ALABAMA COOPERATIVE Extension SYSTEM

ALABAMA A&M AND AUBURN UNIVERSITIES

ANR-790-1.3.2

Conserving Water
Installing Water-Saving Devices

Water-saving devices offer an inexpensive and lasting approach to conservation. The devices can be easily installed and used throughout the house without major disruptions in water use habits; consequently, they offer a palatable approach to water conservation for the American consumer.

Because such a huge percentage of the water is used in the bathroom, that is where water conservation efforts should focus. You can install a few simple, inexpensive devices in the bathroom that can save both water and money with no changes in your lifestyle or your present habits. The devices recommended for showers, faucets, and toilets should pay for themselves in energy savings alone in 4 to 6 months.

Devices For Showers

A standard showerhead uses 5 to 7 gallons of water per minute. To find out your shower flow rate, all you need is a plastic bucket, a watch, and a measuring cup. Turn your shower on all the way with cold water only. Quickly place the bucket under the shower stream and hold it there so that you catch all of the water for 15 seconds then quickly remove it. Measure the amount of water in the bucket and multiply by 4. This will give you the equivalent flow of water for 1 minute. Remember: 4 quarts = 1 gallon, 8 pints = 1 gallon, 16 cups = 1 gallon. Use these conversions to figure the total gallons. You now have the actual shower flow rate in gpm (gallons per minute).

Low-Flow Showerheads. During an average shower, a person may use 25 to 35 gallons of water. The most effective way to reduce the amount of water used in the shower is to install a low-flow showerhead. A low-flow showerhead delivers water with just as much force as a standard showerhead, but it uses only 2 to 3 gallons per minute. These showerheads deliver a very fine spray which cannot be adjusted.

The 2-gpm showerhead has been shown through research to reduce shower water usage by 30 to 60 percent. The actual amount of savings will depend upon the type of showerhead that is replaced and the water pressure. In most applications these showerheads will pay for themselves in approximately 1 month in energy savings alone.

Installation, where the shower arm does not end in a ball joint, is quite simple. Just remove the existing showerhead by turning it counterclockwise with an adjustable wrench, while being careful not to twist the shower arm. Place some Teflon tape or pipe dope on the exposed threads and thread on the water-saving showerhead by turning it clockwise.

For ball-joint showerheads a special adaptor or a new shower arm will be necessary. If an adaptor is used, turn it into the threaded ring around the ball until snug. Then thread the water-saving showerhead onto the other end of the adaptor. There are three widely used types of ball joints; each requires a special adaptor.

If adaptors are not available, the shower arm can be replaced with a nonball-joint shower arm. This operation is a little tricky in that the shower arm is attached inside the shower wall. Rotating the shower arm counterclockwise will free it from the threaded elbow that it is attached to in the wall. A new shower arm with its thread dressed with Teflon tape or pipe dope can then be inserted into the elbow and tightened by rotating it clockwise. Because this fitting is behind the wall, it is important that it not leak. If an access panel is available behind the shower wall, it should be opened to check for leaks after the installation is complete.

Showerhead Restrictors. Showerhead restrictors are small plastic adaptors that can be inserted between the showerhead and the shower arm to reduce the flow of water. They usually allow only 3 gallons of water to leave the showerhead each minute. They are not as effective as low-flow showerheads, however. Restrictors may reduce flow but they also reduce water pressure. The shower may have to be run longer to make up for the lost water pressure.

Devices For Faucets

Faucets manufactured before 1980 allowed a flow of 5 to 7 gallons per minute. Most new faucets allow a flow of 2 to 3 gallons per minute. To reduce the flow rate of older faucets, there are some inexpensive methods available.

Aerators. The simplest device for faucets is the flow-control aerator that uses 0.5 to 1.0 gpm of water. These devices are designed to fit faucets with threaded spouts. Since faucet diameters and thread sizes vary widely, an adaptor may be necessary.

A faucet aerator causes water to spray out of the faucet without splashing. This allows people to rinse and wash with less water. Installation of flow-control aerators is relatively simple. Just remove the old aerator by turning it counterclockwise with a large pair of pliers. Then install the flow-control aerator by turning it clockwise onto the spout until it is snug.

Before you decide that your faucets already have aerators, check them first. Many faucets are equipped with little screw-in plastic inserts and strainers, but no aerators. The aerator will be a small disk with one small hole or a series of small holes or slits through it. Many people think they have aerators on all their faucets when in fact they do not.

After a few years, aerators may become rusty or clogged. Replacement aerators are available at most hardware and home appliance stores.

Aerators can save you money in three ways. First, since they help you to use less water, they can save on your water bill. Second, since many cities set your sewage bill based on your water usage, they can help you save on sewage costs. And, third, since they help conserve on hot water usage, they can lower your heating bill.

Flow Restrictor. A flow restrictor fits on the end of the faucet and can reduce the flow rate of the faucet without reducing water pressure. A flow restrictor can reduce flow rate to as little as ½ gallon per minute to 3½ gallons per minute depending on the water pressure. Restrictors are most effective in homes where people usually run faucets at full pressure.

Water Faucet Repairs. A faucet leaking 100 drops per minute can waste 350 gallons of water each month. Homeowners should check their faucets for leaks every 6 months.

Most leaks are caused by worn washers and o-rings. Homeowners may have to remove the faucet to replace these parts. Usually, faucet repairs are easy and may save thousands of gallons of water each year.

Devices For Toilet Tanks

The ordinary flush toilet uses from 4 to 6 gallons of water every time it is flushed. Today, low-volume commodes that use 3 gallons of water per flush are available. Low-volume commodes perform as well as do the standard-volume models.

These low-flush toilets have a shallow trap that reduces the amount of water needed for flushing. Displacement devices are not effective in low-flush toilet tanks because of the shallow trap design.

To reduce the amount of water the standard-volume toilet flushes, customers can install a displacement device. Displacement devices cause the water level to rise in the toilet even though no additional water has been added. In the past, customers may have put a pair of bricks in the toilet tank to reduce water use. This method was effective, but if the bricks crumbled, they would clog the toilet tank. Some systems now provide water bags for customers to put in their toilet tanks.

Weighted Plastic Bottles. Standard volume toilets can be modified to use less water by adding weighted plastic bottles to the toilet tank. Tests have shown that up to three weighted plastic bottles can be placed in the toilet tank to reduce water use per flush. The number of bottles that can be used depends on the toilet and the type of bottles used. Water saved will be equivalent to the volume of the bottles used, so that a 1-quart bottle will save a quart of water and so on. More bottles can be added based on how well the toilet flushes with the bottles in place. Fine-tuning of the flush volume can be achieved by substituting a smaller size bottle.

The recommended procedure is as follows.

1. Save three plastic bottles for each toilet in your home. Two of these bottles should be of 1-quart capacity and one should be of 1-gallon capacity. A recycled 1-gallon milk jug can be used as the large bottle.

2. Cut the tops out of all the bottles with a sharp pair of scissors.

3. Add enough small stones to the bottles so that they do not move around when submerged in the toilet tank.

4. Fill the plastic bottles with water and place them in the toilet tank wherever they will not interfere with the flush mechanism. (Place the bottles in the lower right-hand corner of the commode, as far away from the flush mechanism as possible.) Eliminate any bottles that do not fit into the tank.

5. Use the toilet for a period of time. If flushing problems are encountered, reduce the size of the 1-gallon bottle by cutting a portion of it away.

6. If flushing problems persist, remove the 1-gallon bottle entirely.

Up to 30 percent of the water used for toilet flushing can be saved using weighted plastic bottles. The average family of four could save about 10 gallons of water per day through the installation of these displacement devices.

Toilet Dam. Another device known as a "water closet dam" can block off the lower portion of your water closet and prevent the water located behind the dam from ever leaving the tank. Generally, devices such as these are installed in pairs, one dam on each side of the flapper valve. Properly installed, the dams reduce water consumption by about 2 gallons per flush. These dams are easy to install and cost about $5 a pair.

A family of four could save about 25 gallons of water per day through installation of toilet dams.

Toilet Repairs. If tank parts are not working properly, toilets may use even more water. Consumers can check their toilets by placing a few drops of food coloring in the toilet tank. If the bowl contains food coloring after 10 minutes, the toilet tank is leaking.

Food coloring, however, can stain a chipped or badly worn bowl. Another method is to shut off water to the tank, note the water level in the tank, and several hours later, recheck for a lower water level.

Worn flush valves and leaking fill valves are two common causes of leaks in toilet tanks. Consumers can usually repair these parts themselves. Toilet tank repair kits are available at most hardware stores.

Other Water-Saving Devices

Pressure-Reducing Valves. Too much pressure causes high flow rates and wastes water. A pressure-reducing valve maintains an adequate water-supply pressure of 50 pounds per square inch. Older homes, where hard water has left mineral deposits in the pipes which reduce their diameters, may need higher pressure.

Hot Water Pipe Insulation. A hot water faucet left running to get hot water to the tap wastes water and energy. Insulating hot water pipes reduces this waste.

Point-Of-Use Water Heaters. Installing these beneath the kitchen and bathroom sinks gives you instant hot water and also saves water and electricity. You don't have to run the tap to wait for the water to get warm. Sizes vary from 2 to 12 gallons. The heaters operate on normal house voltage (120V).

Washing Machines

Washing machines may use up to 14 percent of the water in a home. Most washers use 32 to 59 gallons of water per cycle, depending on the size of the load. Consumers who are shopping for a washing machine should consider a water-saving model. These models may use up to 30 percent less water than standard washing machines.

Washing machines with adjustable water levels allow consumers to use only the amount of water they will need to wash the load. If a washing machine does not have adjustable water levels, the consumer should wash full loads only.

Dishwashers

Standard dishwashers use about 20 gallons of water per cycle. Because of this, only full loads should be washed. If consumers are shopping for a new machine, they should consider an energy-saving model. Energy-efficient dishwashers use 25 to 30 percent less water than standard washers. They also require less electricity to operate.

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For more information, call your county Extension office. Look in your telephone directory under your county's name to find the number.

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