



Water System Planning

Water Use Efficiency Guidebook

Fourth Edition

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Acronyms and Abbreviations

AC	Authorized consumption
DOH/department	Department of Health
DSL	Distribution system leakage
Ecology	Department of Ecology
EPA	U.S. Environmental Protection Agency
ERU	Equivalent residential unit
gpm	Gallons per minute
MWS	Municipal water supplier
ODW	Office of Drinking Water
Planning documents	Water system plan or small water system management program
SWSMP	Small water system management program
TP	Total produced and purchased
WAC	Washington Administrative Code
WLCAP	Water Loss Control Action Plan
“We” or “Us”	Department of Health, Office of Drinking Water
WSP	Water system plan
WUE	Water use efficiency
“You” or “Your”	Your water system

Chapter 1: Introduction Water Use Efficiency Requirements

1.1 Intent of This Guidebook

The intent of this guidebook is to provide helpful information for any water system developing a water use efficiency (WUE) program. Developing an effective WUE program can take a lot of time and effort, and ranges in complexity based on a water system's size and complexity.

We intend for this guidebook to help you understand state WUE requirements ([Chapter 246-290](#) Washington Administrative Code [WAC]). However, this publication does not cover all of them. Each chapter summarizes implementation of the WUE rule by providing guidance and examples. Our goal is to clarify how to meet the Department of Health's expectations for complying with the WUE rule.

This guidebook will help you:

- Create a WUE program that works for your water system.
- Understand fundamental WUE requirements.
 1. Planning.
 2. Distribution system leakage (DSL) standard.
 3. Customer goal setting.
 4. Annual WUE reporting.

We want to keep you informed of any new guidance that may assist you in developing your WUE program. If you have any questions, please visit our [WUE webpage](#), email our program at WUE@doh.wa.gov, or contact your county's [regional planner](#).

1.2 Protecting Our Water Resources

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, better known as the Municipal Water Law (MWL), to address the increasing demand on our state's water resources. The law established that all municipal water suppliers **must** use water more efficiently in exchange for water rights certainty and flexibility to help meet future demands. The Legislature directed the Department of Health to adopt an enforceable WUE program, which became effective on January 22, 2007. Creating a regulatory WUE program is intended to achieve a consistently high level of stewardship among all municipal water suppliers (MWS).

Using Water Efficiently: What is a WUE Program?

A WUE program is a plan you follow to increase water supply and water demand efficiency. Developing your water use efficiency (WUE) program is the foundation for using water wisely. Using water efficiently can help you meet future needs, operate successfully within financial, managerial, and technical constraints, and continue to deliver safe and reliable drinking water. We encourage you to conserve water and use it efficiently.

A main goal is to minimize water withdrawals and water use by implementing water saving activities and adopting policies.

Pressure on our state's water resources comes from many sources including population growth, instream flows, and business needs. As the potential for developing new sources of water within the state is shrinking, efficient use of water is necessary to meet future demand.

Water Efficiency is a Proactive Approach to Protecting Public Health

Our mission focuses on public health. The WUE program connects water resources with safe and reliable drinking water by expanding to include water efficiency. Our WUE program increases awareness about how the efficient use of water strengthens the relationship between the reliability and safety of our water supplies. This connection also enhances our ability to accomplish our mission.

We Prioritize the WUE Program

Drought, climate change, growth demands, and fewer granted water rights all signal a diminishing water supply and the possibility of future water shortages or disruptions. Public health is always at risk during these events. Water systems position themselves to provide a reliable drinking water supply for their customers when they implement an effective WUE program. WUE measures help water systems proactively prevent potential health risks to their customers, which can result in fewer water emergencies. The WUE program requires water systems to pay attention to their usage patterns and water loss, and report annually. The WUE requirements also involve both customers and the public to be included in the decision-making process through a goal setting public forum. Both "customers" and "the public" are involved because these populations are not necessarily the same. For example, an apartment building "customer" is the property owner/manager, while the "public" are the tenants. In this case, the public are the ones expected to meet your goals, while the customer is the one affected by rate/price changes. This input helps water system owners and managers make smart choices about how to use water efficiently.

WUE requirements support our common goal of ensuring safe and reliable drinking water in the following ways.

- ◆ Contribute to long-term water supply reliability and public health protection.
- ◆ Promote good and responsible use of the state's water resources.
- ◆ Ensure efficient operation and management of water systems.

For most water systems, conserving water can be the least costly source of new water supply. Water system managers balance operation and growth costs with customer revenue when making decisions on the future of their water system.

1.3 Using Water Efficiently

We consider using water efficiently an important part of the planning program. Since 1994 we have used the Conservation Planning Requirements publication to describe how water systems should incorporate water use efficiency into their planning process. While many water systems based their successful conservation programs on the 1994 document, this guidebook replaces it. Water systems that are not subject to MWL requirements are subject to the Conservation Planning Requirements of 1994. If you are not a municipal water supplier (MWS) see [Appendix U](#) for WUE requirements.

The WUE requirements emphasize the importance of measuring water use and evaluating the effectiveness of your WUE program. Following are three fundamental elements.

Planning Requirements

As part of a water system plan or a small water system management program, MWS are required to:

- ◆ Collect data.
- ◆ Forecast demand.
- ◆ Evaluate WUE measures.
- ◆ Calculate DSL.
- ◆ Implement a WUE program to meet their goals.

Distribution Leakage Standard

MWS are required to meet a DSL standard to minimize water loss from their distribution system. To calculate leakage, production (source) and consumption (service) meters are required.

Goal Setting and WUE Reporting

MWS are required to set WUE goals through a public process and report annually on their performance to their customers and the Department of Health. They also **must** make the information available to the public.

1.4 Who is Affected by Water Use Efficiency Requirements

The Municipal Water Law ([RCW 90.03.015\(3\)](#)) says that WUE requirements apply to all water systems defined as municipal water suppliers (MWS). An MWS is “an entity that supplies water for municipal water supply purposes.”

Your water system is most likely an MWS if you can answer “yes” to any of the following.

- ◆ My system has 15 or more residential service connections.
- ◆ My system is owned by a city, town, public utility district, sewer district, or water district.
- ◆ My system provides water in a residential manner to a non-residential population that averages at least 25 people for at least 60 days a year.
- ◆ My system provides water indirectly for purposes listed in 1 or 2, through the delivery of water to another water system.

If you answered “no” to all these questions, you most likely don’t meet the definition of an MWS and don’t have to meet the WUE requirements. Please contact your [regional planner](#) to confirm, and if they tell you that you are NOT an MWS, see [Appendix U](#).

1.5 Complying with Water Use Efficiency Requirements

Despite the term “municipal,” privately owned water systems can be municipal water suppliers that **must** comply with WUE regulations. All MWS water systems **must** submit an annual WUE report by July 1 each year even if they haven’t fulfilled all WUE requirements. This report **must** include the following information.

- ◆ Service meter installation schedule.
- ◆ Identify the established WUE customer goal.

- ◆ Total water production—the annual total amount of water pumped from all source meter(s).
- ◆ Authorized water consumption—the annual total amount of water consumed from customer meter records plus any other authorized unmetered uses (see [Chapter 6](#)).
- ◆ Information regarding progress of fulfilling any of the other WUE requirements, such as reducing water loss.

There are additional optional questions that we hope you will take time to answer. See [Appendix E](#) for the WUE worksheet. Make sure you have all the information gathered before you start answering online.

Enforcing the WUE Requirements

We enforce WUE requirements consistently with our compliance strategy. We focus our efforts on providing technical assistance and guidance to help systems develop an effective WUE program that meets the rule requirements. However, violators may face formal enforcement, including red operating permits, if their water system fails to demonstrate that they have met WUE requirements.

Once you submit your report we ensure that you have established a demand-side goal for your water system and determine whether you are in compliance with the DSL. We will keep a record of all annual WUE report submittals and notify you if you fail to report.

Our regional planners review your WUE program in detail when you submit a water planning document for approval. We withhold approval of your planning document until you have demonstrated compliance with WUE regulations.

You don't need to send your WUE program to us unless we request it. In many cases, you will keep the WUE program for your own records as part of your planning document.

Chapter 2: Water Meters

2.1 Metering Requirement

Measuring your water use with source and service meters is fundamental to helping you develop a successful WUE program. Meters provide the information necessary to calculate accurate DSL. They also provide useful information to evaluate the effectiveness of your WUE program.

All MWS **must** have source meters and service meters for each customer and clustered entity. All new services **must** be metered at the time of connection.

2.2 Why Meters are Important

Meters provide the information you need to evaluate water use and leakage and help prioritize your WUE efforts. Installing service meters and billing your customers based on the amount of water they use is the most effective water efficiency measure you can implement. Once customers realize how expensive water use is, their water demand tends to decrease. For example, water use decreased by 40 percent after meter installation and a consumption-based rate was implemented in Mesa, Washington.

If you are not required to install consumption meters (see [Section 2.7](#)), you should consider installing zone meters to isolate sections of the distribution system. Zone meters help identify and prioritize areas with the most leaks and evaluate how to proceed with a water loss control action plan.

Installing Meters Makes Economic Sense

Meters accurately identify water loss within the distribution system. Lost water has a value. Consider the cost to pump, treat, store, and distribute the water. Add up these factors and you'll find that fixing leaks makes economic sense. The best way to accurately determine water loss is to install service meters to measure water consumption.

2.3 Source Meters

Source meters are required on all drinking water sources connected to your system. Measuring the water produced from your source(s) and purchased from other water systems is the first step in managing water efficiently. This information assists you in tracking water production, understanding seasonal variations, and accounting for overall use of the resource.

You are required to measure the volume of water produced or purchased upstream of the distribution system with a production meter ([WAC 246-290-496\(1\)\(a\)](#)). Most water systems use their source meter to provide this information. If your water system has extensive transmission mains, you may install a production meter at the beginning of the distribution system to calculate DSL. Installing a meter at the beginning of the distribution system does not alter the source metering requirements adopted by the Department of Ecology, which may have different installation and reporting requirements.

Source meters **must** be able to measure the volume of water ([WAC 246-290-496\(1\)\(a\)](#)). Hour meters, dedicated power consumption meters, and other non-volume meters don't provide the type of production data necessary to successfully calculate DSL.

Source meters have been required since January 22, 2007.

We expect that you are recording monthly production data. If you don't have a meter on all your sources, you **must** install one immediately.

2.4 Service Meters

Service meters provide information to you and your customers regarding their water usage. Service meter data also provides the most accurate assessment of DSL.

Service meters are required on all existing and new direct service connections¹ and clustered entities ([WAC 246-290-496\(2\)\(c\)](#) and [\(2\)\(d\)](#)). The requirements allow clustering of certain customers using a single meter (see [Section 2.7](#)). New connections **must** be metered at the time water is provided to the customer ([WAC 246-290-496\(2\)\(d\)](#)).

2.5 Intertie Meters

Permanent and Seasonal Interties

Meters **must** be installed on all interties used as permanent or seasonal sources ([WAC 246-290-496\(2\)\(e\)](#)).

Emergency Interties

Emergency interties, described in [WAC 246-290-132\(4\)](#), are exempt from the metering requirement.

2.6 Meter Installation Schedule

Meter installation schedule requirements only apply if you don't already have service or intertie meters installed. If you don't have service meters installed on all existing direct service connections and intertie connections, you **must** meet the following three requirements until your water system is fully metered ([WAC 246-290-496\(2\)\(f\)](#)).

1. Submit a meter installation schedule to your regional planner.
2. Implement activities to minimize leakage.
3. Report status of installing meters and minimizing leakage in your annual WUE report and in any planning document you submit for approval.

¹ A direct service connection is a service hookup to a property that connects to a distribution main and where additional distribution mains are not needed to provide service.

Submit a Meter Installation Schedule

Your meter installation schedule **must** include the following.

- ◆ A schedule for completing installation on all existing connections ([WAC 246-290-496\(2\)\(c\)](#) and [246-290-496\(2\)\(f\)](#)).
- ◆ Documentation showing steady and continuous progress toward complying with the service and intertie meter requirements ([WAC 246-290-496\(2\)\(f\)\(i\)\(C\)](#)). This includes:
 - Percentage of meters that will be installed each year.
 - Funding strategy to cover the metering expenses.

Implement and Report Activities to Minimize Leakage

If you aren't fully metered, there are actions you **must** take to minimize leakage ([WAC 246-290-496\(2\)\(f\)\(ii\)](#)). These activities may include:

- ◆ Leak detection survey.
- ◆ Leak repair.
- ◆ Night usage survey.
- ◆ Planned replacement of leaking mains.
- ◆ Improved data collection, including repair/replacement of failing service meters.

Report Status of Installing Meters

You **must** report your progress on installing meters in your annual WUE report and WUE program ([WAC 246-290-496\(2\)\(f\)\(iii\)](#)). Meter installation progress should be consistent with the meter installation schedule provided to us.

2.7 Exception to the Service Meter Requirement

Clustered entities listed in [WAC 246-290-496\(2\)\(g\)](#) may measure the volume of water through a single meter.

- ◆ Campgrounds.
- ◆ Recreational vehicle parks.
- ◆ Property designated as a mobile home park.
- ◆ A building with multiple units (for example, an apartment building).
- ◆ Complexes with multiple buildings served as a single connection (for example, a business park).

Am I a Designated Mobile Home Park?

To determine if your property is considered a designated mobile home park contact your local planning authority (usually the county assessor). If the local authority has a zoning designation, use code, property class, or similar term used to describe the property as a "mobile home park" for the entire tax parcel or property legal description, then it is what we consider a "designated mobile home park" as written in [WAC 246-290-496\(2\)\(g\)\(iii\)](#). Designated mobile home parks don't need to install service meters.

State law ([RCW 59.20.030\[15\]](#)) defines a mobile home park as:

"Mobile home park" or "manufactured housing community" means any real property that is rented or held out for rent to others for the placement of two or more mobile homes, manufactured homes, or park models for the primary purpose of production of income, except where such real property is rented or held out for rent for seasonal recreational purpose only and is not intended for year-round occupancy.

Metering Requirements for Clustered Entities That Are Municipal Water Suppliers

If you are a campground, recreational vehicle park, or if your property is designated as a mobile home park, and considered a municipal water supplier you don't have to install meters on all of your direct service connections. You may use a single meter (for example, source meter) or multiple meters to measure consumption in your distribution system. However, you are required to meet all other WUE requirements, including the DSL standard.

An effective way to determine leakage in the absence of service meters is by conducting night flow testing. Measuring the amount of water used from your source meter or how much your reservoir has emptied between the hours of 2:00 a.m. to 4:00 a.m. is a good indicator of your water loss.

If your water system provides service to a complex with multiple buildings (such as public college) and is a municipal water supplier, you **must** install service meters on all direct service connections and **must** meet all other WUE requirements, including the DSL standard.

2.8 Selection, Installation, Maintenance, and Operation of Meters

You **must** select, install, operate, and maintain your meters using accepted industry standards and as required by the manufacturer ([WAC 246-290-496\(3\)](#)).

We recommend that a qualified professional install your service meters in accordance with the manufacturer's instructions. If you install your water system's service meters take extra care not to disturb the distribution system. Contamination of the distribution system can occur when water lines are disrupted, which compromises your ability to provide safe and reliable water.

You **must** install and calibrate meters correctly to be accurate. The accuracy of your meters diminishes over time and older meters may require calibration or replacement. Inaccurate meters result in lost revenue. Even a few percentage points of inaccurate measurements on a larger meter can cost you hundreds or thousands of dollars every month. Develop a process and timeline for inspecting, testing, calibrating, and replacing meters as recommended by the manufacturer. How often you do this depends on the size of the meter, water quality, and other factors.

Here's an Idea

Consider installing the latest meter technology to track water use and leaks within your customers' homes.

The new automatic meter reading (AMR) and automatic meter infrastructure (AMI) meters are worth the investment. They automatically collect information from your meters, and some have the ability to detect low flows (such as leaking faucets and toilets) and bill for that usage. Perhaps, most importantly, these meters:

- ◆ Increase your revenue, without increasing rates.
- ◆ Reduce apparent losses (which reduces annual leakage percentage).
- ◆ Save water.
- ◆ With AMI, systems can see **hourly** reading for all connections.
- ◆ With high-resolution registers, you will be able to identify who your largest users are and more importantly when they are using the water.
- ◆ You will be able to identify which customer has a leak and how large it is.
- ◆ You will be able to provide usage information to your customer's fingertips.
- ◆ You will have access to the data that will help you predict future demands.

2.9 Funding Options for Installing Meters and General WUE Efforts

Generally, funding for meters is only available when meter installation is part of a larger capital improvement project. A few state and federal loan or grant programs may provide funding for meters. For the most up-to-date list of water and wastewater project funding programs available in the state of Washington, consult the [Infrastructure Assistance Coordination Council's chart](#).

Chapter 3: Data Collection

3.1 Data Collection Requirements

We require you to collect production and consumption data on a regular basis, and report that information in your planning document and annual WUE report.

Water use data is needed for the following.

- Calculating DSL.
- Forecasting demand.
- Identifying areas for more efficient use of water.
- Evaluating the success of your WUE program.
- Describing your water supply characteristics.
- Aiding in decision-making about water management.

3.2 Collecting Source Meter Data

Source meters are required on all existing and new water sources ([WAC 246-290-496\(1\)](#)). Within a water system plan ([WAC 246-290-100\(4\)\(b\)\(ii\)](#)) or small water system management program ([WAC 246-290-105\(4\)\(h\)](#)), you **must** include the following.

- Monthly and annual totals of water produced.
- Monthly and annual totals of water purchased from another water system.
- Annual totals of water supplied to other water systems through interties.

Water produced is the amount of water you use from your source. You **must** collect this data monthly and calculate annual totals from each source ([WAC 246-290-100\(4\)\(b\)\(ii\)\(A\)](#)).

The source meter requirement is addressed in [Section 2.3](#).

3.3 Collecting Intertie Data

Interties provide consumption and production data. If you **supply** water through an intertie it is authorized consumption (AC). If you **receive** water through an intertie it is part of total produced and purchased (TP).

Water Supplied

Water supplied is the amount of water you provide to another water system through an intertie. Include this information in your AC data when calculating leakage (see [Chapter 7](#)). You **must** collect this data annually from each intertie ([WAC 246-290-100\(4\)\(b\)\(ii\)\(C\)](#)).

Water Received

Water received, often purchased water, is the amount of water you get from another water system through an intertie. Include this information in your TP data when calculating leakage (see [Chapter 7](#)). You **must** collect this data monthly from each intertie and calculate annual totals ([WAC 246-290-100\(4\)\(b\)\(ii\)\(A\)](#)).

Wheeled Water

Wheeled water is a term used to identify a wheeling water system: where an originating water supplier uses a different water supplier's pipes (wheeling water system) to supply water to a receiving water system (end user). This water is not directly used by the wheeling water system or its customers. You **must** track leakage for each water system (originator, wheeling water system, and end user).

3.4 Collecting Service Meter Data

Service meters are required on all direct service connections. Obtaining consumption data from service meters is the most accurate method to know how much water is used and determine leakage within your water system. For both a water system plan ([WAC 246-290-100\(4\)\(b\)\(ii\)](#)) or a small water system management program ([WAC 246-290-105\(4\)\(h\)](#)), you **must** report the following.

- ◆ Water consumed.
- ◆ Annual totals for each customer class (such as single-family residential or commercial).
- ◆ Customer class seasonal variations (for systems with 1,000 or more connections only).

Water Consumed

You **must** collect annual consumption data on how much water is being used by your customers ([WAC 246-290-496\(2\)](#), [246-290-100\(4\)\(b\)\(ii\)](#), and [246-290-105\(4\)\(h\)\(ii\)](#)). This data is useful in forecasting demand and determining leakage. To help determine leakage estimate and record any authorized uses such as water system flushing, street washing, and firefighting.

Collecting regular consumption data helps you understand how water is being used, allows for evaluating rate structures, recognizes water-saving opportunities, and evaluate progress on meeting goals. We recommend reading your service meters every month to obtain meaningful data for decision making.

Customer Class

Include annual water consumption data in your planning document for each customer class. Examples of class types are residential, non-residential, commercial, industrial, single family and multifamily.

Small water system management programs **must** include the annual amount of water consumed by your residential and non-residential customers ([WAC 246-290-105\(4\)\(h\)\(ii\)](#)).

Water system plans **must** include the annual amount of water used in each customer class ([WAC 246-290-100\(4\)\(b\)\(ii\)\(B\)](#)). You have the flexibility to define your own customer classes based on the types of customers in your water system.

Seasonal Variations in Customer Class for Water Systems With 1,000 or More Connections

Consumption data for customer classes may vary from season to season, particularly in the summer when water uses increase. Water systems with 1,000 or more connections **must** collect seasonal data to describe the variations in water consumption trends ([WAC 246-290-100\(4\)\(b\)\(ii\)\(D\)](#)).

3.5 How To Collect Data

We recommend reading all meters (source, intertie, and service) every month. This helps detect significant changes in water usage and manage any potential major problems or leaks.

It is important to collect data from source and service meters at the same time, otherwise you get inaccurate water loss results for the year. Adjustments may be necessary when collecting data to reflect a twelve-month period. Evaluate your billing cycles, billing software, and data collection methods to ensure total production and authorized consumption annual values are accurate.

You have the flexibility to collect annual data on a schedule that meets your needs. For instance, you might choose a “data collection year” from April 1 to the following March 31. However, when you submit your annual WUE report we will ask you to identify a “reporting year” (such as 2024) that verifies you have met the annual WUE reporting requirement.

The reporting year is similar to a tax year. For example, when you submit your report in 2025, you are reporting data from the previous year 2024.

When you submit your annual report each year we will ask you to identify your total water produced and authorized consumption for the previous year. Make sure you have collected this information. The online reporting system automatically calculates annual DSL percentage, annual volume, and DSL average percentage for the last three years.

3.6 Water Supply Characteristics

You need to be aware of factors that influence your ability to access your water supply sources. “Water supply characteristics” are issues that may affect the availability of a water supply to a public water system, such as natural conditions (wildfires, drought), seasonal water levels, and water rights. In order to gain better information about the long-term reliability of your sources, take time to understand your water supply characteristics and consider them when making management decisions (see [Appendix C](#) for more information).

Both you and your customers should understand the impact of water use in your community. Awareness of the water supply characteristics within your watershed should help guide your WUE program and goal setting decisions

There are two fundamental WUE requirements regarding water supply characteristics.

- You **must** describe water supply characteristics or provide a source description to customers, the public, and the Department of Health ([WAC 246-290-105\(4\)\(f\)](#), [246-290-100\(4\)\(f\)\(ii\)\(B\)](#)).
- You also need to consider the water supply characteristics when establishing a quantifiable water savings goal for your customers ([WAC 246-290-830\(6\)\(a\)](#)).

Connect Your WUE Program to Your Water Supply Characteristics

In order to provide context for customers and the public about your WUE program you **must** describe your water supply characteristics or a source description when:

- Setting your goals ([WAC 246-290-830\(6\)\(a\)](#)).

- ◆ Developing your planning document ([WAC 246-290-105\(4\)\(f\)](#) and [246-290-100\(4\)\(f\)\(ii\)\(B\)](#)).

Small Water System Management Programs—Source Description

You **must** describe your sources of water ([WAC 246-290-105\(4\)\(f\)](#)). This description is similar to the information required in a wellhead protection plan. Your water supply characteristics **must** include:

- ◆ Source descriptions.
- ◆ Name and location of the source from which water is used.

Water System Plans—Water Supply Characteristics

You **must** provide a narrative describing your sources and any foreseeable impact (such as drought) to those sources ([WAC 246-290-100\(4\)\(f\)\(ii\)\(B\)](#)). Base your narrative on existing information; no additional studies are required. Using existing data and studies describe how using water from your source, now and in the future, will affect the quantity and quality of that water. Your water supply characteristics **must** include:

- ◆ Source description.
- ◆ Name and location of the sources.
- ◆ Production capacity.
- ◆ Seasonal variability.
- ◆ Water rights.
- ◆ Legal constraints.

You should try to find and report as much information as possible. This is valuable documentation when planning for the future of your water system.

Write your water supply characteristics or source description in easy-to-understand language. You want your customers to understand water supply availability, its value to them and the environment, and the need to meet short- and long-term goals.

[Appendix C](#) has a list of questions to ask yourself when describing your water supply characteristics. It also includes examples of what a source description or water supply characteristics would look like within your planning document.

Where to Find Existing Water Supply Characteristics Information

Information from ODW

- ◆ Your planning document, sanitary survey report, source metering records, water depth records, or historical information.

Here's an Idea

When you submit your annual WUE report to customers, provide some background on the water supply characteristics or watershed in which you live. This example comes from the City of Seattle's Saving Water Partnership.

Watersheds: Our Water Source

The region's fresh supply water comes primarily from two sources: the Cedar River Watershed and the Tolt River Watershed, both located in eastern King County. The watersheds are large, uninhabited areas of land that gather and store rain and snowmelt.

Year-round, 26 cities and water districts rely on a limited supply of stored water from these two sources to meet most of the daily needs of business, government, institutions, and 1.3 million people in our region. In addition to providing clean, clear, reliable drinking water, the watersheds also provide habitat for fish and wildlife.

- ◆ Planning documents submitted by other water systems in the area that have completed a water supply characteristics narrative for your aquifer.
- ◆ Coordinated water system plans, if one covers your service area.

Information from the Department of Ecology

- ◆ Ecology has completed groundwater studies in some parts of Washington State. [See Ecology's Groundwater Publications webpage for information.](#)
- ◆ Water system plan reviewers in Ecology's Water Resources Program.
- ◆ [Ecology's well logs are available online.](#) You need to know the original owner of the well, street address, or legal location of the well (township, range, and section). Look at the well log for pump test information and water depth measurements made by the driller. Also, note the date the well was drilled and the depth.
- ◆ Check the Report of Examination for the water right permits. You can find this information by [contacting your local Ecology Regional Office.](#)
- ◆ Ecology's Watershed Planning Unit staff may know of watershed plans or existing studies for your service area. [Use their Watershed Lookup webpage.](#)
- ◆ Ecology's Instream Resources Protection Program contains important information related to water availability. To find the rules within your watershed, go to [Ecology's Rulemaking webpage.](#)
- ◆ Additional sources of water supply information are available on [Ecology's Water Supply Monitoring webpage.](#)

Here's an Idea

To get an idea of water reliability, graph your monthly water use over time to see how it varies.

Do the same for water depth records. Water depth can fluctuate a great deal, depending on when the depth is measured and the last time the pump ran. Look for long-term or seasonal trends rather than changes from one month to the next.

You **must** measure seasonal depth to water for all groundwater wells under [WAC 246-290-415\(10\)](#). If you don't have a way to measure water depth, we encourage you to contact a qualified well driller to install a water level recorder.

This information is inexpensive to collect and can provide valuable data about the long-term reliability of your water source.

Other Resources

- ◆ Comprehensive plans prepared by your city or county.
- ◆ Studies prepared by local city or county government water resource departments.
- ◆ The U.S. Geological Survey has completed studies in some parts of Washington State, including information about streamflow. Select your appropriate county or basin on their [Washington State Publications search page.](#)
- ◆ Colleges and universities have completed watershed studies throughout the state. [Search your local school to find a study near you.](#)

Chapter 4: Demand Forecasting

4.1 Demand Forecast Requirement

As communities grow the demand for water use often grows with it. To adequately serve new customers you **must** forecast future water demands to make sure you can provide service to growing communities. The WUE requirements add criteria for you to consider when preparing demand forecasts.

Demand forecasting is important because it estimates how much water you will need in the future. You need to collect consumption data on a regular basis from your service meters and use that information to calculate demand forecasts.

4.2 Projecting Demand Forecasts: Factors to Consider

Prepare your demand forecast within your planning document ([WAC 246-290-100\(4\)\(b\)](#)). The WUE goals you establish may affect your system's water demand. When preparing your demand forecast you **must** project your demand both with and without savings obtained from your WUE program ([WAC 246-290-100\(4\)\(c\)](#)).

You **must** include demand forecasting information within your WUE program.

Consider these factors when calculating your future water system supply needs.

- ◆ Population (current and future).
- ◆ Historic water use patterns.
- ◆ Local land use plans.
- ◆ Water rates and their impact on consumption.
- ◆ Employment (economic development and employment trends).
- ◆ Projected WUE savings.

Population

Base your population forecasts on information approved by your local planning agency or the Washington State Office of Financial Management (OFM). You may provide alternative forecasts to establish a potential population of high, medium, and low levels, and corresponding water demand forecast ranges, or as agreed to by the local planning agency.

Water systems often grow at a different rate than predicted. Review the number of connections added to your water system and compare this number with the OFM or local population projections.

Historic Water Use Patterns

Historic water use patterns are an important component for accurate demand forecasting. This figure is the basis for future projections. For some water systems understanding the usage patterns for different categories of customers and seasonal variations may be useful.

Current Land Use, Zoning, and Capacity

Adopted local government comprehensive plans and land use plans, including plans developed under the Growth Management Act, **must** be used as the basis for forecasting the impact of development on water use.

Water Rates

Rate structures can have an impact on the forecasted demand. You should identify your existing rate structure as part of your planning requirement. Setting rates is the responsibility of the elected governing board, governing body, owner, or as authorized by the Washington State Utilities and Transportation Commission.

Employment

Employment trends may change as businesses in your community expand. Understand how economic development affects the demands of your water system. If your water system serves commercial or industrial areas, consider these changes forecasting demand.

Projected WUE Savings

Implementing a WUE program may affect your demand forecast. Projected savings from the WUE program can help you determine whether capital improvements can be delayed or eliminated, and how much additional growth may be permitted. The forecasted reduction in demand should be monitored against actual water use data to monitor conservation success. Adjustments to future projections can be made as actual water use data becomes available.

4.3 Demand Forecast Methods

Demand forecasts are the basis for determining your capacity and infrastructure needs. Depending on the type of planning document and water system size there are different ways to calculate demand forecasts. The forecast should identify the projected needs of your water system and any contractual agreements you have to provide water to other public water systems.

Water System Plan

If you are completing a water system plan you **must** project your demand for the plan approval period and for at least a 20-year period, consistent with the water demand design criteria identified in [WAC 246-290-221](#). More information about design criteria and demand forecasting are available in the [Water System Design Manual 331-123 \(PDF\)](#).

You **must** include projections based on two different scenarios ([WAC 246-290-100\(4\)\(c\)](#)).

1. Forecast demand **without** projected water savings from your WUE program. We require this forecast in the hydraulic analysis and capital improvement program.
2. Forecast demand **with** projected water savings expected from your WUE program. Base this on cost-effective measures implemented by your water system to meet your selected goals.

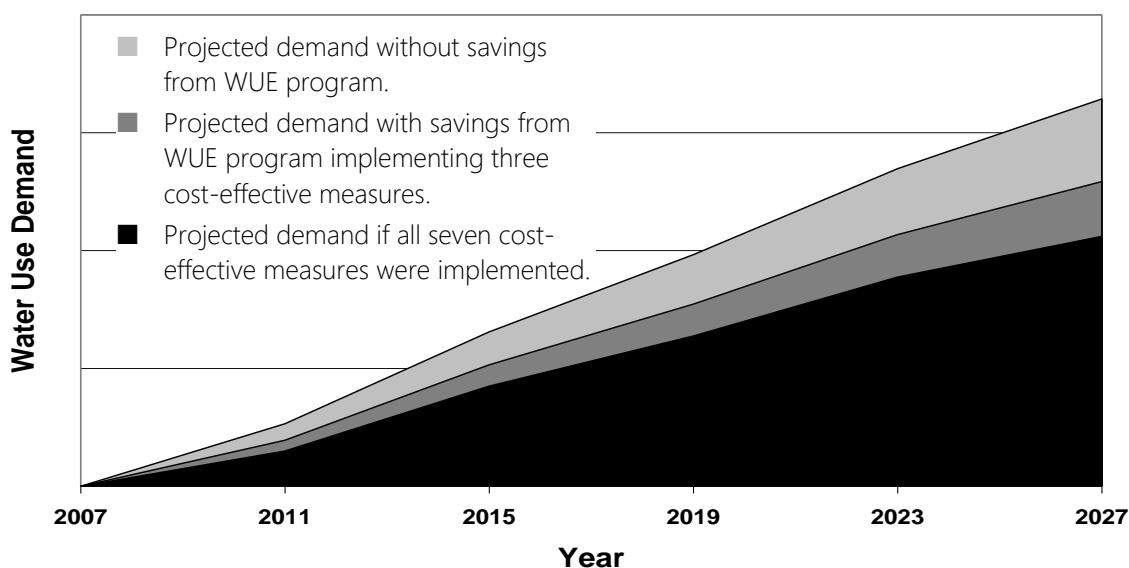
If you serve 1,000 or more connections, you **must** provide a third demand forecast scenario ([WAC 246-290-100\(4\)\(d\)](#)).

3. Forecast demand if **all** WUE measures deemed cost-effective were implemented ([WAC 246-290-810](#)). If you do not choose to implement all of the cost-effective WUE measures you have evaluated to meet your goal then you **must** complete an additional demand forecast showing what the demand with projected water savings would look like if all of those measures were implemented.

All water systems **must** evaluate or implement WUE measures based on water system size ([WAC 246-290-810\(4\)\(d\)\(i\)](#)). The example in Figure 4.1 is for a water system with 53,000 connections in which the customers are using 80 gallons per person per day. The water system determined that seven of 10 measures were cost-effective. Because of the low average daily customer use this water system chose to implement three of the seven cost-effective measures to meet its goal.

Figure 4.1 Demand Forecast Example for a Water System with 1,000 or More Connections

Projected Water Use Demand Example



Small Water System Management Program

If you are completing a small water system management program, you **must** project demand for all your approved connections ([WAC 246-290-105\(4\)\(k\)](#)). If your existing number of connections equals the approved number of connections then project your existing demand. Describe the demand projection using your average daily demand (see [WAC 246-290-221](#) for water demand design criteria).

You should base this projection on historical water use patterns using actual water use and the zoning and land use data from your local government comprehensive or land use plan.

Chapter 5: Water Use Efficiency Program

5.1 The WUE Program Requirement

Developing your WUE program is the foundation for using water wisely. A WUE program is a plan you follow to increase water supply and water demand efficiency. The intent of the plan is to minimize water withdrawals and water use by implementing water saving activities and adopting policies, resolutions, ordinances, or bylaws. [Appendices R and S](#) show examples of large and small system WUE programs.

Your WUE program should be:

- Consistent with the goal(s) established by the elected governing board or governing body of your water system.
- Designed to achieve the goal(s) by implementing cost-effective water use efficiency measures.

You are required to develop and implement a WUE program as part of your planning document ([WAC 246-290-810](#)). The requirement applies to water system plans submitted for approval under [WAC 246-290-100](#) and small water system management programs developed and implemented under [WAC 246-290-105](#).

You **must** prepare a WUE program and have it available for review if we request to see it. WUE programs are required to be submitted with your planning document. In most cases we would not request to see your WUE program until you submit your planning document for approval or during a sanitary survey.

[Appendix A](#) identifies where to include WUE requirements in your planning documents.

5.2 Process for Developing a Water Use Efficiency Program

Setting goals helps you and your customers use water efficiently. Every goal **must** have a benchmark that is quantifiable within a prescribed amount of time.

Consider the following eight steps when developing your WUE program.

1. Evaluate the effectiveness of your current and prior water conservation programs.
2. Select cost-effective WUE measures that support your proposed goals.
3. Establish one or more quantifiable goals through a public process.
4. Fund your WUE program. Consider combining financial resources and forming partnerships with other entities, such as nearby water systems, working toward the same goal.
5. Educate your customers about the benefits of conservation.
6. Be prepared to offer incentives or develop ordinances for using water efficiently.
7. Keep your customers involved by informing them of new measures that support your goals.
8. Set up a method to evaluate the effectiveness of your WUE program every few years.

Partnering with Other Water Systems

If you want to lower your WUE program costs one option is to team up with other water systems. By combining resources you can save money on developing and promoting educational messages. You may also save by coordinating bulk purchases of water-efficient devices.

You can learn valuable information from neighboring water systems. Water systems with similar characteristics to yours may have already implemented successful WUE measures. Take the opportunity to learn more from those water systems because those same measures may work for your water system.

Partnering with Other Types of Utilities

Another option is to work with other types of utilities such as energy and/or wastewater. Energy utilities are interested in customers using less energy. Wastewater utilities are interested in decreasing wastewater volume. Consider these types of partnerships that could help everyone achieve their goals of efficiency. Your local energy or wastewater utility may also already have programs in place so you may want to partner with them on educational efforts and materials.

Partnering with Towns, Cities, and Counties

Many of the decisions that drive water demand are made by towns, cities, and counties through land use and building codes. Planning and building activities, including comprehensive planning, subdivision ordinances, master plans, zoning, landscaping plans, and plumbing codes set baseline water efficiency for the neighborhoods you serve. For more information on ways towns, cities, and counties can help you achieve your WUE goals, contact the Office of Drinking Water's Foundational Public Health Services program at odw-fphs@doh.wa.gov.

Partnering With Local Businesses and Organizations

Partnerships with local businesses and nonprofit organizations can assist with promoting your WUE program. Some Examples: local nurseries and landscaping companies can showcase native and drought-tolerant plants to their customers with a water-efficient demonstration garden. Hardware stores may highlight water-efficient fixtures and irrigation supplies. Nonprofit organizations interested in water efficiency and water resources may assist by providing bulk-purchasing possibilities, such as the [Saving Water Partnership website](#).

5.3 What to Include in Your Water Use Efficiency Program

You **must** include specific information in your WUE program, outlined below. A thorough analysis of your current WUE program helps you develop an attainable goal, define parameters for cost-effectiveness, and customize the program to meet the needs of your water system. The following 11 items summarize what to include in a WUE program.

1. Describe your current water conservation program. Describe what you are currently doing to use water efficiently. This would include your "demand side" measures and your "supply side" measures.

Water systems with 1,000 or more connections **must** also estimate the amount of water saved by implementing their current WUE program over the prior six years or over the most recent water system plan approval period ([WAC 246-290-810\(4\)\(b\)](#)).

2. Describe the WUE goals that support your WUE program and how the goals were established. Describe how the elected governing board or governing body developed the goals through a public process ([WAC 246-290-830](#)). Include a copy of any adopted resolution or other official document that identifies your elected governing board took action to adopt the goal. See [Chapter 7](#) for a complete description of how to set your goals.
3. Evaluate WUE measures for cost-effectiveness. Take some time to research measures that would be a “good-fit” for your customers and evaluate whether they would be cost-effective. See [Section 5.6](#) for guidance on what to include for this part of your WUE program.
4. Describe the WUE measures you will implement to meet your established goals. Identify which measures you will fund to support the program and help you meet your established goals. A minimum number of measures **must** be evaluated or implemented based on the number of connections for your water system (see [Section 5.6](#)).
5. Describe how you will educate customers to use water efficiently. General education to your customers about the importance of using water efficiently is required at least once per year under [WAC 246-290-810\(4\)\(f\)](#). See [Section 5.7](#) and [Appendix J](#) for water conservation tips to use for your customers.
6. Estimate projected water savings from the selected WUE measures. Every measure you select to implement should result in water savings. You will need to predict:
 - ◆ How each measure supports the goal.
 - ◆ The amount of water savings that will result from each implemented measure.

The measures you select establish your WUE program and affect your future water demand. See [Chapter 4](#) for guidance on how to predict water savings based on different WUE programs.

7. Describe how you will evaluate the effectiveness of your WUE program. WUE programs change for several reasons (drought, budget constraints, changes in demographics, extreme weather, etc.) that may contribute to shifts in water use patterns. Plan to adapt and amend your WUE program to keep it economical and effective.
8. Evaluate DSL. When you submit your planning document, you **must** report DSL for the previous six years or for the entire water system plan approval period if it’s longer than six years ([WAC 246-290-810\(4\)\(i\)\(i\)](#)). You **must** include a water loss control action plan with your planning document if the rolling three-year average of DSL exceeds the leakage standard ([WAC 246-290-810\(4\)\(i\)\(ii\)](#)).
9. Evaluate rate structures that encourage water demand efficiency. The rate structure you implement can have a significant effect on water use and promote water efficiency. See [Section 5.4](#) for guidance on what to include in this part of your WUE program.
10. Evaluate reclaimed water opportunities. You **must** evaluate reclaimed water opportunities if you serve 1,000 connections or more. See [Section 5.5](#) for guidance on what to include in this part of your WUE program.

11. Describe your water supply characteristics. Both you and your customers should understand the impact of water use in your community. Awareness of the water supply characteristics within your watershed should help guide your WUE program and goal setting decisions. See [Chapter 3](#) and [Appendix C](#) for guidance on what to include in this part of your WUE program.

5.4 Evaluate Your Rates

Implementing a rate structure that encourages efficient use of water is a good way to help educate your customers about the costs of providing safe and reliable drinking water and influence their water use.

You **must** evaluate a rate structure that encourages water demand efficiency ([WAC 246-290-100\(4\)\(j\)\(iv\)\(B\)](#) and [246-290-105\(4\)\(I\)](#)). There are a couple of things to consider when performing this evaluation.

- ◆ First, describe your current rate structure. Some of the most common rate structures do not encourage your customers to use water efficiently: declining block rate (charge per unit of water decreases with higher use), flat rate (fixed fee regardless of water use), and uniform rate (same charge per unit of water use).
- ◆ Second, evaluate at least one of the following conservation rate structures:
 - **Inclining block rates.** Charge per unit of water increases with higher use.
 - **Seasonal rates.** Charge per unit increases during peak usage season (generally targets outdoor summer use).

Evaluate the feasibility of adopting and implementing a conservation rate structure. This evaluation should identify the pros and cons of the chosen rate structure for both your water system and your customers. Describe how rates may help fund your water system, your WUE program, and established goals.

Uniform block rates are more effective than declining block or flat rates because they are based on consumption. We realize that some water systems will see water savings by changing from one of these rate structures to a uniform rate structure. You may evaluate a uniform block rate if you are currently using a declining block rate or flat rate.

Implementing a new rate structure takes time. The elected governing board or governing body should ensure the rate structure will cover all of the needs of your water system.

You should also inform and educate your customers about what the new rate structure is, how it will affect their bill, and why the rate structure change is necessary. Describe exactly what expenses the rate increase will cover and inform customers that efficient use of water may eliminate or delay the need for costly new sources that would cause an even greater rate increase.

Other things to consider:

- ◆ Explain to your customers how they can use water efficiently to prevent higher water bills.
- ◆ Establish a rate committee to work with you on proposing a new rate structure.
- ◆ Consider hiring a consultant to complete a rate study.
- ◆ Prepare mock bills so your customers can see how the new rate structure will affect their bill before they actually have to pay the higher amount.

- ◆ Provide water bill historical use data to show customers how much they used previously.
- ◆ Washington Utilities and Transportation Commission regulated water systems may have additional requirements to follow. For more information, contact Utilities and Transportation Commission by email at consumer@wutc.wa.gov or 1-800-562-6150.

5.5 Evaluating Reclaimed Water Opportunities

The use of reclaimed water can help balance the water use demands of water systems, leading to greater water savings. We support the use of reclaimed water for non-potable purposes such as irrigation, industrial uses, and groundwater recharge. Using reclaimed water saves potable water for drinking water purposes and is an efficient use of the state's water resources.

Water systems with 1,000 or more connections **must** collect information on reclaimed water opportunities and include that information in their planning documents ([WAC 246-290-100\(4\)\(f\)\(vii\)](#)). When evaluating opportunities for the use of reclaimed water, you **must** identify:

- ◆ Local plans and regulations that govern the availability and use of reclaimed water.
- ◆ Locations where reclaimed water could potentially be used, such as parks, golf courses, groundwater recharge facilities, and car washing facilities.
- ◆ Locations where reclaimed water production facilities exist and the locations of reclaimed water distribution lines (purple pipes).
- ◆ Barriers to the use of reclaimed water such as cost, permitting issues, water rights mitigation, and local regulations that govern the use of reclaimed water, including your system's policies that limit or discourage the use of reclaimed water, such as discounts for large irrigators.
- ◆ Contractual obligations and agreements that limit the use of reclaimed water.
- ◆ Where reclaimed water is used or proposed within your water service area. Provide a description and estimate usage.
- ◆ Your efforts to develop existing or new opportunities for the use of reclaimed water.

The use of reclaimed water is considered a WUE measure, or multiple WUE measures if you use it for multiple purposes (see [Section 5.7](#)). For additional information about the use of reclaimed water in your community, please contact our Foundational Public Health Services at odw-fphs@doh.wa.gov.

5.6 Evaluation of Water Use Efficiency Measures

You **must** evaluate or implement a specified number of measures specifically targeted for your customers. Each evaluation is related to the cost-effectiveness of the measure. The number of measures you **must** evaluate, or implement, is based on the size of your water system. Table 5-1 identifies the number of measures you **must** evaluate or implement based on your number of existing connections. This number represents a minimum number of measures. You may evaluate or implement additional measures if necessary to meet your goals.

Remember, you **must** evaluate measures that support the goal(s) you are proposing or have established for your customers. Each measure you select to implement **must** have an implementation schedule ([WAC 246-290-830\(6\)\(d\)](#)).

Supply side measures such as leak detection surveys, replacing meters, and water audits, are not one of the minimum number of measures you are required to evaluate or implement. These

types of measures **must** be implemented in order to reduce water loss and achieve the leakage standard.

Measures **must** be evaluated for cost-effectiveness from the following categories, if applicable ([WAC 246-290-810\(4\)\(d\)\(ii\)](#)).

- ◆ Indoor residential.
- ◆ Outdoor.
- ◆ Industrial/commercial/institutional.

If you use other categories, such as customer class, each measure may count for up to three categories (see the next section 5.7).

Table 5-1 Water Use Efficiency Measures Based on Total Number of Service Connections

Number of Connections	Less than 500	500 - 999	1,000 - 2,499	2,500 - 9,999	10,000 - 49,999	50,000 or more
WUE Measures	1	4	5	6	9	12

On a Budget?

Choosing Inexpensive Measures to Achieve Your Goals

Choosing the right measures to achieve your WUE goals can be a challenging task if you've never done it before. For smaller water systems with fewer than 1,000 connections we recommend that you implement at least one quantifiable measure.

Inexpensive quantifiable measures include things such as faucet aerators, low-flow showerheads, and hose repair kits. You don't need to buy one of these for every customer, consider purchasing enough quantities to reach 50% of your customers and have them available for pick-up to save on mailing costs.

Some of the most inexpensive measures (such as education) are the most difficult to quantify. Here are some commonly used WUE measures that water systems implement:

- ◆ Sending water savings tips to your customers in the annual water quality report.
- ◆ Conservation rate structures.
- ◆ Educating customers to identify and repair leaks in and around their homes.
- ◆ Educating customers how to save money on water and energy bills by installing WaterSense fixtures and appliances.
- ◆ Showing consumption history on water bills.
- ◆ Placing water saving educational materials on their website.

Evaluation Criteria

Because you may choose to either evaluate or implement a WUE measure, you don't have to evaluate it for cost-effectiveness if you implement it, but an evaluation of water savings may be necessary to forecast demand. Knowing the expected costs to implement a measure helps you develop your budget. We encourage you to implement WUE measures that meet your goal and support your WUE program.

Water systems with fewer than 1,000 connections. Describe how you evaluated any measures you chose not to implement.

Water systems with 1,000 or more connections. There are three evaluations a water system **must** consider when determining if a WUE measure is cost-effective ([WAC 246-290-810\(4\)\(d\)\(iv\)](#)). They are:

1. **Water system perspective** to see if it would be cost-effective for the water system. Water systems **must** include the marginal costs of producing water. Marginal costs are the costs associated with developing supply to meet future demand and may include such costs as a new well, new distribution or transmission lines, new storage, or a new booster station. In other words, the benefits of using water more efficiently should be quantifiably measured against the potential costs of developing new sources of supply.
2. **Cost-sharing perspective** to see if it is cost-effective to share costs with other entities, such as neighboring water systems, water conservation partners, sewer districts, regional partners, wholesale water agencies, and energy utilities. Cost-sharing can reduce WUE program implementation costs and give water systems a way to identify measures that will also benefit other entities with common interests.
3. **Societal perspective** to see if it is cost-effective if all costs and benefits were included. Water systems should begin by identifying some of the other benefits that may occur by implementing the WUE measures. This may include environmental, recreational, or aesthetic benefits such as more water in the river. This can be a quantitative or qualitative evaluation because these benefits are more difficult to quantify.

Here's an Idea

Evaluating Cost Effectiveness

The Partnership for Water Conservation has a free "Water Conservation Measures List and Measure Evaluation Tool" for its members. This tool helps you choose cost-effective measures and estimate water savings.

You can find more information at the [Saving Water Partnership website](#).

Credible Cost-Effective Evaluation

A cost-effective analysis is used to compare WUE measures on a dollar value basis. Identifying the benefits and costs associated with each WUE measure will help you determine which measures should be implemented to meet your goal. A WUE measure is cost-effective if the benefits exceed the cost.

A simple way to do this is to look at the difference between the per gallon cost of conservation and the per gallon cost of supply.

A credible evaluation of each measure should consider:

1. **Cost of the measure.**

- ◆ Materials.
- ◆ Rebates.
- ◆ Contractor costs.
- ◆ Labor.
- ◆ Staffing.

- ◆ Advertising.
- 2. **Estimate of savings.**
 - ◆ Number of units to be installed.
 - ◆ Water savings per unit.
- 3. **Cost benefit comparison.**
- 4. **Net benefit of conservation.**

More information is available in the [U.S. Environmental Protection Agency's Water Conservation Plan Guidelines](#).

About WaterSense

WaterSense is a program sponsored by the U.S. Environmental Protection Agency (EPA). Much like the ENERGY STAR symbol for energy-efficient products and practices, WaterSense is the symbol for water efficient products, services, and practices.

WaterSense helps your customers identify products that meet EPA's criteria for water efficiency and performance. WaterSense labeled products, such as washing machines, faucets, and showerheads, use 20 percent less water than standard products. Best of all, they work without sacrificing performance! The WaterSense labeled water-saving products of today are tested to ensure water efficiency **and** performance. Look for WaterSense labeled products and start saving water today!

Why You Should Join WaterSense

First, it's free! Second, it's very likely that your customers aren't aware that purchasing WaterSense certified fixtures and appliances are guaranteed to save them water. Third, it's an easy way to help you achieve your Water Use Efficiency (WUE) goals.

Remember, the WUE rule says that you **must** educate your customers. As a Water Sense partner, you'll receive a free educational tool kit available only to partners to help you inform your customers about the WaterSense program. Use these free resources to meet the WUE educational requirement!

How to Become a WaterSense Partner

Visit [EPA's Water Conservation Plan Guidelines](#) for more information about becoming a WaterSense partner and instructions for joining.

5.7 What Qualifies as a Water Use Efficiency Measure

A WUE program **must** include both supply and demand efficiency measures. Certain measures **must** be implemented while others may be evaluated. Measures may include water efficient devices, actions, business practices, or policies or ordinances that promote efficient water use.

Supply-side measures (such as leak detection surveys, installing or replacing meters, and water audits) that support supply-side goals to reduce leaks don't count towards the minimum

number of measures listed in [Table 5-1](#). These are considered activities that your water system implements to understand and control water loss.

The measures you evaluate or implement **must** focus on encouraging your customers to use water efficiently. The following mandatory measures don't count towards the minimum number of measures listed in [Table 5-1](#).

You **must** implement the following WUE actions, which cannot count towards the required number of measures.

- ◆ Install production (source) meters—[WAC 246-290-496\(1\)](#).
- ◆ Install consumption (service) meters—[WAC 246-290-496\(2\)](#).
- ◆ Perform meter calibration—[WAC 246-290-496\(3\)](#).
- ◆ Implement a water loss control action plan to control leakage—[WAC 246-290-820\(4\)](#).
- ◆ Educate customers about how they can use water efficiently at least once per year (see more about education on the next page)—[WAC 246-290-810\(4\)\(f\)](#).

You **must** evaluate the following WUE measures.

- ◆ Evaluate rates that encourage water demand efficiency ([WAC 246-290-100\(4\)\(j\)\(iv\)](#) and [246-290-105\(4\)\(l\)](#)). See [Section 5.4](#) for more information.
- ◆ For water systems with 1,000 or more connections, evaluate reclamation opportunities ([WAC 246-290-100\(4\)\(f\)\(vii\)](#)). See [Section 5.5](#) for more information.
- ◆ Implement or evaluate demand-side measures. Refer to [Table 5-1](#) for number of measures required. Only these measures count towards the required number.

Does Your Existing WUE Program Already Meet the Minimum Number of Measures?

Many activities from your current WUE program may already qualify as implemented measures. Here are a few that you may currently be implementing that would count towards the minimum number of measures listed in [Table 5-1](#).

Conservation Rate Structures

You **must** evaluate a rate structure to increase water demand efficiency ([WAC 246-290-100\(4\)\(j\)\(iv\)](#) and [246-290-105\(4\)\(l\)](#)). Because these sections only require an evaluation, implementing a conservation rate structure counts as a WUE measure ([WAC 246-290-810\(4\)\(d\)](#)). See [Section 5.4](#) for additional information.

Reclaimed Water

Water systems with 1,000 or more connections **must** evaluate reclamation opportunities ([WAC 246-290-100\(4\)\(f\)\(vii\)](#)). Because this section only requires an evaluation the actual use of reclaimed water counts as a WUE measure ([WAC 246-290-810\(4\)\(d\)](#)). The use of reclaimed water is considered a WUE measure or multiple WUE measures if you use it for multiple purposes. See [Section 5.5](#) for additional information about reclaimed water.

Notifying Customers About Leaks on Their Property

Educating your customers about fixing the leaks within their homes or on their property counts as a WUE measure ([WAC 246-290-810\(4\)\(d\)](#)). Also a program that notifies customers of unusually high water bills that may be due to a leak on the customer side of the meter counts as a WUE measure.

Educating Your Customers

You **must** educate your customers about the importance of using water efficiently. This may include communicating this message through a newsletter, customers' bills, or your annual consumer confidence report ([WAC 246-290-810\(4\)\(f\)](#)). This would include educational measures such as school programs, advertising (such as bus ads), or consumer education at fairs.

Education should focus on informing your customers about hardware measures that are guaranteed water savers. Hardware measures (such as telling your customers to look for the WaterSense label) are those that can be easily quantifiable and rely less on behavior changes (such as turning off the faucet when brushing teeth).

The more often you educate your customers the more likely you will change their behavior about using water efficiently. Whenever possible reward your customers for their efforts to use less water. Help them understand they are part of the solution. When educating your customers, explain to them:

- ◆ Why water conservation is necessary (such as protecting future water supplies).
- ◆ The financial benefits of conserving water (such as how it might save them money on their utility bills).
- ◆ What might happen if water is not conserved (such as mandatory restrictions during a drought).
- ◆ What your customers can do to help you achieve your goal (such as providing tips on how to save water and what types of water saving devices achieve long-term savings).

Customer Class

If a specific WUE measure is being implemented for different customer classes, it may count as up to three WUE measures. For example, toilet rebates across three customer classes (single family, commercial, and multifamily) count as a measure for each customer class, totaling three implemented measures.

For more examples of WUE measures, see [Appendix B](#).

5.8 Water Use Efficiency Programs for Nonmunicipal Water Suppliers

While most Group A community water systems are considered municipal water suppliers, and some noncommunity systems are considered municipal water suppliers; most noncommunity water systems aren't municipal water suppliers. It is in the best interest of all water systems to use water resources wisely.

Even if you don't qualify as a municipal water supplier, you are still required to have a basic WUE program within your planning document ([WAC 246-290-100\(4\)\(f\)\(i\)](#) and [246-290-105\(4\)\(g\)](#)).

See [Appendix U](#) for an example of what to include in your WUE program if you are a nonmunicipal water supplier. The requirements are different depending on whether you **must** prepare a small water system management program or water system plan.

Did You Know?

Estimated Faucet Leakage Rates (number of drips)

60 drops/minute = 192 gallons/month

90 drops/minute = 310 gallons/month

120 drops/minute = 429 gallons/month

Chapter 6: Distribution System Leakage

6.1 The Distribution System Leakage Requirement

The distribution system leakage (DSL) standard is a significant element of the water use efficiency (WUE) requirements. Collecting source and service meter data is the best way to obtain accurate water loss information and provides the most accurate information to calculate DSL.

Leaky water systems are costly. Significant revenue is lost through leaks, including:

- Energy costs for pumping water.
- Water treatment costs.
- Water that could be sold to other customers.

Water is a precious and limited resource. You should make every effort to keep leakage to a minimum and strive to meet the DSL standard. Compliance with the leakage standard is based on a running three-year average.

In order to calculate DSL, you **must** first install service meters on all existing and new direct service connections ([WAC 246-290-496\(2\)\(c\)](#)). Until all connections are metered, report your progress towards installing meters and all actions taken to minimize leakage in your annual WUE report (see [Section 2.6](#)).

6.2 Water Loss Terminology

Water systems have been using the term “unaccounted-for water” for many years, yet the term does not have a standardized definition. All water should be accounted for, and nothing should be unaccounted for.

The WUE requirements use the terms “authorized consumption” and “distribution system leakage.” In order to account for water loss. All water that enters the distribution system **must** go into the authorized consumption or DSL category.

Authorized Consumption

Authorized consumption is defined as the volume of water authorized for use by the water system. All unauthorized uses and any water that cannot be tracked is considered DSL ([WAC 246-290-820\(2\)\(c\)](#)).

If authorized uses are tracked and estimated these volumes of water can be added into the authorized consumption category.

You cannot estimate consumption by unmetered customers/connections to the water system. Even if these are authorized uses, they **must** be counted as DSL until a meter is installed.

Some examples of unmetered authorized uses that can be tracked and estimated include:

- Maintenance flushing of the water system.
- Fire-fighting (hydrant).
- Cleaning water tanks or reservoirs.
- Street cleaning.

Distribution System Leakage

DSL is defined as the water lost from the distribution system and includes both apparent losses and real losses. Apparent losses include things such as theft, meter inaccuracies, and data collection errors. Real losses are the actual physical losses of water from the distribution system and include such things as reservoir overflows, leaky valves, and water main breaks. Neither apparent nor real losses are authorized uses of water, therefore they are considered leakage even if they are not actual “leaks.”

Transmission Line Leakage

Some water systems have extensive transmission lines. You may exclude transmission line losses from the DSL calculation when there is a production meter located upstream of the entry to the distribution system ([WAC 246-290-820\(2\)\(b\)](#) and [246-290-496\(1\)\(a\)](#)). If an additional production meter is not installed upstream of the distribution system the entire transmission line losses are considered DSL ([WAC 246-290-820\(2\)\(c\)](#)).

If you are excluding transmission line leakage from DSL you **must** describe transmission line leakage and the efforts taken to minimize leakage in your planning document ([WAC 246-290-810\(4\)\(i\)\(iii\)](#)). This does not replace any source meter requirements or waste of water requirements adopted by DOH or Department of Ecology.

6.3 Calculating Distribution System Leakage

Annual DSL is calculated in both percentage and volume ([WAC 246-290-820\(1\)\(a\)\(i\)](#)). At a minimum, collect the amount of water:

- ◆ Produced from the source(s).
- ◆ Purchased from another supplier.
- ◆ Consumed by your metered customers and any other estimated authorized use.

Below are the equations used for calculating the volume and percent DSL.

Note: When submitting your annual WUE report online, you don't need to calculate DSL, the database does it for you.

Calculating Volume DSL

To calculate volume DSL, use the following equation.

$$\text{Volume DSL} = \text{TP} - \text{AC}$$

Report volume DSL in gallons

Calculating Percent DSL

To calculate percent DSL, use the following equation.

$$\text{Percent DSL} = ((\text{TP} - \text{AC}) / (\text{TP})) \times 100$$

Where

DSL = Percent (%) of Distribution System Leakage

TP = Total water Produced and Purchased

AC = Authorized Consumption

Round your percentage to the nearest tenth.

Use [Appendix D](#) and the following three guidelines to help you determine your TP and AC for the year.

1. Add up the amount of water produced from all sources and any water purchased from other water systems.
 - a. Most water systems use source meters for determining water produced.
 - b. Water systems excluding transmission lines use the production meter located prior to the distribution system.
 - c. Other water systems only use the amount of water purchased through an intertie, if this is the only source of water.
 - d. Complex water systems may use all of the above.

This is your total production and purchased (TP).

2. Add up the following categories to determine authorized consumption:
 - a. Amount of water delivered to customers, measured by service meters.
 - b. Amount of water sold to another water system.
 - c. Estimated authorized consumption (for example, fire flow and flushing of water mains). When calculating DSL you may subtract unmetered or unbilled authorized use from your TP if these events are tracked and estimated. Events not tracked are considered DSL.

This is your authorized consumption (AC).

3. Calculate volume and percent DSL.

Table 6-1 shows how data might be used to calculate DSL. Your water system may have different data to include or exclude in your DSL calculation.

Table 6-1: Water System Distribution System Leakage Calculation Example

Add up the amount of water produced from all sources	5,000 MG
Add any water purchased from other water suppliers	500 MG
Total Production and Purchased (TP)	5,500 MG
Add up the annual amount of water delivered to customers from your service meters	4,300 MG
Add any water sold to another water system	0 MG
Add all estimated authorized uses (fire flow, flushing of mains, and other authorized uses)	
Flushing	3 MG
Fire flow	1 MG
Total Authorized Consumption (AC)	4,304 MG
Volume DSL = $5500 - 4304 = 1,196,000,000$ gallons ²	
Percent DSL = $(5500 - 4304) / 5500 \times 100 = 21.7\%$ ³	

² Report volume DSL in gallons.

³ When calculating percent DSL, round up or down to the nearest tenth.

6.4 Alternative Methods to Calculating Distribution System Leakage

WUE requirements allow alternative methodologies for calculating DSL. The alternative methodology allows you to use a different formula for calculating DSL, one that we **must** approve of, but it does not replace metering requirements. Once approved, the alternative methodology can be used statewide. At this time, there are no department-approved alternative methods to evaluate DSL, so use the formula provided in [WAC 246-290-820\(2\)](#).

Any alternative methodology **must** be ([WAC 246-290-820\(3\)](#)):

1. Approved by the Department of Health.
2. Published as a standard or specification by one of the following agencies.
 - Environmental Protection Agency.
 - American Water Works Association.
 - American Public Works Association.
 - American Society of Civil Engineers.
 - Department of Health.
3. Contain numerical standards so that compliance with the DSL standard can be determined.

Even if you are exempt from installing service meters (see [Chapter 2](#)), you are not exempt from meeting the DSL standard. An accepted way to determine leakage in the absence of service meters is by conducting night flow testing. Measuring the amount of water used between the hours of 2:00 a.m. and 4:00 a.m. is a good indicator of the extent of your water loss.

6.5 Distribution System Leakage Standard Compliance

In order to reduce leakage within your distribution system we expect you to troubleshoot where your apparent losses are occurring (such as inaccurate meters) and make efforts to find and repair leaks (such as conducting a leak detection survey). DSL is calculated using a rolling three-year average⁴ from the previous three years. When calculating percent DSL round up or down to the nearest tenth of a percent.

There are four ways to comply with the DSL standard.

Here's an Idea

Water audits are one of the most useful tools to determine your water loss. The Water Loss Control Committee of the American Water Works Association created free water audit software to standardize the auditing process and provide you with a user-friendly tool to conduct a standard water audit.

Once you understand where your losses are coming from through completion of a water audit, you can focus your efforts on reducing leakage to obtain real and meaningful water savings.

Visit AWWA's website to [download the free water audit software](#).

Two good references for controlling water loss.

- *Water Loss Control-Second Edition*, Thornton, Sturm, and Kunkel, McGraw Hill Company, 2008.
- AWWA's M36 Manual-Fifth Edition, 2020.

⁴ For example, after the third year of reporting leakage, you will take the average of years 1 through 3. In year 4, average leakage is based on years 2 through 4, and so on.

1. Ten percent or less DSL ([WAC 246-290-820\(1\)\(b\)\(i\)](#)).

WUE requirements establish a 10 percent or less DSL standard based on a three-year rolling average. If your water system meets this standard you are in compliance.

2. Alternative methodology ([WAC 246-290-820\(1\)\(b\)\(ii\)](#) and [246-290-820\(3\)](#)).

Water systems that use an alternative methodology to calculate leakage must meet the numerical standard established for that alternative methodology. We will develop compliance and action levels to determine whether a water system is in compliance.

3. Twenty percent or less for water systems with less than 500 connections ([WAC 246-290-820\(1\)\(b\)\(iii\)](#) and [246-290-820\(5\)](#)).

Water systems with less than 500 connections are allowed up to 20 percent DSL only if they specifically request the higher level of leakage and submit the following evidence to the department.

- Production volume.
- DSL volume.
- A leak detection survey has been completed in the most recent plan approval period for water system plans and in the last six years for small water system management programs.
- All leaks found have been repaired.
- Unable to find more leaks in the water system.
- Efforts to minimize leakage are part of the WUE program.
- Justification of the technical, economical, or water system characteristics for the higher level of leakage.

4. Water loss control action plan ([WAC 246-290-820\(1\)\(b\)\(iv\)](#) and [246-290-820\(4\)](#))

If your water system exceeds the DSL standard you **must** develop and implement a water loss control action plan (see [Section 6.7](#)).

6.6 Reducing Leakage

You comply with the DSL standard if you develop and implement a water loss control action plan. Depending on the amount of leakage you may need to take aggressive action to get it under control.

For water systems greater than 10 percent and less than 20 percent DSL ([WAC 246-290-820\(4\)\(e\)](#)), you **must**:

1. Assess data accuracy.
2. Assess data collection methods and errors.

For water systems between 20-29 percent DSL ([WAC 246-290-820\(4\)\(f\)](#)), within 12 months you **must**:

3. Complete 1 and 2 above.
4. Implement field activities within 12 months of determining the leakage.

For water systems with 30 percent or greater DSL ([WAC 246-290-820\(4\)\(g\)](#)), within six months you **must**:

5. Complete steps 1, 2, and 4 above.
6. Implement additional water loss control methods within six months of determining leakage.

Water Loss Control Methods

Water loss control methods are the activities your water system implements to reduce leakage in the distribution system. The following list of water loss control methods can help you lower DSL.

- ◆ Conduct a water audit (we recommend you use the IWA Water Audit described in the next section).
- ◆ Conduct a leak detection survey.
- ◆ Repair leaky storage tanks.
- ◆ Calibrate or replace meters.
- ◆ Synchronize production and consumption meter reading schedules.
- ◆ Develop a schedule and budget for replacing old distribution lines.
- ◆ Control theft of water.

Implementing water loss control methods helps you achieve the DSL standard and identify actions you can take to reduce wasted water. Once losses are controlled you will benefit from lower operating costs, lower energy bills, and increased safety and reliability in providing water to your customers.

6.7 Water Loss Control Action Plan: What to Include and How to Submit

If your DSL exceeds the standard, you **must** submit a water loss control action plan within your planning document and when requested by us ([WAC 246-290-820\(4\)](#)). We also recommend that you summarize your water loss efforts within your annual WUE report.

At a minimum include the following in your water loss control action plan.

- ◆ Water loss control methods you will implement to strive for the DSL standard, such as leak detection, meter replacement, or perform a water audit.
- ◆ An estimate of how long it will take you to achieve the standard. You may want to establish a goal to identify a benchmark.
- ◆ A budget that demonstrates how you will pay for controlling leakage. Consider a rate increase to apply for loans and grants, or any other means to pay for infrastructure improvements.
- ◆ Any technical or economic concerns that might prevent you from complying with the standard. If you conclude that you cannot meet the DSL standard you **must** explain what factors are keeping you from complying. To be credible, you will need to make a strong case.

Complying with the DSL Standard by Completing the International Water Association Water Audit

AWWA has published their M36 Manual that adopted the International Water Association (IWA) water audit methodology to evaluate water loss. Completing the IWA water audit is the best action you can take to demonstrate compliance with the DSL standard. It's an appropriate way to show that you understand what to do to control water losses and it meets the intent of the WUE rule. This new water audit method is, in our opinion, the best currently available option for you to evaluate water loss.

Meter Inaccuracies are Considered in the IWA Water Audit

If you're concerned about meter inaccuracies, the IWA water audit method recognizes and allows for customer meter inaccuracies across the entire distribution system when evaluating water loss. This addresses any concerns some water utilities may have regarding upsizing meters to meet residential fire sprinkler flow requirements.

How to Demonstrate Compliance

You can prove that you are serious about reducing DSL within your water system by completing the IWA water audit. Upon completing the audit, you will receive a score that identifies focus areas for you to plan for and implement in order to reduce water losses. Use the planning tool to establish timeframes and benchmarks for achieving water loss reductions.

You will be in compliance with the DSL standard, regardless of your level of DSL, if you use the results of your IWA water audit as part of your water loss control action plan.

Follow the step-by-step process below to complete the IWA water audit and include it in your water loss-control action plan.

1. Collect annual total production and authorized consumption as you normally do each year.
2. Enter that information in the online reporting database.
3. If your calculated three-year average DSL is over 10 percent then you **must** complete a WLCAP.
4. You have **the option of** completing the IWA water audit within your WLCAP to demonstrate compliance with the DSL standard.

The WLCAP **must** include:

- ◆ A completed IWA water audit.
- ◆ Water loss control methods you will implement to achieve the DSL standard.
- ◆ An estimate of how long it will take you to achieve the standard.
- ◆ A budget that demonstrates how you will pay for controlling leakage.
- ◆ Identify actions and benchmarks to achieve water loss reductions as a result of completing the IWA water audit.
- ◆ Implement the recommended "functional focus areas" within the "water loss control planning guide" of the IWA water audit based on your individual water audit data validity score.
- ◆ Establish a supply-side goal, including a timeframe, to achieve an infrastructure leakage index (ILI) of 3.0 or lower.
- ◆ Implement water loss control activities that strive to achieve an ILI of 3.0 or lower.

- ◆ Include a copy of the IWA water audit results within the WUE Program of a water system plan **or** small water system management program **or** to the department upon request.

AWWA's M36 Manual Overview

- ◆ Clear steps to compile the IWA water audit.
- ◆ Rational terms, definitions, and performance indicators that give water utilities objective ways to assess their water loss and reliably plan loss control activities.
- ◆ Worksheets, sample calculations, and references to AWWA's free water audit software.
- ◆ Techniques to capture more revenue by controlling apparent losses in customer metering and billing operations, as well as unauthorized consumption.
- ◆ Innovative technologies to move from reactive, "break and fix" leakage response to proactive leakage management featuring component analysis, pressure management, leak noise logging and other advanced technologies: successful approaches to minimize unnecessary source water withdrawals and excessive water production costs.
- ◆ Structured guidance on planning the loss control program.
- ◆ Considerations for small water utilities.
- ◆ Case study accounts from small, medium, and large water utilities.
- ◆ [Visit the AWWA Water Loss Control website](#) to learn more about the IWA water audit method.

Chapter 7: Goal Setting and the Public Forum

7.1 Goal Setting Requirement

One of the most important steps in using water efficiently is setting measurable goals. Goals provide a benchmark for achievement and play a significant role in defining the success of your WUE program. Whenever you are setting a new WUE goal for your WUE program, you **must** set it through a public process ([WAC 246-290-830\(4\)\(a\)](#)).

7.2 Goal Setting Considerations

Design your goals to encourage customers to use water more efficiently. Understand your water supply characteristics, infrastructure improvements, and future needs before establishing goals.

Each goal **must** identify measurable water savings you will achieve at a specific time in the future. See [Appendix I](#) for examples of goals that meet the regulatory requirements.

You **must** consider the following information and make it available to the public prior to the goal setting public forum⁵ ([WAC 246-290-830\(4\)\(d\)](#)).

1. Your existing WUE program (see [Chapter 5](#) and [WAC 246-290-810\(4\)](#)).
 - ◆ Water saved as a result of implementing WUE measures over the last six or more years.
 - ◆ Current goals.
 - ◆ WUE measures currently implemented.
 - ◆ WUE measures that have been evaluated.
 - ◆ How you are educating your customers (see [Section 5.7](#)).
 - ◆ A projection of how much water you can save by implementing your chosen WUE measures.
 - ◆ How you will evaluate your WUE program.
 - ◆ Distribution leakage information.
 - ◆ The water loss control action plan, if required (see [Section 6.7](#)).
2. Any previous annual WUE reports (see [Chapter 8](#)).
3. Water supply characteristics information (see [Chapter 3](#) and [Appendix C](#)).
4. Water demand forecasts information (see [Chapter 4](#)).
5. Summary of any comments received about the proposed goal and how you considered these comments prior to formally establishing the goal.

⁵ In order to make the information easily accessible by the public, the information should be available directly from the water system (place it on your website, if you have one). You might also consider sending a copy of the information to your local library.

Process for Establishing a Goal

When getting ready to propose a goal there are a few key things to think about in order to move the process along smoothly (see [Appendices H, I, and O](#) for more on goal setting). Examples for each step are provided to help you start developing your own goal setting strategy.

- ◆ Define your objective for proposing the goal based on the information listed above.
Example: Reducing per capita consumption will help us provide better service, save money, and may allow us to add more connections for future growth.
- ◆ Propose measurable water saving goals that will support your objective.
Example: Demand Side Goal—Reduce our annual consumption per residential connection by 3 percent over a ten-year period.
- ◆ Establish a timeframe for achieving the proposed goals.
Example: Our demand forecast shows a need for new connections within ten years therefore, we have established a ten-year timeframe to achieve our goals.
- ◆ Determine the cost effective WUE measures to support the goal.
Example: Faucet aerators, conservation rate structures, and educational outreach at the county fair are the cost-effective measures that will help support our goal.
- ◆ Determine funding source for the WUE measures to achieve the goal.
Example: We will switch from a flat rate structure to an inclining block rate structure for water use.
- ◆ Make information available to the public at least two weeks before your public forum.
Example: An information packet is available for viewing at our billing office and local library.
- ◆ Provide public notice two weeks prior to goal setting public forum.
Example: Public notice is posted on our [WUE Forum Information webpage](#), the local library, published in the local newspaper, and on the utility's website.
- ◆ Hold a public forum and consider public comments.
Example: Public forum held at the town meeting hall; all public comments recorded.
- ◆ Establish goals.
Example: After considering public comments, our elected governing board establishes the proposed goal and will make slight water rate increases every year over the next ten years.

7.3 Goal Setting Authority

Goals **must** be established by the governing board or the governing body of the water system ([WAC 246-290-830\(1\)](#)). The elected governing board or the governing body has the flexibility to establish its own goal to achieve its objective.

A governing body is “the individual or group of individuals with ultimate legal responsibility for operational, technical, managerial, and financial decisions for a public water system,” ([WAC 246-290-010](#)). Examples include the homeowners association board or the proprietors of an investor-owner utility.⁶

An elected governing board is also defined in [WAC 246-290-010](#) as “the elected officers with ultimate legal responsibility for operational, technical, managerial, and financial decisions for a public water system.” Examples include your city council, board of county commissioners, or elected water board.

7.4 Regional Program Goals

You may find regional goals established for a particular area will best meet your needs. If a regional goal is proposed, your governing board or elected governing body **must** formally establish this regional program goal as your own goal through your own public process ([WAC 246-290-830\(4\)](#)).

When completing your WUE report, describe the progress made towards achieving the regional goal. You should also document the specific measures you are implementing for your water system that help achieve the regional goal.

7.5 Goal Setting for Customers and Your Water System

You have the flexibility to determine a goal that makes sense for your customers and set as many goals as necessary. You may consider setting two types of goals: One that reflects supply-side efficiencies, and one that reflects demand-side efficiencies. At a minimum, you **must** establish one goal through a public process designed to help your customers use water efficiently.

Changing Your WUE Measures to Achieve the Goal

If you are not achieving your goals consider implementing different WUE measures.

Setting an Attainable Goal

Every water system will have different reasons for setting a goal for their water system. We encourage you to adopt the most water use-efficient goal possible. Every goal is specific to each water system and may involve different motivating factors such as water supply characteristics, infrastructure upgrade needs, social pressures, reducing irrigation demands, or the need to obtain additional connections to meet future supply.

⁶ Private systems not organized under an elected governing board **must** set WUE goals in a manner that allows customers the same opportunities to provide input, such as during an annual meeting.

The first step in exploring what type of goal to set for your water system begins with stating a clear objective. It is important to relate the goals back to the unique needs and limitations of your water system. Make it real for your customers so that the goals address the needs of the water system, and the measures support your goals. Starting with a clear objective will lead to development of an attainable goal.

Imagine the Savings!

One of the most difficult things to do when establishing a goal is to accurately predict the water savings. If you only adopt non-hardware measures like education and outreach instead of low-flow toilets or WaterSense products to achieve your goal you will have a difficult time quantifying the savings. Consider adopting at least one hardware measure to give you a better idea about how much water might be saved by installing these low-flow fixtures.

Some water systems establish a conservative goal with a 1 to 3 percent savings per year for a ten-year period, or within the plan approval period if it's less than ten years. If you're having a difficult time quantifying the savings you may want to go with a conservative goal like that for now and see how you do. Remember that if you don't achieve your goal you need to adjust your WUE program, which may mean implementing different measures or establishing a new goal entirely.

Example of a 1 percent reduction target goal: "Reduce per capita consumption, currently 95 gallons per person per day, by 1 percent annually, so that by 2027 we have reduced consumption to 85.5 gallons per person per day."

Assuming you were to establish a 1 percent savings annually over a ten-year period, you might achieve a 10 percent reduction in per capita use/connection over today's consumption levels (let's assume that's 95 gallons per person per day). At the end of that ten-year period you'll need to re-establish a new goal.

Now imagine this: if you were to establish the same 1 percent reduction goal over the next ten years it would then turn into a 20 percent reduction over today's consumption. A 1 percent WUE goal might not sound like much, but over 20 years that might reduce per capita consumption from 95 gallons per person per day to 76 gallons per person per day, and that's excellent progress!

Here are a few driving factors that may lead you to a specific goal.

1. **Meet regulatory requirements.** You may choose to implement or evaluate the required minimum number of measures and choose low-cost measures, within a reasonable budget.
2. **Demonstrate stewardship.** You may choose to implement more measures than the minimum required, within a reasonable budget level, or implement the minimum number of measures at a higher implementation intensity.
3. **Decrease operating costs.** You may choose to implement any conservation that is more cost-effective than the variable cost of supplying water.
4. **Defer or avoid capital costs.** You may choose to implement the amount of conservation necessary to obtain the savings necessary to defer or avoid capital costs.
5. **Obtain additional water supply** (traditional supply available). You may choose to implement any conservation that is more cost-effective than the cost of developing new traditional supply.
6. **Obtain additional water supply** (traditional supply not available). You may choose to implement all measures necessary (chosen in order of cost-effectiveness) to obtain the amount of supply needed.

Are You Only Using Education to Achieve the Goal?

Educating your customers is a good way to get them involved in your water saving efforts and you are required to educate your customers at least once per year (see [Section 5.7](#)). The actual amount of water savings achieved from educational programs is difficult to measure. You may find that the ability to achieve your goal is hindered if you rely entirely on educational tools. Without frequent reminders some customers might slip back into their old habits.

As a practical matter, if you do not achieve your WUE goal using only educational measures, you **must** choose to take some action other than education when you update your WUE program.

Stressed Water Supplies are a Great Reason to Focus Your Goals on WUE Efforts

When competition for water increases and factors like drought place a strain on water supplies, it's time to revisit your WUE program and goals. During times like these, board members and customers are likely to support a more aggressive approach to saving water.

When you adopted your WUE goals did you look at your existing WUE/conservation program and decide to keep doing what you've always done? If so, ask yourself this:

- 💧 Did we establish a meaningful WUE goal, or was our response more of an exercise to meet the state's goal setting requirements and deadlines?
- 💧 Is there more we could do to save water?
- 💧 What could we do to encourage customers to do more?

Take this opportunity to evaluate your existing WUE program and consider setting short-term goals that could help your system get through a drought or shortage. And how about setting a more aggressive water-saving goal for the long-term? Remember, you can establish as many WUE goals as you want to. Achieving goals that are more aggressive will take more than sending annual conservation tips to your customers. Consider implementing efficiency measures that really save water, such as setting up a rebate program to help customers replace old, inefficient showerheads and toilets with WaterSense-labeled ones.

Setting a Goal That Meets Our Requirements

Goals **must** be measurable and have a timeframe. You **must** establish a measurable goal that maintains or reduces water use ([WAC 246-290-830\(6\)\(b\)](#)). For example, express your goals in terms of water produced from the source, customer usage, or other measurable basis.

See [Appendix I](#) for examples of goals that meet the regulatory requirements.

Setting a Goal to Maintain Historic Use

After reviewing the information, if you determine no further reduction is reasonably achievable you may propose a goal that maintains water consumption levels. Before assuming that you cannot achieve further reductions in water use ask yourself these questions:

1. Have we looked at all the possible conservation measures?
2. Are there cost-effective measures I may not know about?
3. Have I surveyed my customers to find out which measures they might consider trying?
4. Does my budget support additional measures?

We recommend against maintaining a historic consumption level. Instead think about how you might be able to narrow your focus in different areas. Consider establishing a goal for:

- ◆ **A particular customer class** (such as industrial/commercial).
For example: "Reduce consumption by 10 percent for our industrial and commercial customers by the year 2030."
- ◆ **Seasonal consumption**; one that may reduce seasonal outdoor water use.
For example: "Reduce the amount of water pumped by 5 percent in July and August, each year through 2030."
- ◆ **Your customers that use the most water**.
For example: "Reduce average monthly seasonal consumption by 15 percent for our top 10 percent highest water users by 2032."

If you end up establishing a goal to maintain a historic level you **must** explain why you are unable to reduce water use below that level ([WAC 246-290-830\(3\)](#)). Reasonable justification **must** be included in your annual WUE report and planning document ([WAC 246-290-830\(3\)](#)).

How Do I Establish Goals If I Don't Have Customer Meters?

You probably already **must** have a source meter, if you do not, you **must** install one immediately. Since goals **must** have a water savings target and timeframe/benchmark for achieving that target, then your source meter is your only option to establish a WUE goal if you don't have customer meters.

For example, your goal could be, "Reduce the amount of water pumped from our source well by 2 percent each year through 2027 during the months of July and August."

7.6 Setting Goals Through a Public Forum

Goals **must** be evaluated and re-established when either of the following occur:

- ◆ Every six years, if you are required to develop a small water system management program.
- ◆ As part of any water system plan submitted to the Department of Health for approval.

Evaluation and re-establishment of goals **must** follow the same public process and goal criteria used to establish the original goals.

Changes to goals are allowed at any time ([WAC 246-290-830\(8\)](#)). If you want to change your established goals, you **must**:

- ◆ Modify the goal by following the same public process and goal setting criteria used to establish previous goals.
- ◆ Identify the change to the goal in your next annual WUE report and planning document ([WAC 246-290-830\(8\)](#)).
- ◆ Make necessary changes to your WUE program to achieve the modified goal ([WAC 246-290-830\(9\)](#)).

Setting the Stage for a Public Forum

You **must** engage your customers and interested members of the public in a public forum (meeting) when establishing your WUE goals ([WAC 246-290-830\(4\)\(a\)](#)). This meeting has many benefits. It ensures your customers, and the public, can provide input on the decisions made by the governing body. It also helps the public understand the need to use water more efficiently and teaches them how they can help you achieve your goals.

Identifying Your Target Audience

You should look at three distinct groups of attendees.

- ◆ Your water system's customers.
- ◆ Local community members.
- ◆ Special interest groups such as the environmental community, local tribes, and watershed planning units.

Public Notice Requirements

You **must** provide notice at least two weeks in advance of the meeting ([WAC 246-290-830\(4\)\(b\)](#)). Posting your public notice on the Office of Drinking Water's [WUE Public Forum Information](#) webpage is one free way of getting the message out. If your customers would not consider visiting our website then use other methods of notification.

The notice **must** include the following information.

- ◆ Purpose of the meeting.
- ◆ Date, time and location of the meeting (include a map, if needed).
- ◆ Where your audience can find additional information supporting your proposed goal.

If public notice requirements in [WAC 246-290-830\(4\)\(b\)](#) are met, you may use an existing public meeting already scheduled, such as a city council meeting. Otherwise, you will need to arrange a special goal setting meeting.

Ways to Provide Public Notice

You can provide public notice in several different ways, as long as it is provided at least two weeks in advance of the meeting. Base the method of communication you choose on the audience you are trying to reach. A combination of the following examples may be needed to make sure your target audience is aware of the public forum.

- ◆ Develop a bill stuffer to include in customers' billing statement.
- ◆ Send direct mailings to customers and interested parties.
- ◆ Contact your customers and interested parties by phone or email.
- ◆ Put up neighborhood posters.

Key Message to Use When Setting Goals

When the public, your customers, or the board members ask, "Why are we here?" think of some key messages that they might relate to, such as:

1. Using water efficiently will save you and your customers money!
2. You value the water supply (both quantity and quality).
3. You are doing your part to ensure water is available during drought, extreme weather, and for future generations.
4. Point out the importance of relating the goals back to the unique needs and limitations of your water system.
5. Make it real for your customers so that the goals address the needs of the water system, and the measures support your goals.

- ◆ Include the public notice in your newsletter.
- ◆ Put posters in windows of local businesses.
- ◆ Run a public notice as an advertisement in your local newspaper or community shoppers' guide.
- ◆ Publish in bulletins put out by churches or civic organizations.
- ◆ Publish on your website.
- ◆ Distribute a news release to local print media, radio, and TV stations.
- ◆ Publish on our [WUE Public Forum Information webpage](#).

Tips for Conducting Effective Public Forums

Be clear about the purpose of the meeting and expected outcomes. In addition to preparing what you want to say, spend time practicing how the content will be delivered. Choose someone in your organization with good communication skills, who is comfortable speaking in public.

At the beginning of the meeting, introduce water system personnel in attendance. Stop frequently, providing attendees with the opportunity to ask questions. Answer their questions as completely as possible in a clear, concise way. Always end the meeting thanking everyone for coming and providing contact information for follow-up comments or questions.

If your regularly scheduled meetings are closed to the public, dedicate the first half hour of the meeting to the public for goal setting, then ask those non-members to leave so that you can conduct your private meeting afterwards.

Remember, successful public forums require preparation, practice, and good communication skills.

Chapter 8: Annual WUE Report

8.1 The Annual WUE Reporting Requirement

One of the best ways to communicate your water use efficiency (WUE) efforts is through your annual WUE report. Your report **must** include information about how much water was pumped from your source(s), how much water was consumed by your customers (authorized consumption), and what progress has been made toward achieving your water savings goals for the year.

Submit your WUE Report by July 1

By July 1 every year WUE reports **must** be submitted to your customers, the Department of Health, and made available to the public.

Electronically Submitting to the Department of Health

When reporting to us you **must** submit your WUE information through our online reporting database. We will not accept mail, email, or fax reports.

Follow These Steps to Submit Your Report

1. [Go to our WUE webpage.](#)
2. Click on the link "Submit Your WUE Report Now."
3. Enter your water system ID number.
4. Complete the form. Refer to section 8.2 below for preparation tips.
5. Review the information for accuracy before you submit.
6. Hit the submit button. YOU'RE DONE!

After you successfully submit your annual report you will receive a confirmation email. Then your report, along with every other WUE Report, will be available to the public online. If you have found errors in your past WUE Report(s), please [contact your regional planner](#) to discuss.

You won't be able to include any other materials (such as the WUE section from your water system plan, pictures, graphs, tables, charts, or examples of educational brochures) in your annual WUE report. Instead, include this type of information on your website or in the annual report to your customers (consumer confidence report).

Submit to Customers

Send the WUE report by email or regular mail to your customers by July 1 every year. Sending your customers the same report you submit to the department may confuse them so consider sending a summarized version in your Consumer Confidence Report or newsletter.

Make Your WUE Report Available to the Public

You are also required to make your annual WUE report available to the public ([WAC 246-290-840\(1\)\(a\)](#)). Some ways you can do this include:

- ◆ Posting it on your website.
- ◆ Distributing it to local libraries.
- ◆ Letting your local media know it is available.

At minimum you **must** provide your annual WUE report to the general public upon request.

Share the Info, Share the Wealth

You can view any submitted WUE Report by clicking on “Search for Completed WUE Reports” from the main WUE website. Take this opportunity to see what neighboring water systems are doing to use water efficiently. See how your WUE goals compare to others in the state. You may even find some water-saving ideas for your own water system. Consider forming partnerships with your neighbors to save money and develop a more effective community outreach program.

8.2 Preparing Your Annual WUE Report

This section contains general information to help you fill out the online annual WUE report. We will make every effort to ensure that you can successfully submit your WUE information by updating the reporting system as necessary. [Look for a reporting worksheet on our WUE Annual Report webpage](#) or in this Guidebook’s [Appendix E](#).

Review this List Before You Submit Your WUE Report

There are several things you'll want to know before you submit your report to us each year. Below is list of general guidelines about what to expect.

General Information

- ◆ Be brief and concise when reporting to us. The online form limits the space you have.
- ◆ Avoid using graphs, tables, special characters, symbols, bold or underline text, and special fonts. The database will see this as a security risk and delete it from your report. Instead include this information on your web site or annual report to customers.
- ◆ Please fill out all fields in the WUE report. Some fields are required and won't allow you to proceed if you leave them blank.
- ◆ Submit your report even if you don't have all the information. By submitting your WUE report to us you can show what progress you have made and meet the annual reporting requirement. Use the extra space provided at the end of the WUE report to explain any data fields you may have left empty.
- ◆ You'll need to know the first five numbers of your water system identification number to get into the reporting system.
- ◆ After thirty (30) minutes of inactivity the system closes automatically. If this occurs, you will lose any information you entered. The system will warn you before it closes so that you have an opportunity to keep working on the report.
- ◆ Use the [WUE Reporting Worksheet 331-767 \(PDF\)](#) to gather information before you submit the report.
- ◆ You will have an opportunity to review the report for accuracy. Once you submit the report you will not be able to re-open it for editing.

Meter Information

- ◆ If your system isn't fully metered, tell us approximately what percentage of the system is metered and when you intend to be fully metered.

Reporting Year Information

- ◆ Select a reporting year from the drop down box. The reporting year is just like a tax year.
- ◆ You may submit information from previous years.
- ◆ Twelve Month WUE Reporting Period: Enter the beginning and ending months that establish your annual data information. For example, if you have determined that May 1 to April 30 is your annual data for the 2024 reporting year, enter 05/01/2023 to 4/30/24.
- ◆ If you don't have a full year's worth of data then explain that in the space provided (for example, maybe your software data collection system crashed).

Production, Consumption, and DSL Information

- ◆ Enter your total metered water use (total production), in gallons, from all sources for the year. This has nothing to do with your water rights. See [Chapter 6](#) for a complete explanation as to what you need to report for total production.
- ◆ Enter your total metered water use (authorized consumption), in gallons, from all of your customers for the year. This has nothing to do with your water rights. See [Chapter 6](#) for a complete explanation as to what you need to report for authorized consumption.
- ◆ After you have entered total production and authorized consumption, the database will automatically calculate DSL volume and percentage for the year.
- ◆ Three-year average DSL percentage will automatically calculate once you submit three years' worth of data. The oldest year will be dropped from the average.

Goal Setting Information

- ◆ Indicate the date that you held your public forum to establish goals.
- ◆ Identify the WUE goal that was established by the elected governing board. Make sure you identify a water savings target and timeframe for achieving the goal.
- ◆ Report all progress you have made in achieving water efficiency for your water system and your customers.
- ◆ Identify any WUE measures you are currently implementing.
- ◆ If you established a goal to maintain a historic level you **must** explain why you are unable to reduce water use below that level.
- ◆ If you are exceeding the DSL standard you **must** briefly explain what you are doing to control water loss by summarizing your water loss control action plan.

Appendices

<u>Appendix A</u>	Integrating Water Use Efficiency Requirements Into Your Planning Documents
<u>Appendix B</u>	Water Use Efficiency Measures
<u>Appendix C</u>	Water Supply Characteristics and Examples
<u>Appendix D</u>	Distribution System Leakage Template, Instructions, and Calculation Example
<u>Appendix E</u>	Water Use Efficiency Annual Reporting Worksheet
<u>Appendix F</u>	Recommended Publications and Websites
<u>Appendix G</u>	Water Volume Conversions
<u>Appendix H</u>	Goal Setting Flowchart
<u>Appendix I</u>	Examples of Customer Goals
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<u>Appendix K</u>	Stop Water Waste – It’s Easier Than You Think!
<u>Appendix L</u>	Indoor Water Conservation and Outdoor Water Conservation
<u>Appendix M</u>	U.S. Environmental Protection Agency’s WaterSense Program
<u>Appendix N</u>	Local Stories of Successful Water Use Efficiency Programs
<u>Appendix O</u>	Setting Goals to Use Water Efficiently
<u>Appendix P</u>	Reduce Leaks: Using Water Audits and Leak Detection Surveys
<u>Appendix Q</u>	Water Conservation Leadership Guide: Issues for Local Officials to Consider and Sprayed Away: Seven Ways to Reduce Texas’ Outdoor Water Use.
<u>Appendix R</u>	Example of a Large Municipal WUE Program
<u>Appendix S</u>	Example of a Small Municipal WUE Program
<u>Appendix T</u>	Example of a Water Loss Control Action Plan
<u>Appendix U</u>	Water Use Efficiency Requirements for Nonmunicipal Water Suppliers

Appendix A: Integrating Water Use Efficiency Requirements into Your Planning Documents

This appendix provides suggestions for incorporating WUE planning requirements with existing plan layouts from the [Water System Planning Guidebook 331-068 \(PDF\)](#) and the [Small Water System Management Program Guide 331-134 \(PDF\)](#). Plan contents **must** be tailored according to individual water system needs, size, and complexity. A number of different layouts are possible, and this is only a suggested approach.

Nonmunicipal water suppliers should consult [Appendix U](#) to determine planning requirements regarding water efficiency.

A pre-plan meeting with [ODW planning staff](#) before writing a planning document will assist you in developing the scope of your WUE program in your planning document. This meeting is an important initial step in the water system planning process.

Contact your [regional planners](#).

[Eastern Regional Office](#)

[Northwest Regional Office](#)

[Southwest Regional Office](#)

Appendix B: Water Use Efficiency Measures

Examples of measures that meet water use efficiency requirements.

Indoor Residential	Outdoor	Industrial/Commercial/ Institutional
<ul style="list-style-type: none"> Customer leak detection education (indoor leak repair) Displays at fairs and events Indoor water audit School outreach 	<ul style="list-style-type: none"> Demonstration garden Drip irrigation Irrigation timers Landscape ordinances Landscape water audit Rain sensors Soil moisture sensors Turf replacement rebate Workshops for landscape professionals Xeriscaping (low-water use landscaping) 	<ul style="list-style-type: none"> Air-cooled refrigeration Commercial pre-wash sprayers Cooling systems retrofit Cooling tower improvements Water use audits (including irrigation systems)

For those systems using SFR and MFR categories, measures in Indoor Residential and Outdoor apply.

These measures can be used in more than one category/customer class.

- Advertising
- Inclining or Seasonal Block Rate
- Flow restricting devices such as: High efficiency shower heads and faucet aerators
- Rebate programs (such as toilets or washing machines)
- School outreach
- Speakers bureau
- Targeted marketing
- Toilet or urinal retrofit
- Using reclaimed, onsite non-potable, or gray water
- Water bill showing consumption history
- Water use ordinances

Appendix C: Water Supply Characteristics and Examples

[Section 3.6](#) explains how to describe your water supply characteristics, for both small water system plans (SWSMP) and larger water system plans (WSP). This appendix helps you describe your water supply characteristics (or source description). Answering the questions below will help you describe the water supply characteristics for your water system.

Additional considerations that may apply to your water supply characteristics.

- ◆ Are there any limitations that may affect your ability to continue to use water from the existing source location or develop future supply from the source?
- ◆ Is the aquifer or surface water body from which you divert or withdraw water able to meet current and future needs?
- ◆ What external, social, economic, and environmental trade-offs result as the need to develop additional water supply occurs?
- ◆ Can you delay developing additional water supply by wiser and more efficient use of the resource or with an intertie to an adjacent system?
- ◆ Is your water delivered to a different watershed than the one it is taken from?
- ◆ Are your sources located in any of the fish-critical basins established by the Department of Ecology? If yes, please name them and describe any impact because of the designation.
- ◆ Have you considered how a drought or climate change impacts your ability to provide water to your customers?
- ◆ What are the historical natural variations? What are the low flow-months for the watershed in which your water source is located? How do these low-flow months compare with your peak demand?
- ◆ What are the water rights? Are they sufficient? Is there a future need to add new supply? Will water right limits be reached in the next 6 years? In the next 20 years? In the next 50 years?

Water Supply Characteristics...

...means the factors related to a public water system's source of water supply that may affect its availability and suitability to provide for short- and long-term needs. Factors include, but are not limited to:

- ◆ Source location,
- ◆ Name of any body of water and water resource inventory area from which water is diverted or withdrawn,
- ◆ Production capacity,
- ◆ The source's natural variability (quantity and quality),
- ◆ The system's water rights for the source, and other legal demands on the source such as water rights for other uses,
- ◆ Conditions established to protect species listed under the [Endangered Species Act of 1973, as Amended Through the 108th Congress \(2006\)](#);
- ◆ Instream flow restrictions established under [Title 173 WAC](#),
- ◆ Any conditions established by watershed plans approved under chapter [90.82 RCW](#) and [RCW 90.54.040\(1\)](#) or salmon recovery plans under chapter [77.85 RCW](#).

- ◆ Are new water rights limited in your watersheds, or are your sources located in a closed basin?
- ◆ Do your water rights require additional data collection and tracking? If yes, please describe.
- ◆ Does the watershed have endangered or threatened species that rely on stream flows, wetlands, or riparian habitat?
- ◆ Do any current instream flow requirements affect your diversions or withdrawals, presently or in the future? At what year will the effect be noticeable?
- ◆ Are there any conditions from approved watershed plans or salmon recovery plans that apply to your sources?
- ◆ Is there documentation that shows a hydraulic connection between the aquifer from which you withdraw water and a river or stream? Which river or stream?
- ◆ What are the development patterns near your source or supply? Could these developments affect aquifer recharge and local hydrology (for example, an increase in impervious surfaces and exempt wells)?

For **surface water sources**, answer the following questions.

- ◆ Is instream flow mitigation a condition of your water rights?
- ◆ Are there any agreements or legal constraints that change your supply and demand management strategies during the summer and fall flows or when droughts occur?
- ◆ Is water quality impaired (such as Total Maximum Daily Load or 303(d) list) for the source stream? If yes, describe how the water quality is impaired (such as turbidity) and how it may affect your ability to use water from your source.

For **ground water sources**, answer the following questions.

- ◆ What is the natural range of source changes over the past decades?
- ◆ Has the depth to water been increasing or decreasing over time? (Static water level monitoring is required by [WAC 246-290-415\(10\)](#).)
- ◆ Have you ever observed a change in production capacity?
- ◆ During extended drought summers or because of increased growth demand, has static water level declined? What is the range? How many months does it take to return to normal? Is this the norm? What has caused the most concern?
- ◆ Have you ever had to modify your well(s) level or rehabilitate your well(s) in order to keep them pumping at the desired withdrawal rate?

How Well Do You Know Your Water Supply?

Does your water source consistently provide enough water to meet your needs? How does it hold up during drought? These are questions all water utilities should consider, especially when establishing water use efficiency programs and water-saving goals.

Understanding where your water comes from is more complex than identifying it as groundwater or surface water. It's recognizing that others rely on the same water source you use every day. It's being aware that while the quality and quantity of your water supply may be adequate now, it may not always be that way.

"Water supply characteristics" are factors that may affect the availability and suitability of your water source to provide for short-term and long-term needs. Factors include source location, production capacity, the source's natural variability, and legally available water rights.

As you think about your water supply characteristics, consider who or what relies on the water downstream from you, especially neighboring water systems. Farmers, industry, and agriculture rely on water to do business and provide jobs for local residents. Yearly and seasonal variations in water supplies can put tremendous stress on aquifers, stream flow, and reservoirs, especially during a drought.

In addition, depleting reservoirs and groundwater puts water supplies, human health, and the environment at serious risk. When water levels drop, concentrations of natural or human pollutants can rise.

How Well Do You Know Your Water Supply?

Many of these questions don't have simple or easy answers. So, it's important to start asking the questions now and plan accordingly. For help, email the Water Use Efficiency program at wue@doh.wa.gov.

Source Description and Water Supply Characteristics Examples

Small Water System Management Program Source Description

Our two sources of supply come from wells located in Water Resource Inventory Area 88. They are 200 feet and 350 feet deep and produce 10 gallons per minute (gpm) and 50 gpm, respectively. The wells are located in Section 28, Township 99, Range 77, approximately 500 feet south of Blue Bird Creek.

Water System Planning Water Supply Characteristics

We have five active groundwater wells located in Water Resource Inventory Area (WRIA) 99. They are all in the Safe and Reliable Aquifer, drilled to a depth ranging between 220 and 410 feet below ground surface. They appear stable, as our static water level measurements show only a natural variability of five-feet difference in the summer months. The wells produce between 80 and 100 gpm.

The U.S. Geological Survey tells us that our watershed recharges at the natural rainfall average of about 30 inches per year. When droughts occur, we often experience a slight drop in static well levels. This has not affected our ability to provide water to our customers, although during drought years we strongly encourage limited outdoor water use.

The Department of Ecology's Watershed Plan for WRIA 99 indicates that our wells are in a watershed basin closed to further water appropriations. They are hydraulically connected to the Blue Heron River, which has a minimum instream flow restriction of 50 cubic feet per second between April 1 and October 31. Our peak demand generally occurs between mid-July and late August. Our water rights have priority dates as senior to the established instream flow, so we are able to use water from our wells without interruption from instream flow limitations.

The wells are not in a high- or medium-risk seawater intrusion area, as defined by our watershed plan, and the chloride levels are well below the maximum contaminant level. Iron and manganese are two naturally occurring elements in the Safe and Reliable Aquifer. We treat our water to remove these elements before we deliver water to our customers. Our wells have never needed rehabilitation.

Based on population trends for our county, it is anticipated that our population will increase by about 3 percent per year over the next 20 years. This may create a need to supply new customers in our service area. Our demand forecast predicts sufficient water rights to meet the 20-year demand. If new water rights are needed, the instream flow limitation would likely result in interruption during our peak demand.

Appendix D: Distribution System Leakage Template, Instructions, and Calculation Example

Units can be recorded in millions of gallons, gallons, cubic feet, or acre-feet, but **must** be converted to gallons when reporting information in the online Annual Water Use Efficiency Performance Report Form.

Water Volume Entering Distribution System

Line 1 A—Total Volume Produced

This is the total metered volume of water produced from your source(s) of supply.

Line 1 B—Total Volume Purchased

This is the total volume of water purchased (as measured by intertie meters) from other water systems.

Line 1—Total Water Produced and Purchased (TP)

Add the sum of Lines 1 A and 1 B. This is the total water produced and purchased in the DSL calculation.

Volumes of Metered and Unmetered Water (Billed and Unbilled)

Line 2 A—Total Volume of Metered Water (Billed and Unbilled)

This is the sum of all categories (single family, commercial, and so on) of metered water delivered to a customer.

Note: Make sure you are reading your consumption meters for the same time period you are reading your production meters or make adjustments for your different meter reading schedules.

Line 2 B—Exported Water

This is the total volume of water sold or exported to another water system.

Line 2 C—Estimated Authorized Uses

This is the estimated amount of authorized water used. These are restricted to uses of water authorized by the water system and may be unmetered or unbilled.

Line 2—Total Authorized Consumption (AC)

This is the sum of Lines 2 A + 2 B + 2 C.

Line 3—Total Volume of DSL

Subtract Line 2 from Line 1. This is the DSL volume you **must** report.

Line 4—Percent DSL

DSL percent is calculated by dividing Line 3 by Line 1, then multiplying that number by 100. This is the DSL percent you **must** report.

Distribution System Leakage Data Collection Worksheet—Year

Water Volume Entering Distribution System

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1 A. Total Volume Produced													
1 B. Total Volume Purchased													
1. Total Water Produced and Purchased (TP)													

Total Volume Consumed

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
2 A. Water Volume Metered (billed and unbilled):													
Single-Family Residential													
Multifamily Residential													
Industrial/Commercial/ Institutional													
Other													Continued

	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
2 B. Exported Water													
2 C. Estimated Authorized Uses (may be unbilled and unmetered)													
Utility Flushing and Tank Cleaning													
Fire Fighting and Training													
Storm or Sewer Cleaning													
Other													
2. Total Authorized Consumption (AC)													
3. Total Volume DSL													
4. Percent DSL													

Distribution System Leakage Calculation

Distribution System Leakage for Sampleville Water System

Add up the amount of water produced from all sources	5,000 MG
Add any water purchased from other water suppliers	500 MG
Total Production and Purchased (TP)	5,500 MG
Add up the annual amount of water delivered to customers from your service meters	4,300 MG
Add any water sold to another water system	0 MG
Add all estimated authorized uses (fire flow, flushing of mains, and other authorized uses)	
Flushing	3 MG
Fire flow	1 MG
Total Authorized Consumption (AC)	4,304 MG
Volume DSL = $5500 - 4304 = 1,196,000,000$ gallons	
Percent DSL = $(5500 - 4304) / 5500 \times 100 = 21.7\%$	

Appendix E: Water Use Efficiency Annual Reporting Worksheet

[WUE Annual Reporting Worksheet 331-767 \(PDF\)](#)



Form

WUE Annual Reporting Worksheet

331-767 • 12/20/2024

Use this worksheet to gather your WUE information, and **then go to our [Fortress online reporting system](#) to enter your data.** Do not mail, fax, or e-mail this worksheet to Department of Health.

Submit your WUE report information online at our [Fortress online reporting system](#).

Indicates a required field.

Today's Date <small>Click or tap to enter a date.</small>	
General System Information	
System ID# <small>Add text here</small>	
Your First Name <small>Add address here.</small>	Your Last Name <small>Add address here.</small>
Your Title <small>Add text here</small>	Your Phone Number <small>Add text here</small>
Your Email Address <small>Email Address</small>	
Meter Installation Information	
Estimate the percentage of metered connections. <input type="checkbox"/> Less than 50% <input type="checkbox"/> 50-75% <input type="checkbox"/> More than 75% <input type="checkbox"/> 100%	
If not 100% metered—Did you submit a meter installation plan to DOH? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Within your meter installation plan, what date did you commit to completing meter installation? <small>Click or tap to enter a date.</small>	
Current status of meter installation. Note: Only required if your water system isn't fully metered. Space limited to 500 characters. <small>Click or tap here to enter text.</small>	
Note: Do not include things such as graphs, tables, or pictures when reporting to us online. Instead, include this information on your web site or in your annual WUE report to your customers. Be brief and concise when reporting to us, the online form limits the amount of space you have. After 30 minutes of inactivity, the database will automatically close. Avoid characters, symbols, bold or underline text, and special fonts, these may be seen as a security risk by the database.	

Production, Authorized Consumption, and Distribution System Leakage Information

Reporting Year Click or tap here to enter text.

Note: Your reporting year is last year's information (similar to a tax year).

Twelve-Month WUE Reporting Period: Click or tap to enter a date. **to** Click or tap to enter a date.

Note: Choose any time period to collect annual data, it doesn't have to be January-December.

Incomplete or missing data for the year?

☐ Yes

☐ No

If yes, explain./

Note: Space limited to 1,000 characters.

Click or tap here to enter text.

Note: When submitting annual data, you need to report Total Water Produced and Purchased (TP) **and** Authorized Consumption (AC). The WUE reporting database automatically calculates annual Distribution System Leakage Volume and Percent. It also calculates the three-year average if you have submitted three annual WUE reports.

TP is defined as the annual amount of water pumped from all sources + any water purchased from another water purveyor.

AC is defined as the annual amount of metered water consumed by your customers + any estimated and authorized unmetered uses such as water main flushing or water tank cleaning. AC **is not** your total authorized/permited water rights.

Total Water Produced & Purchased (TP) = Annual Volume in gallons Click or tap here to enter text.

Note: TP is defined as the annual amount of water pumped from all sources + any water purchased from another water purveyor. Report your total Annual Volume in gallons.

Authorized Consumption (AC) = Annual Volume in gallons Click or tap here to enter text.

Note: AC **is not** your total authorized/permited water rights. AC is defined as the annual amount of metered water consumed by your customers + any estimated and authorized unmetered uses such as water main flushing or water tank cleaning. Report your total Annual Volume in gallons

Goal-Setting Information

Date of the most recent public forum to establish WUE goals. Click or tap to enter a date.

Note: You must re-establish a customer goal every six years through a public process. With prior approval from DOH, you may be allowed to set goals less frequently.

Has goal been changed since last performance report? ☐ Yes ☐ No

Customer WUE Goal (Demand Side) Tip: [See DOH Fact Sheet 331-402 \(PDF\)](#).

Note: You must identify the customer goal that was established by your elected governing board that indicates the measurable water savings over time. Space limited to 1,000 characters.

Example: "Within five years, reduce average daily per capita consumption by eight gallons."

Click or tap here to enter text.

Customer (Demand Side) Goal Progress (Space limited to 1,000 characters.)

Note

1. Identify any WUE measures (such as conservation rates, or low-flow showerheads) you are currently implementing.
2. Estimate how much water you have saved.
3. Report progress toward meeting goals within your established timeframe.
4. If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per day) you must explain why you are unable to reduce water use below that level.

Click or tap here to enter text.

Note: Do not include graphs, tables, or pictures when reporting to us online. Instead, include this information on your web site or in your annual WUE report to your customers. Be brief and concise when reporting to us, the online form limits the amount of space you have. After 30 minutes of inactivity, the database will automatically close. Avoid characters, symbols, bold or underline text, and special fonts, these may be seen as a security risk by the database and could be removed from your text. You can review your entire report before electronic submission.

Additional Information Regarding Supply and Demand Side WUE Efforts

Note: If you established a supply side goal (such as "Reduce leakage to 10% in 5 years"), identify here and include all efforts to reduce water loss. Include any other information that describes how you and your customers use water efficiently. Space limited to 2,000 characters.

Click or tap here to enter text.

Note: Do not include graphs, tables, or pictures when reporting to us online. Instead, include this information on your web site or in your annual WUE report to your customers. Be brief and concise when reporting to us, the online form limits the amount of space you have. After 30 minutes of inactivity, the database will automatically close. Avoid characters, symbols, bold or underline text, and special fonts, these may be seen as a security risk by the database and could be removed from your text. You can review your entire report before electronic submission.

Use this worksheet to gather your WUE information, and then go to our [Fortress online reporting system](#) to enter the data. Do not mail, fax, or e-mail this worksheet to Department of Health.

The following questions help us understand more about water usage, water resources management, response to drought, and financial capacity. We will use the questions as an indicator for us to provide technical assistance, not for regulatory purposes.

All questions are voluntary.

Drought or Other Water Shortage Responses

1. Did you activate any level of a water shortage response plan the previous year?

- ☐ Yes.
- ☐ No.
- ☐ There was no need to.

2. If you activated a water shortage response plan the previous year, what level did you activate? Check all that apply.

- ☐ Advisory Conservation.
- ☐ Voluntary Conservation.
- ☐ Mandatory Conservation.
- ☐ Rationing.
- ☐ Other...

Click or tap here to enter text.

<p>3. What factors caused your water shortage the previous year? Check all that apply.</p> <p><input type="checkbox"/> Drought.</p> <p><input type="checkbox"/> Fire.</p> <p><input type="checkbox"/> Landslide.</p> <p><input type="checkbox"/> Earthquakes.</p> <p><input type="checkbox"/> Flooding.</p> <p><input type="checkbox"/> Water Supply Limitations.</p> <p><input type="checkbox"/> Climate Change.</p>
<p>4. Looking back to the 2015 drought, did you activate any level of a water shortage response plan that year?</p> <p><input type="checkbox"/> Yes.</p> <p><input type="checkbox"/> No.</p> <p><input type="checkbox"/> There was no need.</p>
<p>5. If you activated a water shortage response plan in 2015, what level did you activate? Check all that apply.</p> <p><input type="checkbox"/> Advisory Conservation.</p> <p><input type="checkbox"/> Voluntary Conservation.</p> <p><input type="checkbox"/> Mandatory Conservation.</p> <p><input type="checkbox"/> Rationing.</p> <p><input type="checkbox"/> Other.</p>
<p>6. What factors caused your water shortage in 2015? Check all that apply.</p> <p><input type="checkbox"/> Drought.</p> <p><input type="checkbox"/> Fire.</p> <p><input type="checkbox"/> Landslide.</p> <p><input type="checkbox"/> Earthquakes.</p> <p><input type="checkbox"/> Flooding.</p> <p><input type="checkbox"/> Water Supply Limitations.</p> <p><input type="checkbox"/> Climate Change.</p>
<p>Water Loss Control</p>
<p>Are you currently using the American Water Works Association Water Audit methodology to evaluate water loss?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>Do you validate water loss with other individuals familiar with the water system or through a third party?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>Would you like technical assistance in collecting more accurate water use data and reducing non-revenue water?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>

Conservation Rates
<p>Did you install service meters on all connections within the last ten years? <i>Note: some public water systems such as mobile home parks and RV parks are exempt from installing meters for all connections.</i></p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>In the past ten years since the WUE rule has passed, have you changed your rates?</p> <p><input type="checkbox"/> Yes, we changed the rates. Please explain why. (i.e. encourage water conservation, needed more revenue, etc.) Click or tap here to enter text.</p> <p><input type="checkbox"/> No, we did not change the rates. Please explain why not. (i.e. UTC limitations, HOA bylaws/covenants make it too difficult, etc.) Click or tap here to enter text.</p>
<p>What type of rate structure are you using now? Check all that apply.</p> <p><input type="checkbox"/> Declining block rate. Charges for consumption, per unit of water, decrease for progressively larger water use.</p> <p><input type="checkbox"/> Flat rate. All customers pay the same, regardless of how much is used.</p> <p><input type="checkbox"/> Uniform rate. Charges for consumption are the same, per unit of water.</p> <p><input type="checkbox"/> Increasing block rate. Charges for consumption, per unit of water, increase for progressively larger water use.</p> <p><input type="checkbox"/> Seasonal rate. Charges for consumption increase during higher demand, such as during the warmer months.</p> <p><input type="checkbox"/> Excessive water use rate. Customers that use much more than average pay a higher rate.</p>
<p>What changes have you made to your rate structures to encourage water conservation in the past six years? Check all that apply.</p> <p><input type="checkbox"/> Implemented or enhanced the seasonal rate.</p> <p><input type="checkbox"/> Switched from a declining block rate to a uniform rate.</p> <p><input type="checkbox"/> Switched from a flat/uniform rate to an increasing block rate.</p> <p><input type="checkbox"/> Implemented an excessive water use rate.</p> <p><input type="checkbox"/> Implemented drought surcharges.</p>
Residential Daily Consumption of Water
<p>Do you collect household-level water use information for metered connections?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>If you track this information, indicate the average water use per capita? Click or tap here to enter text. Gallons per day.</p>
<p>If you track this information, indicate the average water use per residential single-family home? Click or tap here to enter text. Gallons per day.</p>
<p>Do any of your single-family homes receive their outdoor water use from another water provider such as an irrigation district?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
<p>If yes, estimate what percentage of single-family homes receive their outdoor water use from another water provider. Click or tap here to enter text. percent.</p>
Water Level Measurements
<p>If you have a well, do you measure the water levels at least once per year?</p> <p><input type="checkbox"/> Yes</p>

<input type="checkbox"/> No
<p>If yes, would you be willing to share that data with us in order to monitor how water levels in aquifers are changing over time?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>
Monthly/Seasonal Water Usage
<p>What was your maximum daily water volume consumed for the previous year?</p> <p>Click or tap here to enter text.</p>
<p>If tracked, please report the monthly total water consumed for the previous year.</p> <p>January: Click or tap here to enter text.</p> <p>February: Click or tap here to enter text.</p> <p>March: Click or tap here to enter text.</p> <p>April: Click or tap here to enter text.</p> <p>May: Click or tap here to enter text.</p> <p>June: Click or tap here to enter text.</p> <p>July: Click or tap here to enter text.</p> <p>August: Click or tap here to enter text.</p> <p>September: Click or tap here to enter text.</p> <p>October: Click or tap here to enter text.</p> <p>November: Click or tap here to enter text.</p> <p>December: Click or tap here to enter text.</p>
<p>Estimate the percentage of water that comes from the following sources.</p> <p>Surface water Click or tap here to enter text. percent.</p> <p>Groundwater Click or tap here to enter text. percent.</p> <p>Purchased water Click or tap here to enter text. percent.</p>

Statutory Authority [RCW 70.119A.180](#) | Rule Authority [WAC 246-290-840](#)

For More Information

Find more resources on our [Publications and Forms webpage](#).

Contact our nearest regional office from 8 AM to 5 PM, Monday through Friday. If you have an after-hours emergency, call 877-481-4901.

[Eastern Region](#), Spokane Valley 509-329-2100.

[Northwest Region](#), Kent 253-395-6750.

[Southwest Region](#), Tumwater 360-236-3030.



To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email doh.information@doh.wa.gov. If in need of translation services, call 1-800-525-0127.

SAMPLE ONLY

Appendix F: Recommended Publications and Websites

Websites

- ◆ [Washington State Department of Health, Water Use Efficiency.](#)
- ◆ [Evergreen Rural Water of Washington.](#)
- ◆ [Alliance for Water Efficiency](#)
- ◆ [U.S. Environmental Protection Agency—WaterSense.](#)
- ◆ [Water: Use It Wisely.](#)
- ◆ [American Water Works Association.](#)
- ◆ [Saving Water Partnership.](#)
- ◆ [Green Plumbers.](#)

Disclaimer: Links to external resources are provided as a public service and do not imply endorsement by the Washington State Department of Health.

Publications

- ◆ BMP Costs & Savings Study: A Guide to Data and Methods for Cost-Effectiveness Analysis of Urban Water Conservation Best Management Practices, prepared for California Urban Water Conservation Council by A & N Technical Services, Inc., March 2005
- ◆ Handbook of Water Use and Conservation, Amy Vickers, 2002
- ◆ Residential End Uses of Water, AWWA Research Foundation, 1999
- ◆ Water Conservation Plan Guidelines, U.S. Environmental Protection Agency, 1998
- ◆ Water Conservation Programs—A Planning Manual, AWWA Manual M52, 2006
- ◆ Water Loss Control-Second Edition, Julian Thornton, Reinhard Sturm, George Kunkel, McGraw Hill Company, 2008
- ◆ Water Audits and Loss Control Programs-Fifth Edition, AWWA Manual M36, 2020
- ◆ Water Meters—Selection, Installation, Testing, and Maintenance, AWWA Manual M6, 1999

Appendix G: Water Volume Conversions

This appendix helps you convert water volume information to gallons in your annual WUE report. You can record water use data in the unit of measurement most convenient to your water system since most water meters measure water in cubic feet.

When you report to the Department of Health for the year, convert measurements to gallons.

The table below helps you convert some common volume units of measurement to gallons.

Table G-1: Water Volume Conversion

Convert From	Conversion Factor	Convert To
Gallons	Divide by 1,000,000	Millions of Gallons
Millions of Gallons	Multiply by 1,000,000	Gallons
Cubic Feet	Multiply By 7.48	Gallons
100 Cubic Feet	Multiply By 748	Gallons
Cubic Meter	Multiply By 264.17	Gallons
Acre-Feet	Multiply by 325,851	Gallons

1 cubic foot = 7.48 gallons

100 cubic feet = 748 gallons

1 cubic meter = 264.17 gallons

1 acre foot = 43,560 cubic feet = 325,851 gallons

Appendix H: Goal Setting Flowchart

The goal setting flowchart on the next page shows the steps needed to establish your goal, including the public forum process. [Chapter 7](#) and [Appendix O](#) have detailed information about goal setting. Here are some important things to remember about goal setting.

- ◆ A minimum of one goal is required.
- ◆ You **must** design the goal to enhance your customers' efficient use of water.
- ◆ If you established a goal to maintain a historic level (such as maintaining daily consumption at 65 gallons per person per day), you **must** explain why you are unable to reduce water use below that level ([WAC 246-290-830\(3\)](#)).
- ◆ You **must** evaluate and re-establish goals when either of the following occurs:
 - Every six years, if you are required to develop a small water system management program.
 - As part of any water system plan or water system plan update submitted to the Department of Health for approval.
- ◆ The governing board or governing body at your water system **must** establish your goals.

Goal Setting Flowchart



Appendix I: Examples of Customer Goals

- Goal 1:** Reduce average day demand per connection from 310 gallons to 260 gallons in five years.
- Goal 2:** Reduce daily use per person from 100 gallons to 70 gallons in ten years.
- Goal 3:** Reduce water production per person, on an average annual basis, from 250 gallons per day to 230 gallons per day within six years.
- Goal 4:** Save 100,000 gallons per day, on an average annual basis, at full implementation of the conservation program in six years.
- Goal 5:** Reduce average third-tier residential water consumption per customer by 15 percent by 2025.
- Goal 6:** Reduce seasonal outdoor water use by two to three percent by December 31, 2027.
- Goal 7:** Save five gallons per family home per day by 2027.
- Goal 8:** Reduce single-family residential water consumption by 25 gallons per day (gpd) per home by 2027.
- Goal 9:** Reduce per-connection use by 7 percent by 2027.
- Goal 10:** By 2027 reduce consumption per equivalent residential unit (ERU) from 495 to 415 gpd/ERU.
- Goal 11:** Reduce consumption by 20 percent for the highest 10 percent of water users in single-family class customers by 2027.
- Goal 12:** Reduce seasonal summer demand by 25 gallons per day for residential customers within the next six years.
- Goal 13:** Reduce total production from our wells by 5 percent within six years.
- Goal 14:** Maintain daily per capita consumption at 65 gallons per person per day for the next two years (justification required for maintaining consumption levels, see [WAC 246-290-830\(3\)](#) and [Section 7.5](#)).
- Goal 15:** Reduce regional consumption by 1 percent at the end of three years (based on a regional program goal).

Appendix J: Water Conservation Tips

Saving water is easy and it starts with you! When you use water efficiently, you save money on your water, gas, and energy bills too.

Use these water conservation tips to:

- ◆ Educate your customers and ask them to share these ideas with their family, friends, and neighbors.
- ◆ Develop your own materials to personalize and reprint for your customers.

Indoor Use

General

- ◆ Never pour water down the drain when there may be another use for it. Use it to water your indoor plants or garden.
- ◆ Make sure your home is leak-free. When you are certain that no water is being used, take a reading of the water meter. Wait 30 minutes and then take a second reading. If the meter readings change, you have a leak!
- ◆ Monitor your water bill for unusually high use. Your bill and water meter are tools that can help you discover leaks.
- ◆ When cleaning out fish tanks, give the nutrient-rich water to your plants.
- ◆ Teach your children to turn off faucets tightly after each use.
- ◆ Know where your master water shut-off valve is located. This could save water and prevent damage to your home.
- ◆ Encourage your school system and local government to develop and promote water conservation among children and adults.
- ◆ Set cooling systems and water softeners for a minimum number of refills to save water and chemicals, plus save more on utility bills.
- ◆ Insulate hot water pipes for more immediate hot water at the faucet and for energy savings.
- ◆ Support projects that use reclaimed wastewater for irrigation and industrial uses.
- ◆ Report broken pipes, open hydrants, and errant sprinklers to the property owner or your water provider.
- ◆ Wash your pets outdoors in an area of your lawn that needs water.
- ◆ When you have ice left in your cup from a take-out restaurant, don't throw it in the trash—dump it on a plant.

Bathroom

- ◆ Take short showers instead of tub baths.
- ◆ In the shower, turn the water on to get wet; turn off to lather up; then turn the water back on to rinse. Repeat when washing your hair.
- ◆ Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- ◆ Shorten your shower by a minute or two and you'll save up to 150 gallons per month.

- If your shower fills a one-gallon bucket in less than 20 seconds, replace the showerhead with a water-efficient model.
- When running a bath, plug the tub before turning the water on, then adjust the temperature as the tub fills up.
- Bathe small children together.
- Place a bucket in the shower to catch excess water for watering plants.
- Never use your toilet as a wastebasket. Avoid flushing the toilet unnecessarily. Dispose of tissues, insects, and other similar waste in the trash rather than the toilet.
- Check for toilet leaks by adding food coloring to the tank. If you have a leak, the color will appear in the bowl within 30 minutes. Flush immediately to avoid stains. A leaky toilet can waste 200 gallons per day.
- Upgrade older toilets with water efficient models and ask your water provider if they offer rebates.
- If the toilet handle frequently sticks in the flush position letting water run constantly, replace or adjust it.
- If your toilet flapper doesn't close after flushing, replace it.
- If your toilet was installed before 1992, reduce the amount of water used for each flush by inserting a displacement device in the tank. Place a 1-gallon plastic jug of water into the tank to displace toilet flow or purchase a device available at most hardware and home centers designed for this purpose. Be sure installation does not interfere with the operating parts.
- Don't let the water run while brushing your teeth, shaving, or washing your face/hands.

Kitchen

- Keep drinking water in the refrigerator instead of letting the faucet run until the water is cool.
- Wash fruits and vegetables in a basin instead of running water from the tap. Use a vegetable brush. Re-use the water that vegetables are washed in for watering plants.
- Don't use running water to defrost meat or other frozen foods; thaw in the refrigerator overnight or use the defrost setting on your microwave.
- Kitchen sink disposals require lots of water to operate properly. Add food wastes to your compost pile instead of using the garbage disposal.
- Operate automatic dishwashers only when they are fully loaded. Use the "light wash" feature if available to use less water.
- Most dishwashers clean soiled dishes very well, so dishes don't have to be rinsed before washing. Just remove large particles of food and put the soiled dishes in the dishwasher.
- Run your dishwasher only when full.
- Soak pots and pans instead of letting the water run while you scrape them clean.
- Don't waste water waiting for it to get hot. Capture it for other uses such as plant watering or heat it on the stove or in a microwave. Or install an instant water heater at your sink.
- Some refrigerators, air conditioners, and icemakers are cooled with wasted flows of water. Consider upgrading with air-cooled appliances for significant water savings.

- ◆ When you give your pet fresh water, don't throw the old water down the drain. Use it to water your trees or shrubs.
- ◆ Designate one glass for your drinking water each day or refill a water bottle. This cuts down on the amount of glasses to wash.

Laundry

- ◆ Wash only full loads of laundry or use the appropriate water level or load size selection on the washing machine.
- ◆ Consider purchasing a high efficiency washing machine, which can save over 50 percent in laundry water and energy use.
- ◆ Run your clothes washer only when full.
- ◆ When doing laundry, match the water level to the size of the load.

Long-term Indoor Water Conservation

- ◆ Retrofit all household faucets by installing aerators with flow restrictors.
- ◆ Consider installing an instant hot water heater on your sink.
- ◆ Insulate your water pipes to reduce heat loss and prevent them from breaking if you have a sudden and unexpected spell of freezing weather.
- ◆ If you are considering installing a new heat pump or air-conditioning system, the new air-to-air models are just as efficient as the water-to-air type and don't waste water.
- ◆ Install a water-softening system only when the minerals in the water would damage your pipes. Turn the softener off while on vacation.
- ◆ When shopping for appliances, look for the WaterSense and Energy Star labeled models. Not only will you save water and energy, but your bills will go down too.
- ◆ Repair dripping faucets by replacing washers. One drop per second wastes 2,700 gallons of water per year!

Outdoor Use

General

- ◆ If you have a well at home, check your pump periodically. If the pump turns on and off while water is not being used, you have a leak.

Car Washing

- ◆ Use a shut-off nozzle on your hose that can be adjusted down to a fine spray, so that water flows only as needed. Check hose connectors to make sure plastic or rubber washers are in place to prevent leaks.
- ◆ Consider using a commercial car wash that recycles water.
- ◆ Wash your car on the lawn, and you'll water your lawn at the same time.

Lawn Care

- ◆ Thirty percent of water used by the average American household is devoted to outdoor water use, and more than half of that is used for watering lawns and gardens.
- ◆ More than 50 percent of residential irrigation water is lost due to evaporation, runoff, over watering, or improper system design/installation/maintenance.

- ◆ Don't over water your lawn. Lawns only need one inch of water per week. Buy a rain gauge so that you can determine better when to water.
- ◆ Water the lawn or garden early in the morning during the coolest part of the day. Consider installing an automatic timer. Don't forget to adjust your watering schedule, as days get longer or shorter.
- ◆ Check sprinkler systems and timing devices regularly to ensure they operate properly.
- ◆ Raise your lawn mower cutting height—longer grass blades help shade each other, reduce evaporation, and inhibit weed growth.
- ◆ Avoid over fertilizing your lawn. Applying fertilizer increases the need for water.
- ◆ Use a broom or blower instead of a hose to clean leaves and other debris from your driveway or sidewalk.
- ◆ Don't leave sprinklers or hoses unattended. Set a kitchen timer when watering your lawn or garden to remind you when to stop. A running hose can discharge up to 10 gallons a minute.
- ◆ Adjust sprinklers so only your lawn is watered and not the house, sidewalk, or street.
- ◆ To water sloping lawns, apply water for 5 minutes and then repeat 2-3 times.
- ◆ If installing a lawn, select a turf mix or blend that matches your climate and site conditions.
- ◆ If water runs off your lawn easily, split your watering time into shorter periods to allow for better absorption.
- ◆ Don't water your lawn on windy days when most of the water blows away or evaporates.
- ◆ Remove thatch and aerate your lawn at least once a year so water can reach the roots rather than run off the surface.
- ◆ Use a minimum amount of organic or slow release fertilizer to promote a healthy and drought tolerant landscape.
- ◆ Use sprinklers for larger areas of grass. Water small patches by hand to avoid waste.
- ◆ Let your lawn go dormant during the summer. Dormant grass only needs to be watered every three weeks or less if it rains.
- ◆ Install soil moisture sensors on sprinkler systems.
- ◆ Learn how to shut off your automatic watering system in case it malfunctions, or you get an unexpected rain.
- ◆ Install a rain sensor on your irrigation controller so your system won't run when it's raining.

Pool

- ◆ If you have a swimming pool, consider purchasing a new water-saving pool filter. A single back flushing with a traditional filter uses 180 to 250 gallons of water.
- ◆ Lower pool water level to reduce amount of water splashed out.
- ◆ Use a pool cover to reduce evaporation when pool is not being used.
- ◆ Install covers on pools and spas and check for leaks around your pumps.
- ◆ Make sure your swimming pools, fountains, and ponds are equipped with recirculating pumps.
- ◆ Use a grease pencil to mark the water level of your pool at the skimmer. Check the mark 24 hours later to see if you have a leak.

- ◆ When backwashing your pool, consider using the water on your landscaping if it does not contain chlorine.
- ◆ If you have an automatic refilling device, check your pool periodically for leaks.

Landscape Irrigation

- ◆ Detect and repair all leaks in irrigation system.
- ◆ Water trees and shrubs, which have deep root systems, longer and less frequently than shallow-rooted plants that require smaller amounts of water more often. Check with local extension service for advice on watering needs in your area.
- ◆ Use soaker hoses or trickle irrigation systems for trees and shrubs.
- ◆ Use mulch around shrubs, flowers, vegetables, and garden plants to reduce evaporation from the soil surface and cut down on weed growth.
- ◆ Mulching lawn mowers help protect water loss and do not require disposal of grass clippings.
- ◆ Spreading a layer of organic mulch around plants retains moisture and saves water, time, and money.
- ◆ Use mulch to retain moisture in the soil. Mulch also helps control weeds that compete with landscape plants for water.
- ◆ Plant with finished compost to add water-holding and nutrient-rich organic matter to the soil.
- ◆ When outdoor use of water is restricted during a drought, use the water from the air conditioning condenser, dehumidifier, bath, or sink on plants or the garden. Don't use water that contains bleach, automatic-dishwashing detergent, or fabric softener.
- ◆ Choose shrubs and groundcovers, instead of turf, for hard-to-water areas such as steep slopes and isolated strips.
- ◆ Plant in the fall when conditions are cooler, and rainfall is more plentiful.
- ◆ Water your plants deeply but less frequently to encourage deep root growth and drought tolerance.
- ◆ Remember to check your sprinkler system valves periodically for leaks and keep the sprinkler heads in good shape.
- ◆ Water your lawn and garden in the morning or evening when temperatures are cooler to minimize evaporation.
- ◆ Water only when necessary. More plants die from over-watering than from under-watering.
- ◆ Adjust your watering schedule each month to match seasonal weather conditions and landscape requirements.
- ◆ Apply water only as fast as the soil can absorb it.

Long-term Outdoor Conservation

- ◆ Consider replacing all or even a portion of your lawn with plants and trees that require less water.
- ◆ Replace your lawn with a flower or vegetable garden. Not only will you have fresh flowers and vegetables, but you'll save money at the grocery store and you won't have to mow your lawn anymore.

- ◆ Plant smart. Plant native and/or drought-tolerant grasses, ground covers, shrubs, and trees. Once established, they don't need water as frequently and usually will survive a dry period without watering.
- ◆ Install irrigation devices that are the most water-efficient for each use. Micro and drip irrigation and soaker hoses are examples of efficient devices.
- ◆ Use native plants or practice xeriscape garden techniques in garden and lawn areas. Native plants generally require less water than exotic species.
- ◆ We're more likely to notice leaks indoors, but don't forget to check outdoor faucets, sprinklers and hoses for leaks.
- ◆ Consult your local nursery for information on plant selection and placement for optimum outdoor water savings.
- ◆ Group plants with the same watering needs together to avoid over watering some while under watering others.
- ◆ Use a layer of organic material on the surface of your planting beds to minimize weed growth that competes for water.
- ◆ Direct water from rain gutters and HVAC systems towards water-loving plants in the landscape for automatic water savings.

Other Outdoor Uses

- ◆ Avoid installing ornamental water features, such as fountains, unless they use recycled water.
- ◆ Equip your swimming pools, fountains, and ponds with recirculating pumps.
- ◆ Trickling or cascading fountains lose less water to evaporation than those spraying water into the air.
- ◆ When the kids want to cool off, use the sprinkler in an area where your lawn needs it the most.
- ◆ Winterize outdoor spigots when temperatures dip below freezing to prevent pipes from leaking or bursting.
- ◆ Disallow irrigation of non-functional (purely decorative) grass outside of residential areas.

Industrial/Commercial or Institutional

Each industrial/commercial or institutional (ICI) facility is unique and may have water-using processes not indicated here. Look for innovative solutions to reduce water use. Here are some water saving tips for the ICI customer class.

- ◆ Adjust pump cooling and flushing water to the minimum required.
- ◆ As equipment wears out, replace with water-saving models.
- ◆ Install air-cooled ice machines. Machines that use single pass cooling water for their condensers can use ten times as much water as air-cooled units.
- ◆ Thaw frozen foods in the refrigerator rather than under running water.
- ◆ Replace pre-rinse shut-off spray nozzles—spray nozzles can use as much as five gallons of water each minute, while efficient low-volume nozzles use 1.6 gallons per minute. These units are designed to remove food as effectively as or even better than their high flow counterparts.

- Serve water in bars and restaurants only upon request.
- Wash only full loads in the dishwashers.

Eliminate Single Pass Cooling

Single pass cooling uses water once and then discharges it to the sewer. Single pass cooling can use up to 40 times more water than a closed loop-cooling tower. Consider:

- Installing a cooling tower.
- Replacing single pass water-cooled equipment with air-cooled units.
- Reusing single pass water in other processes as long as water quality is acceptable.

Sterilizers and Autoclaves

Sterilizers and Autoclaves can account for as much as 10 percent of hospital water use. This high amount of water usage is due to the large number of machines, their continuous availability, and the often inefficient design of older equipment.

- Retrofit units with solenoid operated valves. These valves can shut the unit off when not in service.
- Replace old inefficient units with new efficient models. Newer units are designed to recirculate water and shut the machine off when not in use.

Appendix K: Stop Water Waste—It's Easier Than You Think!

The tips you'll find within this brochure, [*Stop Water Waste—It's Easier Than You Think! 331-450 \(PDF\)*](#) are designed to not only save water, but also save you money on your water, energy/gas, and wastewater bills. Maybe all three!

Appendix L: Indoor Water Conservation and Outdoor Water Conservation

Need some tips for your customers on how to reduce indoor and outdoor water use? The following publications are two-page documents you can easily share with them.

- ◆ [*Indoor Water Conservation 331-120-1 \(PDF\).*](#)
- ◆ [*Outdoor Water Conservation 331-120-2 \(PDF\).*](#)

Appendix M: U.S. Environmental Protection Agency's WaterSense Program

Now that you have reviewed the WUE rule requirements, your next step is to educate your customers about WUE practices. Simple messages about the value of using water efficiently helps change the way people use water in your community.



Developing an effective WUE program takes time and effort. Fortunately, WaterSense, a free program sponsored by the U.S. Environmental Protection Agency (EPA), is partnering with water utilities, government agencies, and other promotional partners to help make water-efficient products and practices commonplace.

Educating Customers Can Save Water

Consistent water efficiency messaging is one of the most cost-effective ways to enhance the efficient use of water by your customers. WaterSense helps you develop your water efficiency program by providing you with a credible, national brand with a strong and consistent water efficiency message.

Educating your customers is a requirement of the WUE rule; sending information periodically (more than once per year) to your customers is considered a WUE measure that helps you meet your water efficiency goal.

By joining WaterSense, you get a toolkit that helps you meet the minimum educational requirement.

WaterSense provides you with many benefits to help effectively communicate water efficiency messages to your customers. Seasonal water efficiency messages are a great way to keep your customers informed throughout the year. Use the WaterSense toolkit to develop quarterly newsletter articles such as "This Season's Water Efficiency Tips."

The following materials are available exclusively to partners.

- ◆ Utility bill stuffers.
- ◆ Artwork for promotional items.
- ◆ Fact sheets.
- ◆ Brochures.

Building a Water Saving Certified Home

EPA created the first WaterSense labeled homes in the country, maximizing efficiency when a home is both designed and built. Builders can choose from several water efficient features, indoor and outdoor, to create a whole-house solution to water efficiency. To be a certified

WaterSense home it **must** be verified using EPA's Mandatory Checklist and use at least 30 percent less water than a typical home. To find out more visit [EPA's WaterSense Homes webpage](#).

Join WaterSense Now

The Office of Drinking Water has already joined WaterSense and we're encouraging drinking water utilities throughout our state to become WaterSense partners too. If you're ready to become a partner now just go to their [WaterSense webpage](#) or contact the WaterSense Helpline at 866-WTR-SENS (987-7367).



Appendix N: Local Stories of Successful Water Use Efficiency Programs

Do you have a successful WUE program that you would like to share with us? We want to hear from you! Send your success story to WUE@doh.wa.gov so that we can share it with others. Below are some examples.

Northwest Water Systems (Kitsap County)

"Last December, I had the three old toilets (3.5 gal./flush) replaced with three Toto double-flush low-volume (0.9/1.6 gal./flush) toilets. I have since been monitoring my bi-monthly water usage and comparing it with the same bi-monthly periods for the previous year. For the period of January thru June of 2008, **I have reduced my potable water consumption by about 60 percent.**"

Pasadena Park Irrigation District (Spokane County)

"Replacement of leaking lead joint water mains was the initial step in the water system's water use efficiency program. Before the main was replaced, Pasadena Park had a 45 percent water loss rate (over a million gallons a day), costing the system an estimated \$75,000 a year in lost revenues and electricity, plus unknown costs in wear and tear. Concurrently, Pasadena Park also implemented a metering program; upgraded their SCADA and began automatic meter reading; and conducted an annual water audit. As a result of the project and related water use efficiency efforts, the water system has **reduced its water loss to 9.8 percent and has recaptured 875,908 gallons of water per day.** The value of their recaptured water is \$177,000 per year, which makes the loan payments for the system improvements each year, plus \$47,000 additional. That money is being used to fund radio read meters, which have a leak alert function that helps to find leaks faster."

Wind River Water Association (Skamania County)

"We were able to **detect a huge leak on a home after the meters went in.** We feel that almost a million gallons of water passed undetected before this discovery. We had no idea how out of control things were. Some people used as much as 65,000 gallons a month. Since the meters went in, not one residence has used more than 7,000 gallons a month. We were charging \$12.00 a month for unlimited water before. Since the new water rates were implemented, we are saving about 80,000 gallons a month. Now, as you can see, we have a very aggressive rate plan to encourage continued conservation of water."

City of Mesa (Franklin County)

Water use decreased by 40 percent after meter installation and a consumption-based rate was implemented in Mesa, Washington. Simply adding meters and having a volumetric charge added to customer bills resulted in a 40 percent reduction in water pumped.

Appendix O: Setting Goals to Use Water Efficiently

One of the most important steps in using water efficiently is [*Setting Goals to Use Water Efficiently 331-402 \(PDF\)*](#). Goals help you track your progress and determine the success of your WUE program. This six-page document helps you set goals to help manage the growing demand for water.

Appendix P: Reduce Leaks: Using Water Audits and Leak Detection Surveys

This six-page publication, [*Reduce Leaks: Using Water Audits and Leak Detection Surveys 331-388 \(PDF\)*](#), explains how to calculate your leakage rate and detect and repair leaks.

Appendix Q: Water Conservation Leadership Guide: Issues for Local Officials to Consider and Sprayed Away: Seven Ways to Reduce Texas' Outdoor Water Use

Water Conservation Leadership Guide: Issues for Local Officials to Consider

The Institute for Local Government in California developed an [online Water Conservation Leadership Guide webpage](#) to help their local officials with water conservation issues. The document includes:

- ◆ Water conservation options for local agency policies and programs.
- ◆ Water efficiency options for agency facilities.
- ◆ Water efficiency options in the community.
- ◆ Resources to help develop water efficiency policies and programs.

Sprayed Away: Seven Ways to Reduce Texas' Outdoor Water Use

This document provides useful information; the intro says it all.

"Texas is the fastest growing state in the nation. Our water supplies are limited. So it is a shame that during the summertime, much of our most precious natural resource ends up...

Sprayed Away."

It's available online at [Sprayed Away: Seven Ways to Reduce Texas' Outdoor Water Use](#).

Appendix R: Example of Large Municipal WUE Program

Please contact your [regional planner](#).

Appendix S: Example of a Small Municipal WUE Program

Please contact your [regional planner](#).

Appendix T: Example of a Water Loss Control Action Plan

Please contact your [regional planner](#).

Appendix U: Water Use Efficiency Requirements for Nonmunicipal Water Suppliers

Small Water System Management Program (SWSMP)

As discussed in [Chapter 1](#) some community systems and most non-community systems are not Municipal Water Systems. Non-community systems that are not an MWS should follow the information below for completion of a noncommunity SWSMP. Also use the [Small Water System Management Program Guide 331-134 \(PDF\)](#). Non-MWS community water systems should contact their [regional planner](#) to discuss WUE expectations for their system.

These are the Water Use Efficiency Requirements for Nonmunicipal Systems if you are completing a SWSMP

A complete WUE program includes both supply side (water system) and demand side (customer) strategies for efficient water use. A utility should demonstrate its efficient use of the resource and help their customers to use water efficiently. This guidance was developed to assist nonmunicipal water systems meet WUE planning requirements and recommendations.

[WAC 246-290-105](#)

(1) The purpose of a SWSMP is to:

- a) Demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with all relevant local, state, and federal plans and regulations.
- b) Establish eligibility for funding under chapter [246-296 WAC](#).

(2) All noncommunity and all community systems not required to complete a WSP as described under [WAC 246-290-100\(2\)](#) shall develop and implement a small water system management program.

Water Use Efficiency-Related Requirements

1. Per [WAC 246-290-496\(1\)\(a\)](#), Install production (source) meters.
2. Provide water production data monthly and annually for each source and provide water consumption data for residential and non-residential annual totals, [WAC 246-290-105\(4\)\(h\)\(i and ii\)](#).
3. Forecast demand considering water use trends based on actual water use records, [WAC 246-290-105\(4\)\(k\)\(i\)](#).
4. Evaluate a rate structure that would encourage water use efficiency, [WAC 246-290-105\(4\)\(l\)](#).
5. Create a water use efficiency program, [WAC 246-290-105\(4\)\(g\)](#).

Water Use Efficiency Program

[WAC 246-290-010](#) defines a WUE program as policies and activities focusing on increasing water supply efficiency and water demand efficiency to minimize water withdrawals and water use.

The WUE program recommendations summarized below replace the Water Conservation Program (Element 14) previously required in the Small Water System Management Program.

We recommend that an effective WUE program should include:

- ◆ Setting water saving goals for supply side (water system) and demand side (customer) to promote water use efficiency.
- ◆ Identifying water saving measures to meet goals.
- ◆ Evaluating, reporting, and managing water loss.
- ◆ Educating your customers about WUE.
- ◆ Installing consumption meters to determine annual residential and non-residential usage.
- ◆ Evaluating WUE program effectiveness every six years.
- ◆ Reporting WUE program success annually to your customers. Consider using an annual newsletter or your annual consumer confidence report.

Water System Plan (WSP)

Water Use Efficiency Requirements for Nonmunicipal Systems for Completing a Water System Plan (WSP)

A complete WUE program includes both supply side (water system) and demand side (customer) strategies for efficient water use. A utility should demonstrate its efficient use of resources and help their customers use water efficiently. This guidance was developed to assist nonmunicipal water systems in meeting planning requirements and recommendations regarding WUE.

[WAC 246-290-100](#)

(1) The purpose of a Water System Plan is to:

- a) Demonstrate the system's operational, technical, managerial, and financial capability to achieve and maintain compliance with relevant local, state, and federal plans and regulations.
- b) Demonstrate how the system will address present and future needs in a manner consistent with other relevant plans and local, state, and federal laws, including applicable land use plans.
- c) Establish eligibility for funding under chapter [246-296 WAC](#).

Water Use Efficiency-Related Requirements

1. Per [WAC 246-290-496\(1\)\(a\)](#), install production (source) meters.

2. Provide water production data monthly and annually for each source and provide water consumption data for each customer class (annual totals) per [WAC 246-290-100\(4\)\(b\)\(ii\)\(A and B\)](#). If over 1,000 connections include seasonal variations, [WAC 246-290-100\(4\)\(d\)](#).
3. Provide a demand forecast for a consecutive ten-year and at least a twenty-year period with and without efficiency savings, [WAC 246-290-100\(4\)\(c\)](#).
4. For systems serving 1,000 or more connections, evaluate reclaimed water opportunities, [WAC 246-20-100\(4\)\(f\)\(vii\)](#).
5. Evaluate the affordability and feasibility of a water rate structure that encourages water demand efficiency, [WAC 246-290-100\(4\)\(j\)\(iv\)](#).
6. Create a water use efficiency program, [WAC 246-290-100\(4\)\(f\)\(i\)](#), taking into consideration the water supply characteristics and affect from current and future use on water supply (see [WAC 246-290-100 \(4\)\(f\)\(ii\)\(B\)](#) and [Appendix C](#)).

Water Use Efficiency Program

[WAC 246-290-010](#) defines a WUE program as policies and activities focusing on increasing water supply efficiency and water demand efficiency to minimize water withdrawals and water use.

The WUE recommendations summarized below replace the 1994 Conservation Planning Requirements/Guidelines used in Water System Plans.

We recommend that an effective WUE program should include:

- ◆ Setting water saving goals for supply side (water system) and demand side (customer) to promote water use efficiency.
- ◆ Identifying water saving measures to meet goals.
- ◆ Evaluating, reporting, and managing water loss.
- ◆ Educating your customers about WUE.
- ◆ Installing consumption meters to determine annual usage and customer class data.
- ◆ Evaluating WUE program effectiveness as part of every water system plan or plan update.
- ◆ Reporting WUE program success annually to your customers. Consider using an annual newsletter or your annual consumer confidence report.