



Water Use Efficiency Goals

2019 – 2025

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My Background

21 + years at PUD

Hired as Water Resource Manager in 1998, became Resource Manager ~ 2005

Masters in Geology from Eastern Washington University. Thesis work on Hydrogeology.

In 10 years as PUD representative of on WRIA 17 planning unit wrote grants and participated in water resource projects including HJ Carroll Park deep well, aquifer storage and recovery study, two USGS water projects, local storage and water demand studies.

Worked with Ecology to secure language to allow domestic multiple use in the WRIA 17 water rule (Quilcene basin).

Responsible for WUE reporting, CCRs, water right management, water availability, LUD management, water conservation, etc.

Requirements under Washington State law.

What water use efficiency (WUE) is intended to achieve.

Review existing water use efficiency goals and how we attempted to achieve them

Review proposed water use efficiency goals and how we plan to achieve them.

Board Discussion/Public Testimony
Adoption of water use efficiency goals.

Meeting Format

Establish	Evaluate or implement	Develop	Install	Achieve	Report
<ul style="list-style-type: none">Publicly establish water savings goals for their customers.	<ul style="list-style-type: none">Evaluate or implement specific water saving measures to achieve customer-based goals.	<ul style="list-style-type: none">Develop a WUE planning program to support the established goals.	<ul style="list-style-type: none">Install meters on all customer connections by January 22, 2017.	<ul style="list-style-type: none">Achieve a standard of no more than 10% water loss.	<ul style="list-style-type: none">Report annually on progress towards achieving these goals.

Requirements under state law

What WUE Rule is intended to achieve:

WUE Helps Protect Against:

- Temporary water service interruptions during peak usage.
- Long term or repeated water service disruptions due to limited water supply.
- Contamination of water supply due to leaky pipes.

WUE Helps Ensure & Promote:

- Long term reliable water supplies.
- Good stewardship of the state's water resource.
- Efficient operation and management of water systems.
- Reduced energy usage and money savings.

CURRENT JEFFERSON PUD GROUP A WATER SYSTEMS & CONNECTIONS

Quimper	3,462
Bywater	215
Gardiner	131
Lazy C	119
Coyle	117
Triton Cove	53
Snow Creek	50
Quilcene	40
Mats View	20
<i>Total active connections</i>	<i>4,207</i>

Current Water Use Goals

DEMAND SIDE

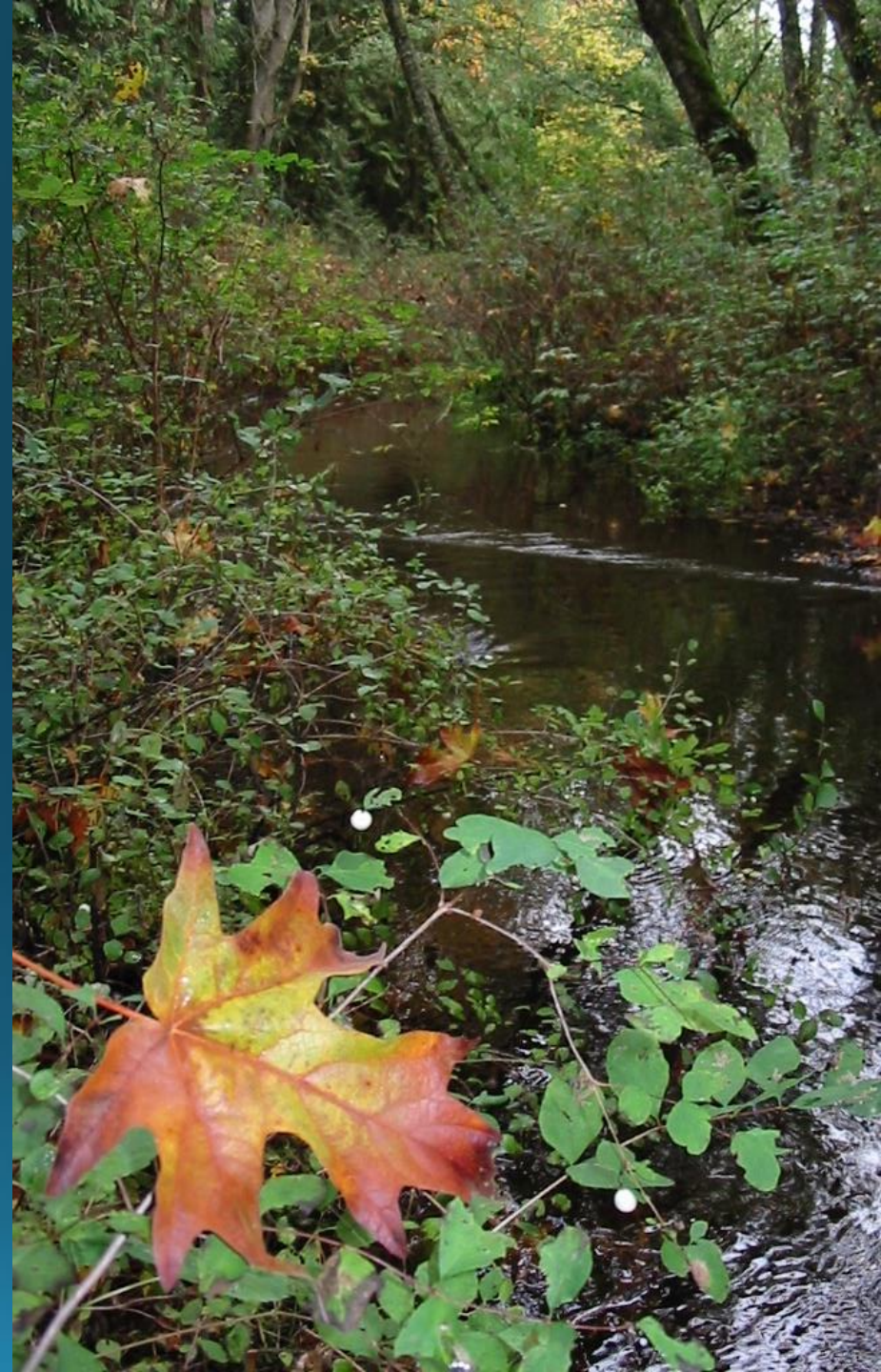
2% reduction in usage – 2010 baseline

Singled out commercial and government
– Quimper and Quilcene

SUPPLY SIDE

<10% distribution system leakage

Better account for fire hydrant usage



Current Water Conservation Plan

From 2011 Water System Plan

- Indoor/Outdoor water conservation kits (at fairs/over the counter)
- Toilet tablets
- Newsletter articles and annual conservation message billing inserts.
- Water education workshops and talks (WSU Beachwatchers, Realtors Association, etc.)
- Low flow showerhead giveaways and BPA rebates (low flow showerheads)
- Water conservation messaging (“Use Water Wisely” pens and pencils)

Three tier water rate

Most important “tool” in the WUE toolbox are rates

Residential base or meter fee -	\$25.65
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Consumption Charge (per 100 gallons)

0-5,000 gallons:	\$0.29
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5,001 – 10,000 gallons:	\$0.40
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10,001 plus gallons:	\$0.54
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Proposed Fourth Tier for “super users”

- There are several notable residential water users that routinely consume over 100,000 gallons per cycle during peak season.
- Even relatively large water systems such as Bywater Bay has had difficulty keeping up with these customers (reservoirs nearly emptied numerous times in previous years).
- These users can have a potentially disproportionate impact on the PUD staff and infrastructure; they warrant a rate commensurate to their impact.

Demand Side Goal Performance

Current 2011 WUE Plan Goals

System	2011	2012	2013	2014	2015	2016	2017
Bywater	Yes	Yes	No	Yes	No	Yes	No
Coyle						Yes	Yes
Gardiner	Yes	Yes	Yes	No	No	Yes	No
Lazy C	No	Yes	No	No	Yes	Yes	Yes
Mats View		Yes	Yes	Yes	No	No	No
Quilcene	No	Yes	Yes	Yes	No	No	No
Quimper	Yes	No	No	KALA PT	No	LUD#3	No
Snow Creek	Yes	Yes	No	Yes	No	No	No
Triton Cove	No	Yes	Yes	Yes	No	Yes	Yes

Question is: Did customers make progress toward 2% reduction in use goal?

Note: Kala Point added in 2014, LUD#3 in 2016

Equivalent Residential Units (ERUs)

is a dwelling unit, or development that is equal to a single- family residence in terms of the nature of its use or impact on an improvement.

Used as a water engineering standard for water system planning for determining a water system's capacity.

Ideal for setting water use benchmarks for water use efficiency planning purposes.

The simple math....



Annual metered use (gals) x
1 yr/365 days /
of active connections
= Gallons per day/active connection

Metered use value
is affected by
leaks on customer
side of meter.

Capture
“Snowbirds” by
counting meter’s
non-zero reads.

....is harder than it looks.

Demand (Customer) Side Goal – 3 yr Mean ERU

Rationale for Using 3 yr Mean ERU as baseline

- Using 3 yr mean or “average year” illustrates that water savings can be achieved.
- Rational.
- Measurable.
- Bywater Bay should be adjusted for “super users”. Special case.
- Captures recent weather patterns (warm summers, 2015 drought).
- Should not have an adverse impact on water revenues near future.
- Quimper - using routes is best way to capture diversity of users within the system (Marrowstone ≠ Woodland Hills).

Demand Side Goal Recommendations

(minus Quimper)

System	ERU (gpd/connection)			
	2015	2016	2017	Mean
Bywater Bay	216	189	212	205
Gardiner	171	177	184	177
Lazy C	96	81	80	86
Triton Cove	92	85	83	87
Snow Creek	93	112	126	110
Mats View	149	150	195	164
Quilcene	168	161	200	176
Coyle	112	111	102	108

Note: Staff recommends 190 gpd/connection at Bywater Bay, not the mean.

	ERU (gpd/connection)			Goal
Quimper				
	2015	2016	2017	3 yr Mean
Tri-Area	166	141	147	151
Kala Point	164	150	159	157
LUD 3	126	123	130	126
Marrowstone	153	103	114	123
Glen Cove South	182	164	175	174

Quimper - Demand Side Recommendations

Supply Side Goals

State-Mandated

- Stay at or below the distribution leakage standard of 10% (3 yr average)

Voluntary

- Stay at or below 3 yr average (2015 -2017) benchmark per system
- Survey and monitor affected system infrastructure with sonic leak detection sensors and data loggers to identify large system leaks.

Production

- Water withdrawn from groundwater wells (in gallons)
- Having a “tight” system reduces need for production.
- Keeping production low is good for the resource.



Distribution System Leakage (DSL)

$$\text{DSL} = (\text{Production} - \text{Use}) / \text{Production} \times 100\%$$

- “Production” is source water (from wells)
- “Use” is accounted for water either metered or measured. It includes metered treatment backwash.
- Utilities must keep DLS at 10% or less (3 year average) or develop a Water Loss Control Plan to remedy it.
- For smaller systems, high percentage DSL numbers can be challenging as small leaks can get a system out of compliance.

Production, Use and Distribution System Leakage (DSL)

System	Production			Use			DSL (gal)				DSL %				
	2016	2017	2018	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018	3yr
Bywater Bay	16,761,640	20,911,800	18,527,840	16,218,110	20,043,159	17,893,473	280,180	543,530	868,641	634,367	1.5	3.2	4.2	3.4	3.6
Gardiner	9,263,300	11,357,700	8,597,800	7,451,290	9,029,510	7,847,278	218,690	1,802,010	2,328,190	750,522	2.3	19.5	20.5	8.7	16.2
Lazy C	3,448,400	3,263,800	3314900	3,357,250	3,260,775	3262668	208,120	91,150	3,025	52,232	5.7	2.6	0.1	1.6	1.4
Triton Cove	1,266,560	1,977,470	1,958,100	1,151,400	1,507,120	1,290,876	173,010	115,160	470,350	667,224	12.5	9.1	23.8	34.1	22.3
Snow Creek	1,453,400	1,348,350	1405810	1,393,430	1,172,790	1360281	341,160	59,970	175,560	45,529	24.9	4.1	13.0	3.2	6.8
Mats View	1,736,300	2,117,700	1,682,030	1,442,050	1,378,510	1,426,695	320,260	294,250	739,190	255,335	19.1	16.9	34.9	15.2	22.3
Quilcene	2,336,330	2,260,620	2,132,350	2,089,290	2,105,340	1,951,590	311,730	247,040	155,280	180,760	13.1	10.6	6.9	8.7	8.7
Coyle	4,664,000	4,604,000	4,190,000	1,895,740	1,832,740	1,745,270	2,182,830	2,768,260	2,771,260	2,444,730	52.3	59.4	60.2	58.3	59.3
Quimper	218,343,530	281,970,710	275387060	207,900,810	261,233,781	260433662	7,635,940	10,442,720	20,736,929	14,953,398	3.3	4.8	7.4	5.43	5.9

Note that this slide replaces a less readable one presented at the meeting.
 Plus distribution system leakage was added (gals)
 GREEN indicates system meets <10% DSL standard.
 RED indicates it has not.

Supply Side Goal Recommendations



Keep production volumes at 3 year average (2016-2018).



Pursue aggressive leak identification program using sensors and dataloggers to eliminate system leakage.



Get all systems under State-Required 10% leakage standard.



Questions?