

WATER USE EFFICIENCY PROGRAM & WATER RESOURCE ANALYSIS CONSERVATION PROGRAM DEVELOPMENT & IMPLEMENTATION

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, better known as the Municipal Water Law, to address the increasing demand on the state's water resources. The law established that all municipal water suppliers must use water more efficiently in exchange for water right certainty and the flexibility to meet future demand. The legislature passed requirements in the Washington Administrative Code (WAC) 246-290 and directed the department of health to adopt an enforceable Water Use Efficiency (WUE) program, which became effective in January of 2007.

The WUE requirements emphasize the importance of measuring water use and evaluating the effectiveness of the WUE program. There are three fundamental elements to the program: planning requirements, distribution leakage standard, and goal setting and WUE reporting. The city is required to collect data, forecast demand, evaluate WUE measures, calculate distribution system leakage and implement a WUE program to meet established goals. The city is required to meet a distribution system leakage standard of 10% or less to minimize water loss from our distribution system. In addition, we are required to set WUE goals and report them annually.

Two of the three fundamental elements of the program: planning requirements (which include water use data collection and water demand forecasting), and the distribution leakage standard and the calculated distribution system leakage are addressed in chapter 2 of the comprehensive water plan.

This section will focus on the third fundamental element, goal setting and the WUE reporting.

Water Meters

The city has met the metering requirement of the WUE rule. All services and production points are metered. The city requires meters on all new connections to the water system. The city selects, installs, operates, and maintains water meters using accepted industry standards, and as required by the manufacturer. The replacement of meters at this time is on an as needed basis, averaging about 10 a year. In addition, the city would like to install a zone meter for the Cedars/Woodside area.

Water Use Efficiency Goal

The city must set a water use efficiency goal and measure progress each year toward meeting the goal. The goal must include a measurable outcome, address water supply characteristics, and include an implementation schedule. The city must also evaluate or implement efficiency measures to help meet the goal.

On August 16th, 2010 the city council held a public hearing to establish a water use efficiency goal for the water system. The city evaluated various scenarios and set an attainable goal for water savings. The goal was established in accordance with WAC 246-290-830. On September

7th, 2010 the council passed Resolution 725 which established the water use efficiency goal of reducing residential water use by 2% in the summer months of July and August by September 1st, 2016. The months of July and August were selected because the water consumption nearly doubles during these two months, and the community wanted to focus the conservation effort to when the highest use of water showed up in the system. The current goal presented is to reduce residential water consumption 2% per ERU average per year in summer months of July and August through September 2022.

		159 AVG ERU
2016		
2017	-3.18	155.82
2018	-3.12	152.7
2019	-3.05	149.65
2020	-2.99	146.66
2021	-2.93	143.73
2022	-2.87	140.86

The new goal removes undeveloped lots and irrigation meters. Irrigation usage will be monitored separately and staff will work with those customers on an individual basis.

As shown in our production numbers since the 2002 Water Plan, the water system customers have been voluntarily conserving through 2012 the production then tapers and :

2003: 60,746,800	2010: 45,188,600
2004: 58,875,500	2011: 44,345,700
2005: 54,121,400	2012: 43,280,400
2006: 56,300,000	2013: 45,664,000
2007: 53,835,400	2014: 44,825,700
2008: 51,395,600	2015: 48,453,950
2009: 52,821,300	2016: 45,577,200

The city will reduce its water use by utilizing several different measures:

- Continue the search for and provide customer education regarding leaks beyond the meter. Each billing cycle includes a search for abnormalities in water usage to pinpoint leaks. The city will verify leaks beyond the meter and notify the homeowner immediately, as well as educate them about potential causes and provide contacts for potential contractors to make repairs.
- Encourage customers to conserve water by continuing to implement, a conservation rate structure to discourage excessive outdoor water use during the summer. The rate structure is a financial incentive to conserve water during the summer months.
- Increase efforts to promote water conservation and reduce overall water demand through proactive efforts to educate our customers about water conservation. This education information will be primarily available through the city’s website www.langleywa.org, the Consumer Confidence Report, and in messages included in the consumer’s bill.

Although the focus will be on reducing outdoor water use, there will also be information on winterizing houses to prevent leaks and encouraging reduction in indoor water use.

- Increase efforts to find distribution system leaks with recently purchased leak detection equipment. Daily source readings are currently compared with the average for the years past to detect any spikes in volume that may indicate a leaks in the system.

4.1.3 Water Use Efficiency Measures

The WUE Rule requires that water efficiency measures must be implemented or evaluated for each water system based on system size. The city has currently less than 999 connections and therefore must evaluate or implement four supplementary water use efficiency measures in addition to the mandatory measures (WAC 246-290-810).

Mandatory measures the city has implemented are as follows:

1. Source and Service Metering and Meter Calibration: The city currently meters all customers and sources. The city is in compliance with this requirement.
2. Leak Detection and Water Accounting: The city has worked diligently over the past 5 years to reduce Distribution System Leakage (DSL). The City is committed to replacing aging infrastructure that contributes to leakage, steady progress has been made. While excavation around old piping takes place the risk for larger scale leaks occurs and that is reflected in the DSL numbers. It is difficult to account for the volume lost in instantaneous leaks and results in a fluctuating water loss numbers. The 2013 DSL was 13.5 %, the 2014 DSL was 6.6% and in 2015 the DSL was 7.9%. The rolling three year average is at 9.3%. The preliminary numbers for 2016 indicate that this number will increase. If the rolling three year average is above 10% the implementation of a water loss control action plan is required.
3. Customer Education: The city will include conservation tips in the annual Consumer Confidence Report. In addition, the city has tips and resources available on its website. The city is a member of WaterSense.

Supplementary measures the city has implemented are:

1. Conservation Rates: The city is, through this plan, developing a competitive conservative rate structure that will encourage high water users to reduce usage during the summer months of June, July and August as well as provide financial sustainability.
2. Notification of Leaks on Customer's Service: The city notifies customers of leaks on the customer side of the meter. When staff finds an unusually high water bill, the water department is notified and the meter is checked for a leak. If one is found, the customer is notified and the city assists in determining the source of the leak and how to make the repair.

3. Conservation Kits: The city has conservation kits available to any city water user. The free kits are available at City Hall and include a shower flow restrictor, kitchen and bathroom faucet aerators, toilet leak detection tablets, and instructions on installing all of the devices.
4. Water Saver Challenge: The city has instituted an ongoing challenge that customers can sign up for and be acknowledged for their water conservation efforts. The challenge is for the months of July and August each year. The city provides water saving tips and information on previous water usage for the months the challenge takes place to participants. In 2010, Water Saver Challenge participants reduced their usage by 49% from the previous year. In 2011, the participants reduced their usage by 40% from the previous year, even though some were repeat participants. In addition, the city began watering the flower pots and hanging baskets with non-potable water as a conservation effort during the summer months.
5. The city has added consumption history to water bills. In addition, the city will include a quarterly conservation tip on the consumer's bill.

The city will implement all of the measures listed previously as part of the WUE Program as well as continue with measures already in place. The city has shown over the last 8 years that the measures they are currently using have made an impact. In 2003 the total source production was 60.74 million gallons, over the course of the next 8 years annual withdrawals steadily declined to 45.18 million gallons in 2010. This is a reduction of 15 million gallons, 25% of annual production. In 2016 the total source production was 45.57. The years in between fluctuated to as high as 48.28 to as low as 43.28.

Water loss control action plan

The city is committed to achieving and maintaining a DSL below 10%. In 2009 a supply-side goal was established to reduce DSL to less than 10% by 2013. In 2010 the DSL was at 9.4%, and in 2015 was at 9.3% as a result of aggressive steps to reduce losses.

One of the first measures taken was to purchase hydrant meters to account for water used during flushing of the water system. Purchase of an acoustic leak detector in 2010 enabled location and repair of nine leaks in the distribution system that year. An unauthorized connection was also identified and a meter installed. The City updated the rate structure to provide a steady revenue stream which allowed the replacement of one section of water line per year over the last 4 years.

The city continues to implement a meter replacement schedule to change out older and inaccurate meters. As a result of replacing these meters, water losses are expected to decline and revenue is expected to increase due to more accurate measurement. In addition, the city will continue to look for and remove any unauthorized consumption.

GOAL Target and Water Saving Projections

The conservation measures currently implemented by the city have proven to be effective. In 2003, the city's wells produced 60,746,800 gallons whereas in 2016, 45,577,200 gallons were pumped. The city hopes that this downward trend continues, but realistically the city expects to see the rate of reduction slow, even though consumers become more efficient. The residential population is expanding and more single family houses are being built. This goal targets the residential class, eliminating irrigation and vacant lots. The goal over the next 6 years is to reduce usage from 159 gallons/ERU/day average to 140 gallons/ERU/day average in the summer months of July and August. Success for this goal will result in an overall savings of 2,055,600 gallons bringing the annual production to 43,521,600 gallons in 2022 as a result of the goals implementation.