

Green Building and Water Efficiency

Water efficiency is the long-term ethic of saving water resources through the employment of water-saving technologies and activities. Using water efficiently will help ensure supplies for future generations. Water efficiency in green building can be subdivided into indoor water use and outdoor water use.

Benefits of Water Efficiency

- *Save Water, Save Money*
 - The average household spends as much as \$500 per year on its water and sewer bill. By making just a few simple changes to use water more efficiently, you could save about \$170 per year.
 - [Local rebate incentives](#) are available to homeowners implementing certain types of water conservation measures
- *Saving Water Saves Energy*
 - It takes a considerable amount of energy to deliver and treat household water used every day.
 - For example, letting a faucet run for five minutes uses about as much energy as letting a 60-watt light bulb run for 14 hours.
- *Water Efficiency and the Environment*
 - Depleting reservoirs and groundwater can put water supplies, human health, and the [environment at serious risk](#).
 - Using water more efficiently helps maintain supplies at safe levels, protecting human health and the environment.

Additional Resources on the Internet

[U.S. Environmental Protection Agency
Water Sense Program](#)

[City of Prescott
Water Conservation](#)

[Arizona Department of Water Resources
Residential Home Page](#)

[Rainwater Harvesting for Drylands and
Beyond](#)

Indoor Water Efficiency... How to Achieve It

Efficient Plumbing Design

- Short runs (less than 30 ft) between the storage tank and the hot water tap means that there is less water wasted down the drain while [waiting for the hot water](#) to arrive.
- Alternatively, a [on-demand circulation pump](#) can also limit wasted water by reducing or eliminating the wait time for hot water to arrive.

Efficient Plumbing Fixtures

- *Toilets*
 - Toilets are by far the main source of water use in the home, accounting for nearly 30 percent of an average home's indoor water consumption.
 - WaterSense labeled toilets combine high efficiency with high performance. Design advances enable WaterSense labeled toilets to save water (20% less than current federal standard) with no trade-off in flushing power.
- *Showers*
 - Showering is one of the leading ways we use water in the home, accounting for nearly 17 percent of residential indoor water use, or about 30 gallons per household per day.
 - WaterSense-labeled [showerheads](#) use no more than 2.0 gpm yet meet quality standards for coverage and spray intensity
 - Since these water savings will reduce demands on water heaters, households will also save energy.
- *Faucets*
 - Faucets account for more than 15 percent of indoor household water use
 - A WaterSense high-efficiency lavatory faucet has a maximum flow rate of 1.5 gpm or about 30% less than the current standard while still providing adequate flow
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- *Appliances*
 - ENERGY STAR qualified [clothes washers](#) use about 30% less energy and use over 50% less water than regular washers.



- A [dishwasher](#) built before 1994 wastes about 8 gallons of water per cycle compared to owning a new ENERGY STAR qualified model.

Outdoor Water Efficiency ... How to Achieve It

Outdoor water usage – landscape irrigation used for watering lawns and gardens, pools, and water features - is estimated to account for almost one-third of all residential water use. Residential irrigation water often goes to waste due to evaporation, wind, improper system design, or overwatering. Outdoor water efficiency is achieved through performance in the following areas:

Water Efficient Landscapes

- [Drought Tolerant / Low Water Use Plant Lists](#) for the Prescott Area
- [Good Reasons to Limit Landscape Turf](#)

Efficient Irrigation Systems

- [Guidelines for Landscape Drip Irrigation Systems](#)
- [Fine Tune Your Irrigation System to Save Money and See Better Results](#)

Consider Using a Certified Professional

- [Arizona-registered landscape architects](#)

Pools, Spas, and Water Features

- [Design, Operation and Maintenance for Water-Efficient Pools and Spas](#)

Gray Water and Rainwater Harvesting

Graywater is defined as the wastewater produced from baths and showers, clothes washers, and lavatories. These wastewater sources comprise 50-80% of residential "waste" water. This wastewater may be reused for other purposes, [especially landscape irrigation](#). Use of household graywater is safe, permitted by most Arizona jurisdictions, and is beneficial in several ways:

- Lower demands on municipal fresh water used for landscaping
- Decreased fluid volumes sent to the septic tank or treatment plant
- Better treatment (topsoil is many times more effective than subsoil or treatment plant)
- Less energy and chemical use
- Improved plant growth
- Reclamation of otherwise wasted nutrients
- [Arizona state income tax credits are available](#) to homeowners for installing graywater systems

Installing a graywater system in new construction is relatively simple but must be included in the initial plumbing design. A [typical layout for a gray water plumbing system](#) involves separate waste lines and storage for graywater and blackwater (i.e., water from toilets).

[Harvesting rainwater means the capture and storage of rainwater from roofs](#). Use of collected rainwater can provide homeowners with high-quality soft water for irrigation and potable uses, reduce pressure on water-treatment plants, and reduce stormwater runoff and flooding. Like graywater systems, there is a [Arizona state income tax credits are available](#) (and possibly [City of Prescott incentive credits](#)) to homeowners who install rainwater harvesting systems.

Typical rainwater harvesting systems involve rain gutters which channel filtered roof runoff into storage tanks (above or below ground), a submersible pump, and discharge lines to the exterior irrigation system or interior uses.