Estimating Water Use and Savings in Your Home

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The average Pennsylvanian uses about 62 gallons of water in their home each day. This fact sheet will help you determine how much you currently use and the amount of water and money you could save by installing water-conserving devices. These worksheets are educational exercises, and the numbers used to calculate use and energy savings are only averages. Your actual results could vary significantly.

How Much Water Do My Appliances Use?

The amount of water an appliance uses is generally related to the year it was manufactured. The tables below give the typical consumption of different household devices. Use these figures for Worksheet 1 to estimate your consumption. You can find more accurate values of the amount of water your appliances use from the original manuals.

Toilets (The average person flushes the toilet about five times daily.)

Pre-1950	7.0 gallons per flush (gpf)
1950–1980	5.0 gpf
1980–1994	3.5–4.5 gpf
After 1994	1.6 gpf

Showerheads (The average person showers about 5 minutes each day.)

Pre-1980	4.3 gallons per minute (gpm)
1980–1994	3.0 gpm
After 1994	2.5 gpm

Faucets (The average person uses faucets for about 8 minutes each day.)

Pre-1994	3.0 gpm
After 1994	2.5 gpm

Clothes Washer (The average home washes about seven loads of laundry per week)

Pre-1980	56 gallons per load (gpl)
1980–90	51 gpl
1990–present	43 gpl
Front-loading	27 gpl

Dishwasher (The average home uses a dishwasher about five times per week.)

1980–90	14 gpl
1990–1995	11 gpl
1995–present	7.0 (water efficient)–10.5 gpl (typical)

(If you hand-wash your dishes, assume 2 1/2 gallons of water each time.)

Worksheet 1: Your Family's Current Daily Water Use

1) Fill in the number of household members, or the information requested, in the first column.
2) Fill in the water consumed by each appliance based on its age, using the values from the previous page or the device's manual.
3) Multiply these numbers to calculate the total gallons of water the appliances in your home typically use each day.

Toilet
[____] household members X 5 flushes/person X [_____] gpf   = [_____] gal/day

Shower
[____] household members X 5 min/person X [_____] gpm   = [_____] gal/day

Faucets
[____] household members X 8 min/day X [_____] gpm   = [_____] gal/day

Clothes Washer
[____] loads of laundry/wk X [_____] gpl ? 7 days   = [_____] gal/day

Dishwasher
[____] loads of dishes/wk X [_____] gpl ? 7 days   = [_____] gal/day

OR

Hand-washed Dishes
[____] meals/day that require dish washing X 2 1/2 gal of water/meal   = [_____] gal/day

Miscellaneous Water Use
Think about the ways that you consume water in your home that are not mentioned above. For example, you might use water to fill humidifiers, fish tanks, hot tubs, or swimming pools. You might also water gardens or landscaping or wash vehicles. This outdoor consumption can be significant, especially during droughts. To estimate this use, consider that a typical 1/2-inch diameter garden hose emits about five gallons per minute. Think about these chores, and estimate the amount of water they consume.

Estimated miscellaneous water use   = [_____] gal/day

4) Add the values in the far right column to get the total daily water use of the appliances in your home.

Toilet + shower + faucets + clothes washer + dish washing + other uses   = [_____] gal/day

5) Divide this value by the number of household members to get the total amount of water consumed by each person. Is this value greater or less than the 62 gallons per person average?

_____ gal per person per day

Worksheet 2: Daily Domestic Use with Water-saving Appliances

This worksheet estimates the potential benefits of water-efficient appliances. In this case, the water use values are given.
1) Fill in the number of household members or loads of laundry or dishes, as you did for Worksheet 1.
2) Multiply the numbers in each row to calculate the daily consumption of each water-saving device.

Toilet

| household members X 5 flushes/person X | 1.6 | gpf | = | | gal/day

Shower

| household members X 5 min/person X | 2.0 | gpm | = | | gal/day

Faucets

| household members X 8 min/day X | 1.5 | gpm | = | | gal/day

Clothes Washer

| loads of laundry/wk X | 27 | gpl ? 7 days | = | | gal/day

Dishwasher

| loads of dishes/wk   X | 7 | gpl ? 7 days | = | | gal/day

OR

Hand-washed Dishes

| meals/day that require dish washing X 2 1/2 gal of water/meal | = | | gal/day

Miscellaneous Water Use
Think about how you could reduce your miscellaneous water consumption from Worksheet 1. For example, rain barrels can catch roof runoff for your gardening and landscaping needs or you could wash your vehicles less. Estimate the new value that these changes would bring.

Estimated miscellaneous water use   =   gal/day

3) Add the numbers in the far right column to project the new total daily water use of the appliances in your home with these water-saving features.

Toilet + shower + faucets + clothes washer + dish washing + other uses   =   gal/day

4) How does your per person water use compare to the state average now? Divide the total from #3 by the number of people in your house to get the water use per person. Is it greater or less than the 62 gallon per person average?

_____ gallons per person per day

How Much Water Could You Save?
You can calculate your daily and yearly water savings by comparing your daily use with and without water-efficient devices (the last box of Worksheet 1 and 2).

Daily household water use from Worksheet 1   =   gal/day
Daily household water use from Worksheet 2   =   gal/day
Subtract these values to get your daily water savings   =   gal/day
Multiply this value by 365 to get your annual water savings =   gal/yr

Leak Repairs: You can conserve even more water by fixing leaks. The average American home loses about 9 1/2 gallons of water per person every day. Most of these leaks are from toilet tanks. A faucet that drips once every second wastes about 10 gallons in one day! If your home has a water meter, you can easily check for leaks by shutting off all faucets and appliances. If your meter continues to turn, you have a leak. You can determine if a toilet is to blame by putting food coloring in its tank. If the food coloring appears in the toilet bowl, you should repair it.

Worksheet 3: Potential Dollar Savings

Water-efficient appliances can save money, as well as water. The following worksheet estimates the money you could save by installing these devices. These values are based on assumptions about energy costs and the approximate water savings you calculated in Worksheet 2. They do not include the purchase price of each appliance. Your actual savings could vary significantly.

Water Bill Savings

If your home is served by a public water supply, you probably pay for each gallon you use. In this case, conserving water also means saving money.

1) What was your total water savings (last box on Worksheet 2)　　　= [_____] gal/yr
2) Multiply this number by the price you pay for each gallon of water. If you don't know what this amount is, assume $5/1000 gal or $0.005/gal.

Water bill savings = [_____] gal/yr X $[_____] /gal　　　　= [_____] $

Annual Energy Savings

Any device that conserves hot water such as efficient dishwashers, clothes washers, showerheads, and faucets will also save money through reduced energy. The calculations below estimate how much your energy bill could lower, if you have an electric water heater. They assume that the average charge for electricity is 8 cents per kilowatt-hour (kWh). If you use a gas water heater, your savings will be slightly different.

Compute your savings by comparing the current water use of each appliance from Worksheet 1 to the reduced consumption from Worksheet 2.

Shower
Shower use without water-saving device (worksheet 1)　= [_____] gal/day
Shower use with water-saving device (worksheet 2)　= [_____] gal/day
Shower water savings (worksheet 1 – worksheet 2)　= [_____] gal/day

[_____] gal of water saved X 365 days X 0.13 kWh/gal X $0.08/ kWh = $[_____]
Note: The 0.13 kWh/gal figure assumes that water temperature when showering is 106ºF.

A low-flow showerhead will cost about four to eight dollars.

Dishwasher

Dishwasher use without water-saving device (worksheet 1) = [____] gal/day
Dishwasher use with water-saving device (worksheet 2) = [____] gal/day
Dishwasher water savings (worksheet 1 – worksheet 2) = [____] gal/day

[____] gal of water saved X 365 days X 0.20 kWh/gal X $0.08/kWh = $ [____]
Note: The 0.20 kWh per gallon estimate assumes that the dishwasher uses water heated to approximately 140ºF.

A water efficient model will cost about $300 to $700.

Clothes Washer

Clothes washer use without water-saving device (worksheet 1) = [____] gal/day
Clothes washer use with water-saving device (worksheet 2) = [____] gal/day
Clothes washer savings (worksheet 1 – worksheet 2) = [____] gal/day

[____] gal of water saved daily X 365 days X 0.076 kWh/gal X $0.08/kWh = $ [____]
Note: The 0.076 kWh per gallon value assumes that warm water is used in normal loads.

A water-efficient clothes washer will cost $600 to $1000.

Faucets

Faucet use without water-saving device (worksheet 1) = [____] gal/day
Faucet use with water-saving device (worksheet 2) = [____] gal/day
Faucet water savings (worksheet 1 – worksheet 2) = [____] gal/day

[____] gal of water saved X 365 days X 0.057 kWh/gal X $0.08/kWh = $ [____]
Note: The 0.057 kWh per gallon estimate assumes the average water temperature is 80ºF.

A low-flow aerator installed on existing faucets costs $0.50 to $3. Purchasing a low-flow faucet for the kitchen would cost $50 to $250 and $40 to $150 for the bathroom.

Annual Money Savings
Your annual money savings are the sum of the energy conserved with each appliance as well as the lowered water bill (if you use a public supply).

Shower energy savings + dishwasher energy savings + clothes washer energy savings + faucet energy savings + water bill savings

= $ _____ /yr

Sewer and Septic Savings
Water conservation also decreases wastewater discharges. Although sewer bills are typically flat fees, this reduction provides community benefits. If your home has an on-lot septic system, water conservation will lessen the load on your system, which lowers your pumping frequency and reduces malfunctions.

Source of Information:
Water and energy use estimates in this fact sheet are based on information published in:
Vickers, A. 2001. *Handbook of Water Use and Conservation.* WaterPlow Press, Amherst, MA.