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# ENVIRONMENTAL Fact Sheet

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## Home Water Efficiency: Home Water Audit

Performing a water audit of your home is the first step in designing an effective water conservation plan. A water audit surveys all water-using or conveying fixtures, plumbing, equipment and practices in your home to determine the present water uses, losses and conservation practices and to recommend improvements. A water audit serves as the starting point for identifying losses and implementing useful water efficiency practices.

The following steps are designed as a general guide to the water audit process. Since this is a generic document, not all portions of the audit process will apply to your home.

### **Step 1: Identify your source.**

- Where do you get your water? Is it from an offsite municipal or community water supply, or an onsite private well?

### **Step 2: Gather all existing information including:**

- Water and sewer bills.
- Number of occupants and a typical schedule of their activity. Does anyone stay home all day? These factors make a difference in the magnitude of your water use.
- Paperwork (owner's manuals) related to water-using equipment, appliances, fixtures, pumps, etc.
- Capacities, storage and water use of all appliances, fixtures, pumps, hoses and other water-using equipment such as spas and pools. Some of this information should be in the owner's manuals. You may have to call the manufacturer or installer (such as your plumber) to get the information you don't have.

### **Step 3: Quantify your water use.**

- If your house is metered this task is easy. Locate your water meter. It is most likely located in your basement. Some meters read in cubic feet. To convert cubic feet to gallons, multiply the reading by 7.48. To measure daily water use, record the meter readings at the beginning and end of any 24-hour period. Subtract the initial reading from the final one. This is how much water you used on that day. Do this several times and average the daily readings.
- If you want to know how much water individual appliances or practices use, read the meter before and after each water use. Make sure no one else in the house is using water when you are taking these readings. For instance, if you want to know how much water you use when washing dishes, take a meter reading before and after you run the dishwasher, but make sure no one flushes a toilet or takes a shower during the cycle.

- If your home is not metered, determining water use is more difficult. You can easily measure the flow from your faucets, showerheads or garden hose by following the next step.
- Hold a large container under the device to be measured and run the water for 10 seconds. Measure the amount of water in the container and multiply it by 6 to get the volume per minute. This is the flow rate for that device. For example, if there are 2 quarts of water in the container after 10 seconds, multiply 2 by 6, equaling 12 quarts. Dividing this number by 4 (the number of quarts in a gallon) yields a flow rate of 3 gallons per minute for that faucet.
- You can determine the water used by appliances and other water-using devices by contacting the manufacturer, reading the owner's manual or checking with your plumber.

#### **Step 4. Perform the audit.**

- Catalog your water-using devices. Note the number of each, the manufacturer and the amount of water each uses (flow rate calculated in step 3). For example: Homes built after 1994 typically have toilets that flush at 1.6 gallons per flush and those built prior to 1994 usually flush a minimum of 3.5 gallons per flush. Don't forget to include fixtures and practices employed in outside water use.
- Multiply the flow rate for each device by the amount of time the device is used in a day for each water use, such as brushing teeth or taking a shower. For instance, multiply the flow rate of a garden hose in gallons per minute times the number of minutes you run the water. If you water the garden twice a day for 20 minutes with a 5-gallon per minute hose, you would use 200 gallons of water a day on your garden.
- Note any leaks and try to determine how much water is being lost to that leak. If the leak is in a kitchen sink, place a measuring device under the leak and measure how long it takes to fill. Let's say it takes 15 minutes to fill a 2-quart measure. This means the leaking faucet wastes 2 gallons of water an hour, or 48 gallons of water a day. Depending on your water rates, one small leak could be costing you about \$5 a month. If you have your own well, this leak could cost as much as \$30 a month in electricity to run your pump.
- If you aren't sure whether you have leaks in the house, turn off all water-using devices and watch your meter. If it still spins, you have a leak. Otherwise listen to your pump if you have a private well. It shouldn't come on if you aren't using any water.
- Identify and quantify water conservation devices and practices already in place, such as low-flow faucets and shutting off the water when you brush your teeth. Quantify their water use and savings over conventional devices and methods.

#### **Step 5. Analyze the audit results.**

- Determine how and where you use water in your house.
- Identify areas where you can save water. Include retrofit and replacement of high water-using devices and appliances. For more information about how you can conserve water in your home from installing WaterSense certified fixtures to making small behavior changes, go to the fact sheets webpage at [www.des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm](http://www.des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm) and scroll to "Water Efficiency" at the bottom of the page.

#### **Step 6. Prepare a benefit/cost analysis of potential water conservation measures.**

- Calculate the cost of water lost to leaks as identified in Step 4. This cost could be either cost per gallon to buy water or cost per gallon to pump it. Be sure to include cost of

wastewater disposal. If you know the wattage rating for your pump you can estimate the cost of pumping water. Multiply the wattage times the number of hours a day the pump runs times the kilowatt-hour rate your electric company charges. A licensed pump installer should be able to tell you the wattage rating for your type of pump.

- Consider all costs associated with a proposed conservation measure including initial purchase and installation.
- Determine the savings the new conservation measure will provide. Consider the cost savings of buying, pumping or heating water that would be used without the measure and the disposal costs of wastewater. Also take into consideration savings due to leak repair. Water efficiency practice implementation could eliminate or reduce the need for water pump or septic system upgrades or replacements. Take these avoided costs into consideration as well.
- Calculate a payback period for water efficiency measures. The payback period equals the amount of time it will take to recover the initial expenditure of a retrofit as a result of the savings associated with its use.

### **Step 7. Develop a long-range water conservation plan.**

- Use your audit results and benefit/cost analysis to formulate your plan.
- Include a regular leak detection and repair program. See the fact sheet on identifying and fixing leaks at the fact sheets webpage (below).
- Determine where and how you will replace or retrofit water efficiency devices. For example, “I am going to install faucet aerators in the kitchen and bathrooms.”
- Determine how water efficiency practices will be implemented. For instance, “Everyone in the family will take 5-minute showers and turn off the water while brushing their teeth. I will put a timer in each bathroom to remind everyone to take shorter showers.”
- Document an implementation schedule for any proposed water efficiency practices and upgrades. For example, “I am going to start watering the garden by drip irrigation next summer and I am going to mail order soaker hoses this winter.”
- Educate your family about the implemented practices and the installed devices. Without your family's help, water efficiency practices will not work.

### **For Additional Information**

Please contact the Drinking Water and Groundwater Bureau at (603) 271-2513 or

[dwgbinfo@des.nh.gov](mailto:dwgbinfo@des.nh.gov) or visit our website at

<http://des.nh.gov/organization/divisions/water/dwgb/index.htm>. All of the bureau's fact sheets are on-line at <http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/index.htm>. More information about the DES Water Conservation Program can be found at [http://des.nh.gov/organization/divisions/water/dwgb/water\\_conservation/index.htm](http://des.nh.gov/organization/divisions/water/dwgb/water_conservation/index.htm).

### **References**

U.S. Department of Defense; *MIL-Handbook-1165, Water Conservation*; U.S. Dept. of Defense; 1997

Vickers, Amy; *Handbook of Water Use and Conservation*; WaterPlow Press, Amherst, MA; 2001

Note: This fact sheet is accurate as of February 2013. Statutory or regulatory changes or the availability of additional information after this date may render this information inaccurate or incomplete