

**Proposal to Redesign the City of
Salem's Water & Sewer Bill to
Promote Water Use Literacy and
Sustainability**

John Hayes, Chair

**Salem Sustainability, Energy and
Resiliency Committee**

August 26, 2020

Indoor Water Use at Home

When most people in the US want fresh, clean water, all they have to do is turn on a faucet. Still, no place is immune from drought, so it's important to be conservative with your water use at home, no matter where you live.

On average in the US, water use at home (water from the tap, toilet, dishwasher, etc.) adds up to about 138 gallons per household per day, or 60 gallons per person per day.

Table 1. A daily breakdown of water use in the US:

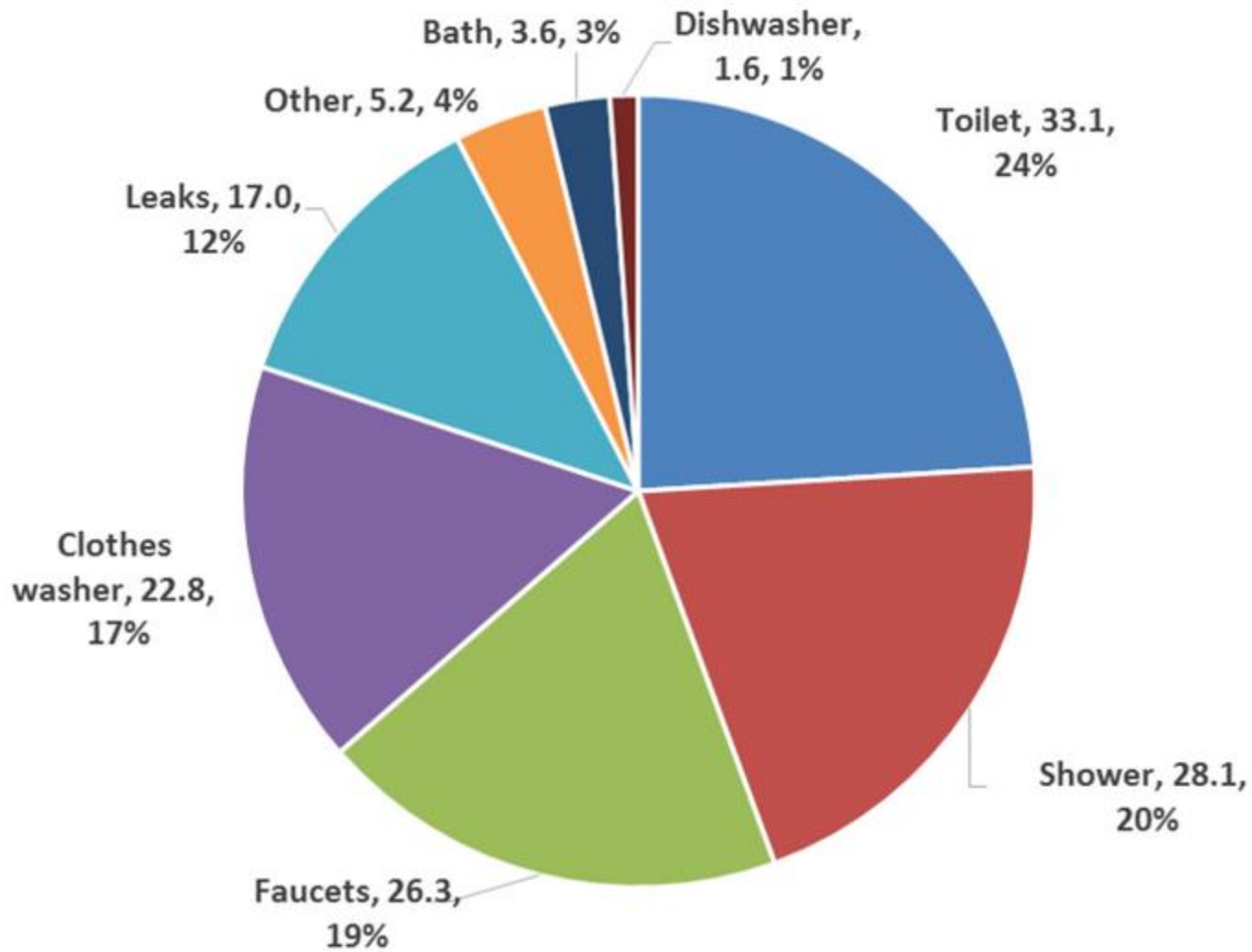
Appliance/Device	Household per Day	Percent of Total
Toilet	33 gallons	24%
Shower	27 gallons	20%
Faucet	27 gallons	20%
Washing Machine	22 gallons	16%
Leaks	18 gallons	13%
Bath	4 gallons	3%
Dishwasher	2 gallons	2%
Other	4 gallons	3%
Total	138 gallons	100% (101% with rounding)

SOURCE: Residential End Uses of Water, V2 (2016)

Residential water use in the U.S. and Canada

From Wikipedia, the free encyclopedia

Residential water use (also called domestic use, household use, or [tap water](#) use) includes all indoor and outdoor uses of [drinking](#) quality water at [single-family](#) and [multifamily](#) dwellings.^[2] These uses include a number of defined purposes (or water end uses) such as flushing toilets, washing clothes and dishes, showering and bathing, drinking, food preparation, watering lawns and gardens, and maintaining swimming pools. Some of these end uses are detectable (and measurable) while others are more difficult to gauge.



End uses of water for households in the U.S. in gallons per household per day and percent of indoor use^[1]

Totals 137.7 gallons/day Source: Wikipedia



100+ WAYS TO
CONSERVE WATER

KIDS & TEACHERS

RESOURCES

JOIN THE CAUSE

NEWS & EVENTS

CONTACT US

IS 24,000 GALLONS OF WATER PER MONTH TOO MUCH FOR A FAMILY OF THREE?



Understanding Your Water Bill

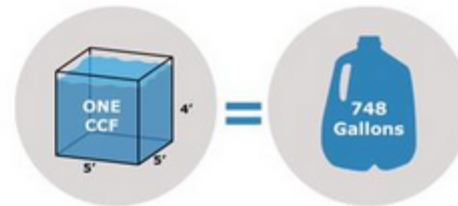


The first step in changing the way you use water in the future is by understanding how much water you use today. The best place to find this information is on your monthly water bill. Pull out your water bill and follow the steps below to learn more about it and your own water use.

How much do you use?

Different utilities use different units for measuring water use. The most common units are centum cubic feet (CCF) and the gallon. A CCF also called an HCF (hundred cubic feet), represents one hundred cubic feet of water. The first "C" comes from the Roman word for hundred, "centum." This is the most common unit used by both water and natural gas utilities. But you may be more familiar with the other unit, the gallon. One CCF is equal to 748 gallons.

What does your usage mean? The average American uses around 88 gallons per day per person in the household. That means a family of four would use around 10,500 gallons in a 30-day period. But usage varies a great deal across the country, mostly because of differences in weather patterns. For example, water use tends to be higher in drier areas of the country that rely more on irrigation for outdoor watering than in wetter parts of the country that can rely on more rainfall.



Front Side of the City's Water & Sewer Bill

City of Salem
Office of the Tax Collector
93 Washington Street
Salem, MA 01970
000004 0001679

*pd
8-16-20*



City of Salem
Water & Sewer Bill
You can pay your water & sewer bill
on-line at www.salem.com

Account #	Bill #
	1296626

NEW WATER & SEWER RATES EFFECTIVE AUGUST 1, 2020

5-DIGIT 01970
HAYES JOHN T
13 HANCOCK STREET
SALEM MA 01970-4645

Questions regarding billing, please contact (978) 619-5674
Email: kmoran@salem.com
Questions regarding payments, please contact (978) 619-5621

Water & Sewer FY 2021
Customer Copy

Account #	Bill #	Parcel ID	Bill Date	Due Date	Part Due			
[REDACTED]	1296626	330240	08/04/2020	09/08/2020	\$0.00			
Service Location					Interest on Past Due			
13 HANCOCK STREET					\$0.00			
					Current Total			
Service Type	Previous Read Date	Current Read Date	Read Code	Previous Reading	Current Reading	Usage (c.f.)	Charges	
Q W 5/8 RS	04/21/2020	07/20/2020	A	39471	41124	1653	\$59.84	\$177.70
Q S 5/8 RS			A			1653	\$117.86	Total Amount Due
					\$177.70			
					Discounted amount due if paid on or before 08/24/2020			
					\$171.72			
REPLACED METER USAGE					0			

READING / USAGE CODES		DISTRICTS' ISSUE DATES	
A - ACTUAL REMOTE READING	O - ACTUAL MANUAL READING	DISTRICT A: BILLS ISSUED OCTOBER, JANUARY, APRIL, JULY	
E - SYSTEM ESTIMATE	T - ESTIMATE - NEEDS TROUBLESHOOTING	DISTRICT B: BILLS ISSUED AUGUST, NOVEMBER, FEBRUARY, MAY	
P - IN-HOUSE ESTIMATE	H - NON-RESPONSIVE - METER REPLACEMENT	DISTRICT C: BILLS ISSUED SEPTEMBER, DECEMBER, MARCH, JUNE	

SEE REVERSE SIDE FOR IMPORTANT INFORMATION

1653 cubic feet for the most recent quarter of the year.

So JHayes' most recent Water & Sewer Bill indicated his household use for the 3 month period **4/21 – 7/20/20** was **1653 cubic feet**.

SO how many residents relate to 3 months of water use in c.f.? To convert to more user-friendly units they need to:

- 1) **Divide 1653 by 3** to get usage/month in c.f. ; [**551 c.f.**]
- 2) Know that there are 748 gallons of water in 100 cubic feet of water (hcf);
- 3) Convert 551 c.f./month to gal/month: $551/100 = 5.51\text{hcf}$
 $5.51\text{ hcf} * 748\text{ gal/hcf} = 4,121.48\text{ gal/month}$
- 4) **Divide the answer in #3 by 30 days** to get usage per day in gallons; [**137.38 gal/day for my home**].
[Note: our wintertime water use of 1436 c.f. is $\approx 119\text{ gal/day}$]

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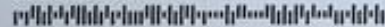
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Usage (gal/day)

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wasted space

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I submit that there is room to add a column for usage in the more user-friendly and relatable units of gal/day.

If there are any questions on your water usage or rates, please call the Water Department at (978) 619-5674, or email: kmoran@salem.com

- 22,300 ltr/mo/30 days = 22.3 m³/month = 5,881.04 gal/mo. = 1

Questions on payments, please call the Collector's Office at (978) 619-5621

16,700 " " " " " " " " = 4,411.672 " = 14

Questions on water quality, please call the Salem Beverly Water Board at (978) 922-2600

11,200 " " " " " " " " = 2,958.73 " = 98

All bills for water furnished not paid within thirty(30) days shall be declared delinquent by the City Collector and shall bear interest at the rate of 14% per annum.

Backflow Test Definitions

- BF RP TEST = Backflow RP Test (High Hazard)
- BF DC TEST = Backflow DC Test (Low Hazard)
- BF PV TEST = Backflow RP Test (Irrigation)

Office Hours: Mon, Tue, Wed: 8:00AM - 4:00PM
 Thursday 8:00AM - 7:00PM
 Friday 8:00AM - NOON

CURRENT RATE STRUCTURE - EFFECTIVE 08/01/2020 (Per Hundred Cubic Feet)		
TYPE OF SERVICE	RESIDENTIAL	NON-RESIDENTIAL
Water	\$3.62	\$4.90
Sewer	\$7.13	
Monthly up to 25,000 C.F.		\$10.80
Quarterly up to 75,000 C.F.		\$13.83
Monthly over 25,000 C.F.		
Quarterly over 75,000 C.F.		

- 1) There are minimum charges for low/no usage which are calculated on meter size.
- 2) No allowance will be made for no use water & sewer unless service is shut off at the street.
- 3) The presence of a water service binds the owner of the premises, his agents or tenants to the rules and regulations of the department.

SERVICE CHARGES FOR WATER SHUT-OFFS

Please call DPS at 978-744-3302 for this service

Service charges for turning water on or off is \$25.00 between 7:00AM to 2:30PM Monday through Friday. After 2:30PM, evenings, weekends and holidays the shut-off charge is \$50.00. In addition after hours there is a minimum overtime fee of \$35.00 per hour with a minimum of 4 hours. Fees subject to change.

Back of the city's Water & Sewer Bill.

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*** Possible water use info here ***

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This table could be smaller.

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The back of the water bill could have typical U.S. (or MA) water use in gallons/day for 2, 3, and 4-person households. This would allow residents to compare their use with average use. There could also be info as to winter vs. summertime water use.

Conclusions:

1. Water usage units of cubic feet per 3 month period are difficult for a typical resident to relate to in terms of their average daily water use.
2. We have demonstrated that there is sufficient room on both the front and back sides of the City's current Water & Sewer Bill to add a column on the front for water use in gal/day and on the back side to offer information as to average household water use for 2, 3, and 4-person households.
3. When information is useful and relatable it has power to cause change and to promote sustainability.