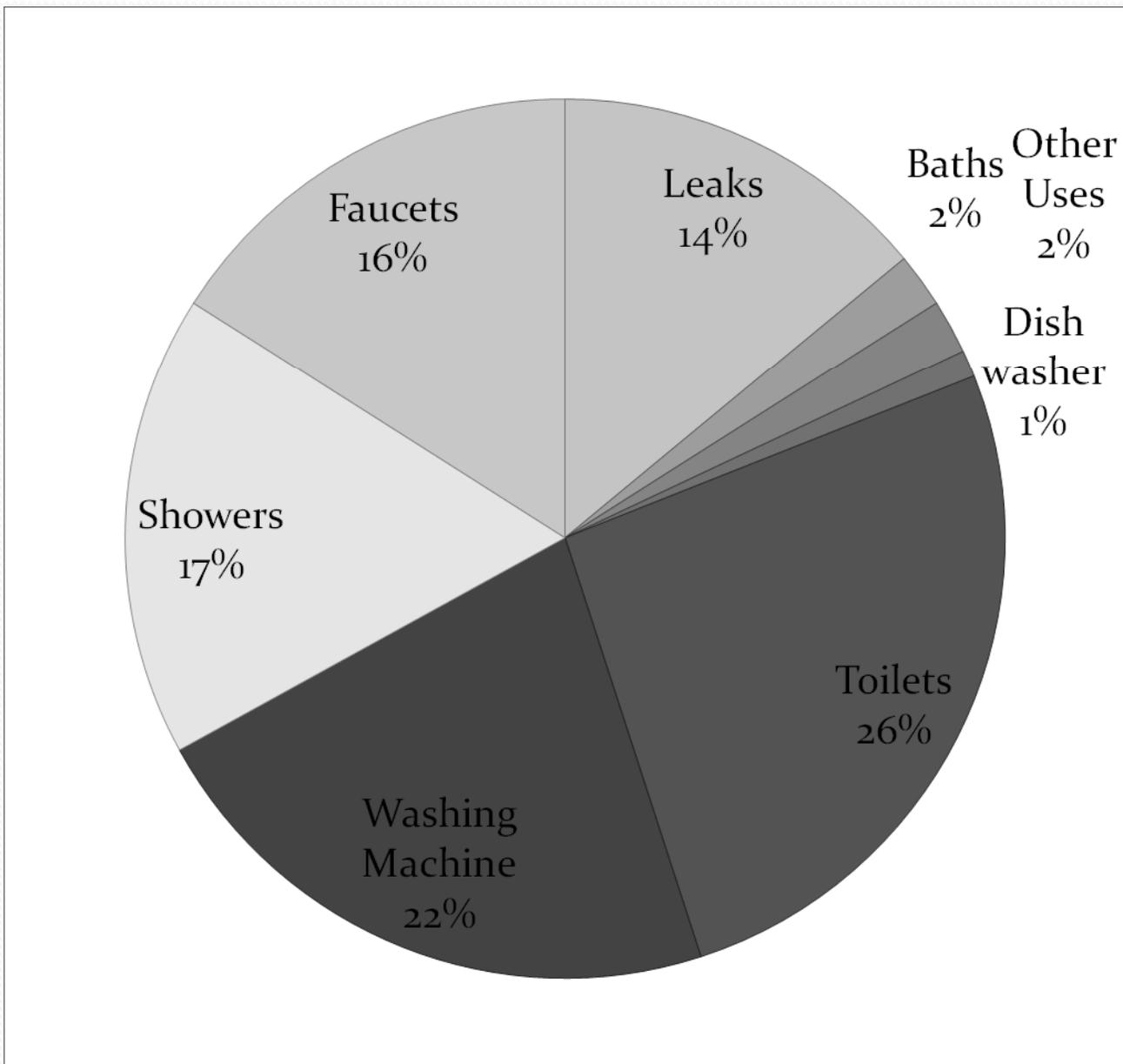


City of
St. Helens

*Consumer Guide to Water
Conservation*

Indoor Water Use





Dishwasher

Fact Sheet

In the dishwasher versus hand washing debate, using an automatic dishwasher to clean dishes generally wins for both water and energy efficiency. Most conventional dishwashers installed in U.S. households today use 7-14 gallons per load and account for less than 2 percent of water used in an average American home. Despite the small portion of overall water consumption by dishwashers, newer machines are substantially more water-efficient than older models. Today the most efficient (full-size) machines use a maximum of 7 gallons per load- and some as little as 4.5 gallons. Energy saving also results from upgrading to an efficient dishwasher because fewer gallons of water need to be heated per cycle.

Choosing a Dishwasher

If you are considering replacing or installing dishwashers at your property, investigate the possibility of upgrading to a high-efficiency model. Energy Star is a national program that labels dishwashers if they are energy efficient. This can also be a good indicator that the machine is also water efficient. Standard dishwashers use a maximum of 5.8 gallons per cycle. If you purchase a high-efficiency dishwasher, check with the Oregon Department of Energy to see if residential or business energy tax credits are available.

Pre-rinsing

The next time you turn on the faucet to re-rinse your dinner plates, remember that five minutes of pre-rinsing in the sink using running water can use up to 12 gallons of water depending on your faucet. Using the pre-rinse cycle (if your dishwasher has one) to rinse dishes uses approximately one gallon of water.

Another way to prepare dishes for the dishwasher is to do what most appliance manufactures recommend and scrape (not rinse) dishes before placing them in the dishwasher.

Choosing a Cycle

Most dishwashers provide a variety of cycle choices. Using the correct wash cycle will increase cleaning and water efficiency. Choose the shortest wash cycle for lightly soiled loads and the “heavy” or “pot/pan” cycle for the heavily soiled items. Using the heavier setting when it’s not needed won’t clean the dishes any better- it will just waste water.

Loading

Operate the dishwasher with full loads only. Load dishes properly so that water is able to reach all dish surfaces. Incorrect loading may cause part or the entire load to be re-washed. To help you load correctly follow these helpful dishwasher loading tricks from *Real Simple* magazine:

- Face plates toward the center of the dishwasher.
- Put bowls on the top rack facing center so water can reach all surfaces more easily.
- Place large platters and cookie sheets on the bottom rack along the outer edges to prevent them from blocking detergent and water from other dishes.
- Place large serving spoons too big for the silverware basket horizontally across the top rack and facedown to not collect water.
- Large pots, serving bowls, and casseroles belong on the bottom rack at a slight angle to ensure proper water contact.
- Glasses should go on the top rack between tines, not over them, to prevent them from rattling or coming out with tine marks.

Easy Dishwashing Water Conservation Tips!

- * **Operate the dishwasher with full loads only.**
- * **If hand-washing dishes, wash them in a filled sink and let the water run only while rinsing items under the faucet.**



Faucet

Fact Sheet

Bathroom and kitchen faucets account for 16 percent of the water used in an American home. In a typical house, faucets run for around 8 minutes a day and consume nearly 11 gallons of water per person per day. Reducing faucet water use and repairing leaks is an easy way to save water and money around the house!

How much water does my faucet use?

Prior to 1994, faucets used between 2.75 and 7.0 gallons per minute (gpm). Today, federal requirements state that residential bathroom and kitchen faucets have a maximum flow rate of 2.2 gpm, and non-residential public restrooms of 0.5 gpm. Faucets are often fitted with a device called an aerator that screws onto the end of the faucet. They are designed to mix air with water and produce a more full flow.

Retrofit Your Faucet

One of the easiest ways to save water and money with your faucet is to install a water-efficient aerator. Bathroom faucet aerators that flow between 0.5 to 1.0 gpm are generally adequate for hand washing. Kitchen faucets may require a higher flow rate such as 1.5 to 2.0 gpm to fill a sink or spray food off of dishes. Reducing the flow can increase the wait time for hot water.



Typical bathroom (left) and kitchen (right) faucet aerators.

Install a WaterSense fixture

If it's time for you to replace a new bathroom or kitchen faucet, consider buying a WaterSense approved faucet fixture. WaterSense is the U.S. Environmental Protection Agency's product labeling program for quality, water efficient products. Learn more about the program by going to: <http://www.epa.gov/watersense>

Repair you leaky faucet

Is your faucet dripping? If the answer is yes, you may be wasting a lot of water. For example, a faucet that leaks at one drip per second can waste over 8 gallons of water per day, or around 2,900 gallons per year. In some cases, the repair can be relatively simple, such as replacing a worn washer.

Easy Faucet Water Conservation Tips!

- * Turn the bathroom faucet off while brushing your teeth.**
- * When washing dishes by hand, fill the sink or a pan with soapy water instead of letting the faucet run while soaping dishes. Rinse dishes in a filled sink or pan of water.**



Shower & Bath

Fact Sheet

Showers account for roughly 17 percent of the water used indoors and are typically the third-largest use of water in the average home. According to a national study of residential water use, the average American shower uses roughly 17 gallons of water and lasts for around 8 minutes. The average bath uses 24 gallons of water and accounts for roughly 2 percent of the water used indoors. Taking time to think about how you can conserve water in the shower or bath will help you save water, energy, and money!

Determine how much water your shower uses

The amount of water consumed while taking a shower depends on two main factors: the flow rate of the showerhead and how long the shower lasts.

Flow rate: Prior to the 1980s most showerheads used 5 gallons-per-minute or more. By the mid-1990s federal requirements mandated that new showerheads used no more than 2.5 gpm. Most showerheads are marked with the flow rate on a small silver button in the center of the head.

Shower length: Changing how long you spend in the shower is the least expensive way to conserve water. A 10-minute shower will use twice as much water as a 5-minute shower taken at the same flow rate. Some people believe that a lower flow rate leads to longer shower times; however, studies show that flow rates have little influence on the duration of the shower.

Replace your showerhead

Another great way to conserve water in the shower is to make sure you are using a water-efficient showerhead. Showerheads generally last about 10 years. As showerheads age, they may wear and leak, or the nozzle holes can enlarge or plug, causing them to use more water or change the pattern of the spray so that the shower spray no longer feels even and comfortable. If you have showerheads that are more than 10 years old, it may be time to replace them.

Today there are many well-performing showerheads on the market that flow at 1.5 gpm or less! The performance and quality of showerheads can vary greatly. Talk to a representative at your local plumbing supply store and visit the WaterSense website to make sure you purchase a showerhead that is right for you.

WaterSense labeling

WaterSense is the U.S. Environmental Protection Agency's product labeling program for quality, water efficient products. The EPA will soon be labeling showerheads that have been tested for performance and water-efficiency. Learn more about the program by going to: <http://www.epa.gov/watersense>



Energy saving

Hot water for showers is one of the biggest energy users in the home after the furnace. Switching to a water-efficient showerhead not only cuts down on water use, but also the energy needed to make and keep the water hot.

Water Consumptions in the bath

The amount of water used while taking a bath varies depending on the size of the bathtub and the level to which the user fills the tub. The American bathtub size has generally decreased over time and today the typical modern bathtub (non-jetted) holds between 25 to 45 gallons. A person who only fills the tub half-way will consume approximately 20 gallons while bathers that fill the tub up to (or exceeding) the overflow valve will use 40 to 50 gallons.

To reduce water used while taking a bath follow these helpful hints:

- **Fill the tub to your belly button.** Only fill the bathtub as much as you need.
- **Use a small tub insert when possible.** Bathing babies, small children, and pets requires much less water, so use a small tub insert or baby bathtub.
- **Don't overflow the tub.** Over filling the tub forces unneeded water into the overflow drain.

Estimated Water Use by Duration and Bathing Method

<i>Device</i>	<i>Duration of Event in Minutes</i>					
	5	10	15	20	25	30
Tub half-full	20 gallons	20 gallons	20 gallons	20 gallons	20 gallons	20 gallons
Tub Full	45 gallons	45 gallons	45 gallons	45 gallons	45 gallons	45 gallons
Whirlpool tub	80 gallons	80 gallons	80 gallons	80 gallons	80 gallons	80 gallons
1.5 gpm showerhead	8 gallons	15 gallons	23 gallons	30 gallons	38 gallons	45 gallons
2.5 gpm showerhead	13 gallons	25 gallons	38 gallons	50 gallons	63 gallons	75 gallons
5.0 gpm showerhead	25 gallons	50 gallons	75 gallons	100 gallons	125 gallons	150 gallons

Extra-Efficient	Efficient	Non-Efficient	Wasteful
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Table is adapted from the Alliance for Water Efficiency:

http://www.allianceforwaterefficiency.org/Residential_Shower_Introduction.aspx



Toilet

Fact Sheet

Operating a toilet can cost more money than you might think. A national study of residential water uses found that toilets can account for 26 percent of water used in an American home. Whenever a toilet is flushed, there are charges for the water and wastewater related to your toilet's consumption. While today's federal requirements specify that toilets use no more than 1.6 gallons per flush, there are still many old and inefficient toilets in operation that consume 3.5, 5.0, or more gallons with each flush!

Determine how much water your toilet uses

Finding out how much water your toilet uses per flush is a great first step to decide whether upgrading your toilet is a good investment.

**Check the date:* Try looking inside the tank for a manufacturer's stamp indicating when your toilet was made.

Manufacture Date	Estimated Flush Volume (gallons per flush)
1994 to present*	1.0 to 1.6
1980 to 1994*	3.5 to 4.5
1950 to 1980	5.0
Pre-1950's	7.0

**Measure the volume:* If you can't find the date, or you want to be more exact, use a tape measure to calculate the volume of your toilet tank.

1. Remove the toilet tank lid and measure the internal length and width of the tank.
2. Measure the depth of the water in the tank. Flush the toilet and measure the depth of the water that remains in the bottom of the tank before it starts to refill (not all tanks will completely empty of water). Subtract the depth of the water that was left in the tank after flushing from the depth of water when the tank was full. This gives you the "net" height of the water.
3. Use the calculation below to determine the approximate volume of water used to flush the toilet. Note that you add an additional 0.6 gallons per flush to account for water that is used to refill the bowl.

$$\begin{array}{ccccccc}
 \boxed{} & \times & \boxed{} & \times & \boxed{} & = & \boxed{} \div \boxed{231} = \boxed{} + \boxed{0.6} = \boxed{} \\
 \text{Length in} & & \text{Width in} & & \text{Weight of} & & \text{Volume} & & \text{Tank} & & \text{Gallons} & & \text{Total Gallons per flush (GPF)} \\
 \text{inches} & & \text{inches} & & \text{water in} & & & & \text{volume} & & \text{in bowl} & & \\
 & & & & \text{inches} & & & & \text{(GPF)} & & & &
 \end{array}$$

This calculation is approximate and actual flush volumes will vary due to variable sin tank shape, internal flush components and other factors.

Check your toilet for leaks

Sometimes it is easy to tell that your toilet is leaking-you hear a sound of running water or a faint hissing or trickling. Sometime toilets leaks can be silent and may be overlooked. To check your toilet for leaks. Lift off the toilet tank lid. Without flushing, place 1 dye tablet (or 10 drops of food coloring) in the toilet tank. If water in the bowl changes colors in 15 minutes, you have a toilet leak. Toilet leaks can be caused by something as simple as a worn out flapper.



Leak detection tablets

Retrofit an existing toilet

If it isn't in your budget to replace your existing toilet with a new one, consider retrofitting your existing toilet to help it use less water. There are two common types of toilet retrofit devices- a fill-cycle diverter and a toilet displacement bag for use in your toilet tank. Each device saves about a half-gallon per flush.



Toilet displacement bag



Toilet fill-cycle diverter

Replace your toilet

Today it's easy to find a water saving high-performance toilet thanks to WaterSense – a national program sponsored by the United States Environmental Protection Agency. Only toilets that are 20 percent more water-efficient than standard toilets and pass rigorous independent performance testing receive the WaterSense label.

Another resource for choosing a new toilet is the Maximum Performance Testing study of toilet performance. It is an excellent, unbiased source for information about the performance of popular toilet models and brands. You can download a free copy at: <http://www.cwwa.ca/freepub e.asp>.

Dual-flushing toilets

A dual-flush toilet is designed to give the user a choice between a standard volume flush for solid waste (usually 1.28 to 1.6 gallons), and, a lower volume flush for liquids and toilet paper (0.8 to 1.0 gallons). Dual-flush toilets are becoming more common and can be even found at the Portland Airport in Oregon. Preliminary field testing of dual-flush toilets in Washington, California, Oregon, Utah and Canada is showing that dual-flush toilet consumption is very similar to the 1.28 gallons per flush High-Efficiency Toilets.

A dual-flush toilet with separate buttons for high and low volume flushes.



An example of a sign displayed in restrooms (similar to signs at the Portland Airport).



Washing Machine

Fact Sheet

About 22 percent of the water used in a typical residential home is for washing clothes. Estimates say that a four-person household with a standard washing machine will generate more than 300 loads of laundry per year, consuming 12,000 gallons of water. A high-efficiency front-loading washing machine can reduce water consumption by more than half, saving you energy and money.

Top- versus front-loading washing machines

Top-loading or vertical-axis washing machines are designed to suspend clothes in soapy water while an agitator moves laundry around, dissolving and removing stains and dirt. Design has changed a little since they were created in the 1940s and many top-loading washing machines still use up to 40 gallons per load because they require large amounts of water to keep the clothing in suspension. Horizontal-axis, or front-loading washing machines, use only 15-30 gallons of water to wash the same amount of clothes as a top-loading one. A constantly rotating drum lifts clothes in and out of the water removing dirt and stains, eliminating the need to suspend them in water. Studies have shown that this process is not only gentler on fabric and more water-efficient, but also requires less laundry detergent and saves on the energy used to heat water.



High-efficiency washing machines

Today, the most efficient front-loading washing machines use as little as 5 gallons of water! If you are considering the purchase of a high-efficiency washing machine, do your research to find an efficient model that works for you. The Alliance for Water Efficiency and Consortium for Energy Efficiency have great web sites. For more information visit: <http://www.cce1.org/resid/seha/rwsh/rwsh-main.php3>.

Incentives for efficient washing machines

If you purchase a high-efficiency washing machine, check with the Oregon Department of Energy and Energy Trust of Oregon for residential or business energy tax credits and rebates.

Multi-family laundry facilities

Central laundry facilities in multi-family buildings typically use far less water per occupant than providing in-unit washing machines and dryers. A 2001 study by the National Research Center showed that tenants with in-unit washing machines use 3.3 times as much water and 5 times as much energy for laundering than tenants that use common-area laundry rooms.

The convenience of having a washing machine at hand combined with the fact that most apartments dwellers do not pay their own water and sewer bill creates conditions in which tenants tend to wash smaller loads more frequently. If tenants are not charged directly for water use, central laundry facilities can reduce water use and therefore water and sewer fees.

Of course, in-unit washing machines and dryers are generally offered as a convenience to tenants for marketing purposes in which case, consider purchasing high-efficiency machines. High-efficiency washing machines use 40 percent less water and 60 percent less energy than a typical washing machine.

Laundry Water Conservation Tips

*** Remember to operate the washing machine with full loads only!**



Breakdown of your bill

The City of St. Helens' customers bills include two components:

- Fixed rate
- Volume charge for the amount consumed

The two components are added together to compute an invoice for each customer. Fixed rates are based on costs associated with maintaining/reading meters and costs associated with billing and are charged per connection to the water system. Volume rates are based on the customer class for each 100 cubic feet (ccf) of water. The following table lists rates for customers within the City of St. Helens, and wholesale customers.

Water Utility Rate Components (Bi-Monthly)

		Inside City of St. Helens
1. Fixed Rate		\$16.56
2. Volume Rate (by consumer class per 100 cu. ft.)		
	Residential	\$ 4.11
	Multi-family:	
	Duplex	\$ 3.97
	Apartments	\$ 3.89

Sewer Utility Rate Components (Bi-Monthly)

1. Fixed Rate		\$25.92
Residential without measurable consumption		\$80.78
2. Volume Rate (by consumer class per 100 cu. ft.)		
	Residential (Single Family)	
	With measurable water consumption	\$ 4.96
	Multi-Family:	
	Two residential sewers	\$ 5.50
	Duplex	\$ 3.96
	Apartments	\$ 3.81

Residential sewer accounts – Winter Averaging

Volume will be based on 4-month winter averaging of water consumption. The winter average period will be defined as the 4-month period starting with the first full billing cycle starting on December 15th of each year. Accounts with an average usage of less than 1 ccf of water consumption are automatically assessed at the 5.53 ccf average.

Storm Drainage Utility Rates (Bi-Monthly)

1. Residential	\$18.28
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* Billings for customers are based on amount of impervious surface for a property. The measurements are broken down into components of single family units or equivalent residential units.



Potential Savings Examples

Potential Savings on Residential Bi-monthly Utility Bill

Shower heads - Potential Savings Bi-monthly Per Person \$7 to \$25

	Pre mid 90's	Post mid 90's	Low Flow Device	Potential Savings	
				Pre mid 90's	Post mid 90's
Usage in gallons per minute	5.00	2.50	1.50		
Shower duration in minutes	10	10	10		
Gallons used per shower per person	50.00	25.00	15.00		
Number of days - bi-monthly	60	60	60		
Total bi-monthly usage per person	3,000	1,500	900		
Conversion to CF - measured on bill	401	201	120		
<u>Cost as of rates set 12-15-2011</u>					
Water	\$ 16.50	\$ 8.20	\$ 4.90	\$ 11.60	\$ 3.30
Sewer	\$ 19.90	\$ 9.90	\$ 6.00	\$ 13.90	\$ 3.90
Total cost per shower per person - bimonthly	\$ 36.40	\$ 18.10	\$ 10.90	\$ 25.50	\$ 7.20

Toilets - Potential Savings Bi-monthly Per Person \$2.2 to \$9.2

	Pre mid 90's	Post mid 90's	Dual Flushing	Potential Savings	
				Pre mid 90's	Post mid 90's
Usage in gallons per flush	3.50	1.60	1.00		
Number of flushes per day	5	5	5		
Gallons used per person	17.50	8.00	5.00		
Number of days - bi-monthly	60	60	60		
Total bi-monthly usage per person	1,050	480	300		
Conversion to CF - measured on bill	140	64	40		
<u>Cost as of rates set 12-15-2011</u>					
Water	\$ 5.80	\$ 2.60	\$ 1.60	\$ 4.20	\$ 1.00
Sewer	\$ 7.00	\$ 3.20	\$ 2.00	\$ 5.00	\$ 1.20
Total cost per person - bimonthly	\$ 12.80	\$ 5.80	\$ 3.60	\$ 9.20	\$ 2.20

Washing Machines - Potential Savings Bi-monthly Per Person \$1 to \$3

	Top Loading	Front Loading	High efficient	Potential Savings	
				Top Loading	Front Loading
Usage in gallons per wash	40.02	15.03	5.01		
Number of washes per week	1	1	1		
Gallons used per person	40.02	15.03	5.01		
Number of washes - bi-monthly	8	8	8		
Total bi-monthly usage per person	320	120	40		
Conversion to CF - measured on bill	43	16	5		
<u>Cost as of rates set 12-15-2011</u>					
Water	\$ 1.80	\$ 0.70	\$ 0.20	\$ 1.60	\$ 0.50
Sewer	\$ 2.10	\$ 0.80	\$ 0.30	\$ 1.80	\$ 0.50
Total cost per person - bimonthly	\$ 3.90	\$ 1.50	\$ 0.50	\$ 3.40	\$ 1.00