

# The Hard Sell

Addressing the myths surrounding water conservation

All of the water we use has a real value of time, energy and human capital attached to it. From those costs come significant value, as all human civilization is built on reliable access to water. As a globally shared renewable resource, cheap, clean water is becoming progressively more difficult to find. We have to think intergenerationally about smarter water management and conservation, and act now to improve the future for our descendants—the future of humanity depends on it.

In much of the U.S., the effects of ongoing drought are impacting all aspects of society. We constantly hear of homeowners and farmers whose wells have dried up, or whose well water quality has declined to the point where the pumped water is not usable without pretreatment. While we can debate all of the reasons why drought happens, the indisputable reality is that it does happen, and we need to use what little water we have more efficiently. Some common myths about conservation are hampering our efforts.

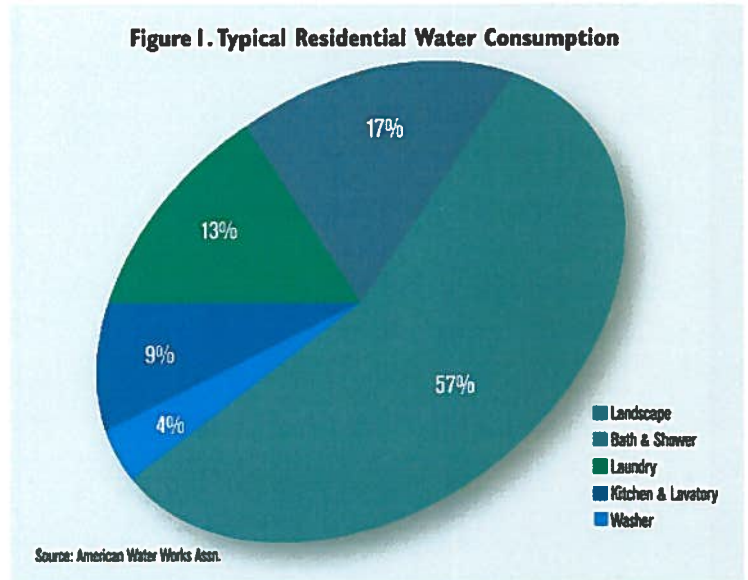
**Myth: Conservation is hard, inconvenient and expensive.**

**Reality:** Water conservation is easy when you take the time to think about it and are willing to treat water as the precious resource that it is.

**Myth: Only homeowners should conserve.**

**Reality:** Agriculture is the single largest water-using segment, followed by industry and then homes. Within the residential segment, the largest user is landscape and outdoor water features, while indoor domestic water usage has declined over the past 40 years.

While legislation restricting residential water use is easy to pass, the more sensible approach is to encourage agriculture to use sustainable practices and technologies with appropriate incentives.



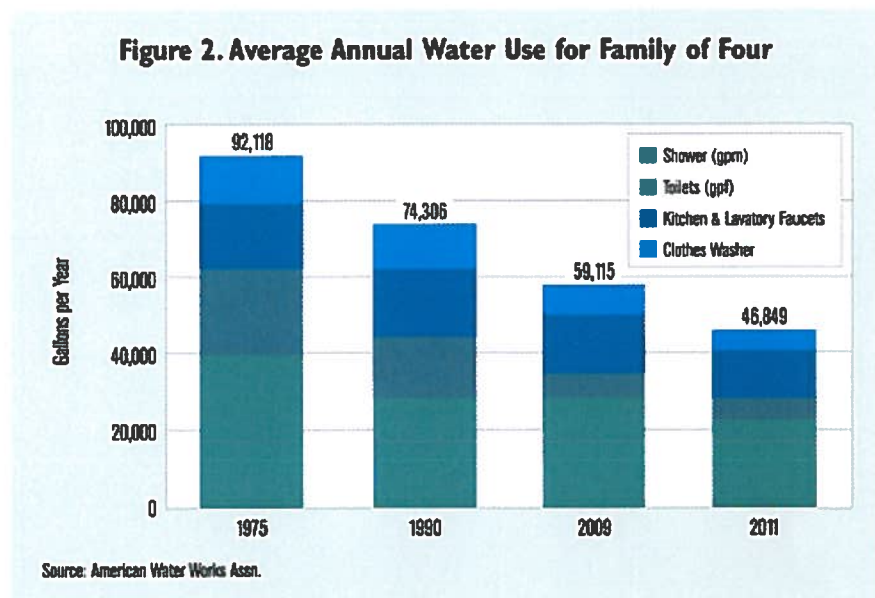
Centrally monitored soil sensors connected to a weather forecasting database allow farmers to economically reduce their watering requirements. Sustainable techniques such as decentralized aquaponics can use up to 90% less water to produce the same caloric output as traditional agriculture while consuming less fertilizer and fossil fuels.

Many cities have mandatory “green grass” legislation that should be rescinded. There are more water-friendly methods to control erosion while maintaining pleasant aesthetics for homes and businesses.

**Myth: Rainwater harvesting is for hippies and Hawaiians.**

**Reality:** Many U.S. states have revised their regulations, and rainwater harvesting is simpler and easier than ever before. Instead of wasting water that falls from the sky, property owners can harvest this water, store it and use it for a host of beneficial applications.

ARCSEA/ASPE/ANSI 63-2013: Rainwater Catchment Systems was approved as an American National Standard by the American National Standards Institute on Nov. 14, 2013. Now, building owners are empowered to capture and reuse this precious resource while still meeting stringent environmental regulations and lowering their overall environmental footprint. The American Rainwater Catchment Systems Assn. is a great resource for learning more about opportunities and developments in this growing field.



**Myth: Greywater reuse is not worth the cost or hassle.**

**Reality:** With improved legislation and technology, we continue to see improvements in the economic design and adoption of greywater harvesting and reuse systems in the U.S. It is silly to waste “gently used” water, such as that from hand sinks and showers, when it can be captured, treated and repurposed to flush toilets or water plants.

Greywater reuse reduces not only the amount of potable water used on a property, but also the downstream infrastructure demand and environmental impact by lowering sewer outflows. Because toilet flushing averages approximately 30% of all domestic water consumption, when one applies the Whole-Life Cost model developed by Professor David Butler and his associates at the Imperial College London, the case for greywater reuse is financially stronger.

**Myth: Banning salt-based softeners will save the environment.**

**Reality:** I have yet to see any studies that show any net benefit in wastewater quality compared with the detrimental effect on energy consumption, cleaning material waste and labor time lost by forcing homes and businesses to operate without the benefits of an ion exchange water softener.

The water quality improvement industry polices itself well and the competitive nature of the industry continues to spur innovations in salt and water efficiency. There are few dealers still selling time clock-based softeners, and most are now installing metered demand-initiated regeneration systems, but that is not good enough. We need to step up and make the water softeners we sell even more efficient by fully embracing efficiency.

Year Built	Number of Units	Average Indoor Water Use	Average Outdoor Water Use
pre '60s	2,392,460	92,118	115,088
'60s	1,143,459	92,118	115,088
'70s	1,162,924	92,118	115,088
'80s	1,135,153	74,306	115,088
'90s	826,346	59,115	115,088
'00s	889,000	59,115	115,088

The benefits of upflow (countercurrent) regeneration have been recognized in the industry for half a century, but many dealers still choose downflow regenerated systems because they are cheaper. Upflow regeneration offsets its initial acquisition cost quickly. Depending on the particular application and resin used, regenerant usage and water efficiency can improve by as much as 30% while improving the quality of the water.

Resin exhaustion sensors also are beneficial, because they allow a softener to adapt to changing water chemistry and only clean itself when absolutely necessary. Deployed in a twin alternating tank configuration, resin exhaustion sensors allow for maximum salt efficiency while maintaining consistent water quality. Deep cleaning and differential brining algorithms further enhance efficiency by using less water to clean and protecting media from fouling.

Brine recovery systems used to be the domain of only large industrial softeners, but a number of manufacturers are now including brine recovery systems on their smaller commercial and residential systems. Improving technology will reduce the complexity and cost of these systems, making them more affordable.

### Simple Savings

While large industry sectors can make the most dramatic impact, we all can help reduce our water usage footprint by practicing these simple principles of conservation:

- Use the dishwasher instead of hand washing;
- Turn off the tap when brushing teeth or shaving;
- Fix dripping faucets and leaky toilets;
- Shower instead of using the tub (for bonus points, take a bucket into the shower and use that captured water for plants);
- Install water-saving faucets, toilets and showerheads;

- Drink less bottled water—filter it on site instead;
- Adjust sprinklers to eliminate over-spray onto sidewalks and other non-permeable areas; and
- Use a commercial car wash or bucket and sponge instead of hosing cars and trucks clean.

When practicing water reduction techniques, we also need to stay sanitary. A recent Canadian study discovered increases in *Pseudomonas aeruginosa* contamination at a hospital that used high-efficiency foot-operated faucets, and emphasized the importance of “wasting a little water” with a first flush to minimize the risk of bacterial contamination. ASHRAE’s proposed Standard 188 further stresses that the risk of bacterial contamination in buildings from waterborne sources is a significant threat to human health and safety, and that bacterial growth in plumbing and appliances is far more widespread than previously thought.

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Employing extreme water-saving technology in water treatment equipment removes the luxury of frequent extra-long backwashes that can reduce bacteria growth in the media. You should always use a high-quality media cleaner, disinfect all treatment equipment at least once a year and deploy a bacterial safeguard such as ultraviolet sterilization or ultrafiltration after the treatment equipment.

Conservation is convenient, sensible and smart. Intelligent conservation and sustainable technologies and techniques are good for society, good for the planet and good for business. wqp

*Greg Reyneke is managing director for Red Fox Advisors. Reyneke can be reached at [gregreyneke@redfoxadvisors.com](mailto:gregreyneke@redfoxadvisors.com)*