in laundromat)			X
14	Outdoor Irrigation Kits	X	X	
15	Indoor Audit			X
16	Outdoor Audit			X
17	Irrigation Systems - school audits only			X
18	Irrigation Systems - school audits and financial assistance			X
Number of Measures Per Sector		**9**	**9**	**11**

The measures were analyzed for both the six-year and 20-year planning periods associated with the CWP. A summary of the results for the six-year planning period, which is most applicable to Everett's conservation program for the next six years, is shown in Table 5-7. A technical memorandum discussing data inputs, measure definitions, analysis methodology, and detailed results for both the six-year and 20-year planning periods can be found in Appendix 5-2.

Table 5-7 Summary of Analysis for the 6-Year Planning Period [1]

Conservation Measure		Participants	Savings		Direct Costs	
			Annual GPD at Full Implementation	CCF Over Measure Life	Total Cost Over Plan Period	Cost per CCF Saved During Entire Year Over Measure Life
Single-Family	Toilets - 1.6 gpf ultra low flow toilets (ULFT)	13,619	442,636	755,872	$2,349,278	$3.11
	Toilets - 1.0 gpf high efficiency toilets (HET)	14,519	235,208	2,868,963	$3,339,370	$1.16
	Toilets - leak detection	36,297	289,481	988,670	$105,988	$0.11
	Showerheads - 2.0 gpm	58,632	171,559	1,255,560	$351,792	$0.28
	Faucet aerators bathroom - 1.0 gpm	65,970	316,656	2,317,460	$164,925	$0.07
	Faucet aerators kitchen - 2.2 gpm	0	0	0	$0	N/A
	Hot Water - on demand recirculating systems	2,904	29,040	212,530	$435,600	$2.05
	Clothes washers - residential capacity (in unit)	25,215	368,139	2,335,008	$2,521,500	$1.08
	Outdoor Irrigation Kits	24,739	157,500	537,913	$321,607	$0.60
Multi-Family	Toilets - 1.6 gpf ultra low flow toilets (ULFT)	7,106	206,074	351,904	$959,310	$2.73
	Toilets - 1.0 gpf high efficiency toilets (HET)	8,159	118,317	1,443,176	$1,468,620	$1.02
	Toilets - leak detection	20,398	145,343	496,392	$9,247	$0.02
	Showerheads - 2.0 gpm	39,355	147,581	1,080,079	$177,098	$0.16
	Faucet aerators bathroom - 1.0 gpm	37,339	190,429	1,393,662	$56,009	$0.04
	Faucet aerators kitchen - 2.2 gpm	6,414	30,313	14,790	$6,414	$0.43
	Clothes washers - residential capacity (in unit)	4,292	55,796	353,899	$429,200	$1.21
	Clothes washers - residential capacity (in common area)	4,292	55,796	353,899	$85,840	$0.24
	Outdoor Irrigation Kits	778	9,966	34,036	$10,114	$0.30

Conservation Measure		Participants	Savings		Direct Costs	
			Annual GPD at Full Implementation	CCF Over Measure Life	Total Cost Over Plan Period	Cost per CCF Saved During Entire Year Over Measure Life
Commercial	Toilets - 1.6 gpf ultra low flow toilets (ULFT)	1,012	277,795	474,380	$607,200	$1.28
	Toilets - 1.0 gpf high efficiency toilets (HET)	108	17,496	213,409	$86,400	$0.40
	Toilets - leak detection	252	12,928	44,152	$4,876	$0.11
	Urinals - 1.0 gpf	623	50,463	61,553	$140,175	$2.28
	Urinals - 0.5 gpf	1,084	29,268	285,599	$243,900	$0.85
	Faucet aerators bathroom - 0.5 gpm	584	84,754	41,352	$2,336	$0.06
	Clothes washers - commercial capacity (in laundromat)	5	6,720	42,623	$15,000	$0.35
	Indoor Audit	259	92,651	452,045	$77,700	$0.17
	Outdoor Audit	271	12,767	62,291	$135,500	$2.18
	Irrigation Systems - school audits only	11	3,323	16,215	$8,250	$0.51
	Irrigation Systems - school audits and financial assist.	28	12,463	60,806	$66,500	$1.09

(1) All numbers in the table include free riders.

5.6.3. Final Conservation Program

The regional conservation program for 2007-2012 was developed using the avoided cost of supply and conservation measure analyses discussed above, coupled with other considerations such as conservation drivers and budgetary constraints. The general premise was to select a suite of measures that would: 1) provide assistance to all sectors, 2) stay within a reasonable range of Everett's avoided cost of supply, 3) have annual budgets similar to current conservation expenditures, and 4) contain the minimum number of required measures under the draft conservation Rule for the largest EWUC partner, even though as discussed above this CWP and conservation program is not subject to the new requirements. (Note that under the draft Rule, Everett and its largest EWUC partner Alderwood are both required to implement or evaluate nine measures.)

The conservation program consists of the following eight primary measures:

1. Education
2. Indoor Retrofit Kits

3. Outdoor Irrigation Kits
4. Toilet Leak Detection
5. Toilet Rebates
6. Washer Rebates
7. Commercial Indoor Audits
8. School Irrigation System Audits

Additionally, the conservation program includes continuation of the following nine measures: purveyor assistance, customer assistance, bills showing consumptive history, source meters, service meters, leak detection, conservation demonstration garden, conservation pricing, and reuse. Savings related to the plumbing code will also continue as older non-code fixtures are naturally replaced at the end of their useful life by more efficient models.

A summary of the eight primary measures is provided in Table 5-8. Descriptions of each measure are discussed below and the full original measure analysis can be found in the measure analysis technical memorandum in Appendix 5-2. The focus, and therefore the methodology and calculations, of the measure analysis is different than the focus of the conservation program. The measure analysis focuses on the highest conservation potential for measures, while the conservation program focuses on documenting measure savings and costs for the selected level and schedule of implementation. Therefore, while the conservation program numbers rely heavily on data from the measure analysis, additional analysis was performed to generate the conservation program numbers. The details of this additional analysis can be found in Appendix 5-3.

Table 5-8 Summary of 2007-2012 EWUC Regional Conservation Program

	2007				2008				2009				2010				2011				2012				Total			
	Units	Average Annual Savings (mgd)	Peak Season Savings (mgd)	Budget	Units	Average Annual Savings (mgd)	Peak Season Savings (mgd)	Budget	Units	Average Annual Savings (mgd)	Peak Season Savings (mgd)	Budget	Units	Average Annual Savings (mgd)	Peak Season Savings (mgd)	Budget	Units	Average Annual Savings (mgd)	Peak Season Savings (mgd)	Budget	Units	Average Annual Savings (mgd)	Peak Season Savings (mgd)	Budget	Units	Average Annual Savings (mgd)	Peak Season Savings (mgd)	Budget
Programmatic Measures																												
1. Education (#)	n/a	0.60	0.60	$175,000	n/a	0.61	0.61	$175,000	n/a	0.63	0.63	$175,000	n/a	0.64	0.64	$175,000	n/a	0.66	0.66	$175,000	n/a	0.67	0.67	$175,000	n/a	0.67	0.67	$1,050,000
2. Indoor Retrofit Kits	3,750	0.03	0.03	$20,250	8,250	0.07	0.07	$44,550	8,250	0.07	0.07	$44,550	8,250	0.07	0.07	$44,550	8,250	0.07	0.07	$44,550	8,250	0.07	0.07	$44,550	45,000	0.40	0.40	$243,000
3. Outdoor Irrigation Kits	3,750	0.03	0.08	$49,125	7,500	0.05	0.15	$98,250	7,500	0.05	0.15	$98,250	3,750	0.03	0.08	$49,125	3,750	0.03	0.08	$49,125	3,750	0.03	0.08	$49,125	30,000	0.20	0.59	$393,000
4. Toilet Leak Detection	132,500	0.26	0.26	$115,700	71,640	0.13	0.13	$60,740	10,760	0.02	0.02	$11,480	5,760	0.01	0.01	$4,480	5,760	0.01	0.01	$4,480	5,760	0.01	0.01	$4,480	232,180	0.45	0.45	$201,360
5. Toilet Rebates	0	0.00	0.00	$0	750	0.01	0.01	$84,380	1,610	0.02	0.02	$181,130	1,610	0.02	0.02	$181,130	1,610	0.02	0.02	$181,130	1,620	0.02	0.02	$182,230	7,200	0.08	0.08	$810,000
6. Clothes washer Rebates	0	0.00	0.00	$0	750	0.01	0.01	$84,370	1,610	0.02	0.02	$181,130	1,610	0.02	0.02	$181,130	1,610	0.02	0.02	$181,130	1,620	0.02	0.02	$182,240	7,200	0.11	0.11	$810,000
7. Commercial Indoor Audits	0	0.00	0.00	$0	5	0.002	0.002	$1,880	28	0.01	0.01	$10,500	28	0.01	0.01	$10,500	28	0.01	0.01	$10,500	31	0.01	0.01	$11,620	120	0.04	0.04	$45,000
8. School Irrigation System Audits	0	0.00	0.00	$0	5	0.002	0.01	$4,690	15	0.01	0.02	$14,100	15	0.01	0.02	$14,100	15	0.01	0.02	$14,100	10	0.003	0.01	$9,420	60	0.02	0.06	$56,410
Annual Subtotal	n/a	0.92	0.97	$360,075	n/a	0.89	0.99	$553,860	n/a	0.83	0.94	$716,140	n/a	0.81	0.87	$660,015	n/a	0.83	0.89	$660,015	n/a	0.84	0.89	$658,665	n/a	1.97	2.41	$3,608,770
Cumulative	n/a	0.92	0.97	$360,075	n/a	1.21	1.36	$913,935	n/a	1.43	1.69	$1,630,075	n/a	1.61	1.93	$2,290,090	n/a	1.79	2.17	$2,950,105	n/a	1.97	2.41	$3,608,770				
Plumbing Code (*)																												
Annual	n/a	0.49	0.49	$0	n/a	0.25	0.25	$0	n/a	0.24	0.24	$0	n/a	0.25	0.25	$0	n/a	0.24	0.24	$0	n/a	0.29	0.29	$0	n/a	n/a	n/a	n/a
Cumulative	n/a	0.49	0.49	$0	n/a	0.74	0.74	$0	n/a	0.98	0.98	$0	n/a	1.23	1.23	$0	n/a	1.47	1.47	$0	n/a	1.76	1.76	$0	n/a	1.76	1.76	$0
Grand Total																												
Annual	n/a	1.41	1.46	$360,075	n/a	1.14	1.24	$553,860	n/a	1.07	1.18	$716,140	n/a	1.06	1.12	$660,015	n/a	1.07	1.13	$660,015	n/a	1.13	1.18	$658,665	n/a	n/a	n/a	n/a
Cumulative	n/a	1.41	1.46	$360,075	n/a	1.95	2.10	$913,935	n/a	2.41	2.67	$1,630,075	n/a	2.84	3.16	$2,290,090	n/a	3.26	3.64	$2,950,105	n/a	3.73	4.17	$3,608,770	n/a	3.73	4.17	$3,608,770

Education savings are not cumulative over the six years since a continuous effort must be made to maintain the savings each year.
* Code savings were calculated based on assumptions regarding gradual replacement of older, non-code plumbing fixtures.
SF = Single-Family
MF = Multi-Family

Education

This measure is a continuation of EWUC's current educational efforts as described in Section 5.4.2 Public Education, which includes the distribution of an annual summer lawn watering calendar. The savings are estimated to be one percent of the forecasted demand without conservation for each year. It should be noted that the savings are not cumulative over the six years since a continuous effort must be made in order to maintain the savings each year. The budget is based on historical costs.

Indoor Retrofit Kits

This measure is a modified version of the current single-family / multi-family indoor kits described in Section 5.4.5 Incentives / Other Measures and combines several of the individual measures analyzed in the measure analysis. This measure applies to the single-family and multi-family sectors, both existing and new customers. Different versions of the kit will be distributed to each sector. The single-family kits consist of 2.0 gpm showerheads and 1.0 gpm bathroom faucet aerators. Those flow rates are more efficient than the maximum allowed under the plumbing code. The multi-family kits includes those measures and 2.2 gpm kitchen faucet aerators, which are treated as bringing customers up to code, even though technically the maximum flow rate allowed under the plumbing code is slightly higher at 2.5 gpm. Kitchen faucet aerators are only included in the multi-family kits since the measure analysis concluded that the majority of the single-family sector has already been brought up to code due to natural replacement and distribution of the previous kits, which were targeted primarily to single-family customers.

Outdoor Irrigation Kits

This measure is a version of the current single-family / multi-family outdoor kits described in Section 5.4.5 Incentives / Other Measures. This measure applies to the single-family and multi-family sectors, both existing and new customers. These are free outdoor irrigation kits with devices and information to improve the irrigation efficiency of residential customers that manually irrigate their landscaping. Historically, the kits have included items such as a watering timer and shut-off device, a spring-loaded hose nozzle, a rain gauge, hose washers, and a conservation brochure.

Toilet Leak Detection

This measure is a more comprehensive version of one component of the previous indoor kits. This measure provides free toilet leak detection dye tablets for customers to determine if their toilets leak and provides detailed information on how to fix leaks. This measure applies to single-family and multi-family sectors, both existing and new customers, and businesses with tank style toilets. Only tank style toilets are targeted since most leaks occur in that type of toilet, usually via flapper leaks.

Toilet Rebates

This is a new measure which provides $100 rebates for customers to replace less efficient toilets with high efficiency toilets (HETs) in tank style toilets. HETs are technically defined as toilets flushing at a maximum of 1.28 gpf. However, a flush volume of 1.0 gpf is used for this measure since most models flush at this volume. HETs include both dual flush toilets

and pressure assist tank style toilets. This measure assumes dual flush toilets are used for the single-family and multi-family sectors and pressure assist toilets for the commercial sector. The target audience is existing and new customers with tank style toilets, in the single-family, multi-family, and commercial sectors. EWUC chose to focus on HET toilets, rather than the standard 1.6 gpf toilets, to obtain higher savings, avoid free riders, and go beyond current code requirements.

Clothes Washer Rebates

This is a new measure which provides $100 rebates for customers to replace less efficient residential-capacity clothes washers with more efficient models. This measure is applied to the single-family and multi-family sectors, both existing and new customers, and commercial laundromats. For multi-family, this measure targets both clothes washers in individual households and common laundry areas. This measure is applied to both existing and new customers. The measure targets customers who are ready to purchase a new machine and is not intended to accelerate replacement before the normal lifespan ends.

Commercial Indoor Audits

This measure is a modified version of the current commercial audit and rebate program described in Section 5.4.5 Incentives / Other Measures. This measure provides free indoor audits to commercial customers to determine efficiencies that could be achieved through hardware improvements or operational changes. The audits are performed by a professional auditor. This measure is applied to the commercial sector, both existing and new customers.

School Irrigation System Audits

This measure is a modified version of the current school irrigation audit and upgrade program described in Section 5.4.5 Incentives / Other Measures. This measure provides free irrigation audits to schools to improve the efficiency of their irrigation systems. Efficiencies can be achieved through hardware improvements or operational changes. The audits are performed by a professional landscape irrigation auditor. This measure is applied to existing customers in the commercial sector.

5.6.4. Conservation Impact on Demand Forecast

The impact of the regional conservation program on the demand forecast is shown in Table 5-9. On a cumulative basis, the potable portion of the demand forecast without conservation is estimated to have a 2.4% reduction in 2007 and grow to a 5.5% reduction by 2012. Those savings estimates include both programmatic savings and code savings and have been incorporated into the demand forecast presented in Chapter 3 Planning Data and Demand.

Table 5-9 Demand Reduction Due to Conservation

	2007	2008	2009	2010	2011	2012
Demand Without Conservation (ADD mgd)	59.8	61.3	62.9	64.4	66.0	67.3
Conservation Savings (avg annual mgd)	1.4	2.0	2.4	2.8	3.3	3.7
Programmatic Component	*0.9*	*1.2*	*1.4*	*1.6*	*1.8*	*2.0*
Code Component	*0.5*	*0.7*	*1.0*	*1.2*	*1.5*	*1.8*
Demand With Conservation (ADD mgd)	58.4	59.4	60.5	61.6	62.7	63.6
Demand Reduction - Individual Year	2.4%	1.9%	1.7%	1.6%	1.6%	1.7%
Programmatic Component	*1.5%*	*1.4%*	*1.3%*	*1.3%*	*1.3%*	*1.2%*
Code Component	*0.8%*	*0.4%*	*0.4%*	*0.4%*	*0.4%*	*0.4%*
Demand Reduction - Cumulative	2.4%	3.2%	3.8%	4.4%	4.9%	5.5%
Programmatic Component	*1.5%*	*2.0%*	*2.3%*	*2.5%*	*2.7%*	*2.9%*
Code Component	*0.8%*	*1.2%*	*1.6%*	*1.9%*	*2.2%*	*2.6%*

Conservation savings beyond 2012 have also been included in the demand forecast. While the conservation program outlined above is only for the next six years, it is anticipated that a regional conservation program would continue in the future. Therefore, continued programmatic and code conservation savings are applied to the demand forecast. For the programmatic savings, 3% is subtracted from the demand, which is the cumulative demand reduction for the programmatic portion for the final year of the 2007-2012 conservation program, rounded to the closest full percent. For the code savings, the cumulative code savings increase each year from 2013 until they plateau in 2018, when all fixtures are assumed to be at code.

The anticipated future metering of the flat rate single-family customers would result in some conservation savings. Those savings are not included in this CWP, however they will be incorporated in Everett's next CWP.