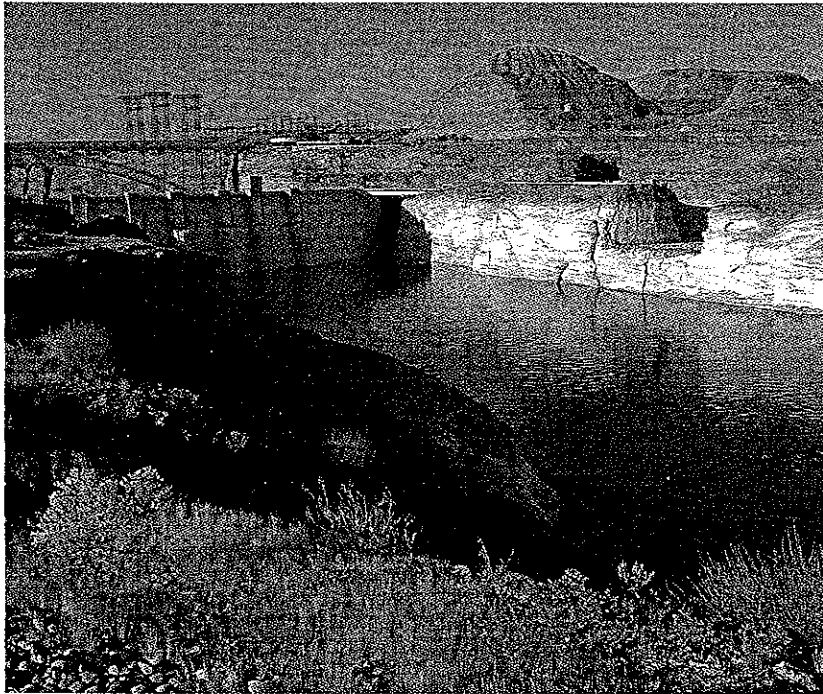


When Every Drop Counts

Make efficient use of water in any remodel



The Colorado River system is facing the worst drought on record. In May, Lake Powell's water level dropped to about 135 feet below maximum depth. It has risen about 40 feet since then.

By Susan Conbere
PATH Partners

Even in the age of potfillers and second sinks, body jets and soaking tubs, some homeowners care about water conservation. They'd like to reduce their water bill, or their area is experiencing a drought forcing reduced usage. For homeowners in arid regions of the West and Southwest, this kind of thinking is a way of life. This summer's unusually high temperatures have consumers nationwide re-examining their utility bills.

Plumbing fixtures

Homeowners may be turned off to water-saving fixtures if they have one of the early 1.6 gallons-per-flush toilets. Prior to 1995, when the National Energy Policy Act began mandating the use of

1.6 gpf toilets, most water closets used 3.5 to 7 gallons. The first low-flow models didn't always deliver on functionality, often requiring two flushes to clean the bowl. Consumers were not happy, but their voices were heard.

Over the past few years, manufacturers have introduced wider flush valves and trapways, pressure-assisted flushing and other technology to improve performance while still meeting code. They have also developed one-flush models that use even less water and dual-flush models that offer a super low-flow flush for liquid waste and a standard flush for bulk waste.

Doug Bennett, conservation manager for the Southern Nevada Water Authority, notes that quality varies among high-efficiency fixtures, but says some are excellent. However, the best models tend to be the more expensive, and

homeowners may balk at the price of the really good performers.

Bill Simone, president of Custom Design & Construction in Los Angeles, notes that his clients often ask him not to install low-flow fixtures, even though that would violate code.

"My advice to any remodeler: I would comply with the codes, even if the homeowner doesn't want you to," says Simone. "You can install what the homeowner asks for, but there's a good chance that the building inspector will require it to be changed. And if we have to change it out, it costs more."

The standard low-flow toilet could save up to 22,000 gallons of water per year for a family of four compared to an older toilet. Low-flow showerheads use about 2.5 gallons of water per minute; older fixtures use between 4 and 5. Low-flow faucet aerators can cut the water use of faucets by as much as 40 percent.

Another low-flow option is laminar flow controls, which deliver a precise amount of water to faucets, showerheads, and hoses at a constant rate. Unlike aerators, which add air to the water stream to make the flow feel stronger, laminar flow controls produce multiple streams of water very close together so that water feels like it is flowing at a higher rate than it actually is. Like other low-flow fixtures, laminar controls are simply screwed into place.

Plumbing fixtures that have a pressure of 60 psi or less (which is 20 psi less than the national code) will not only reduce water use, but also reduce

equipment failures and leaks.

"We found all fixtures work just fine at 60," says Bennett. "We also see fewer malfunctions and fixtures typically last longer"

There are many water authorities that offer rebates for changing toilets, installing hot water heat pumps, and other water efficiency measures.

Hot Water Systems

By reducing a homeowner's wait time for hot water, you can reduce the amount of cool water wasted. As an added benefit, they save the energy required to heat the water. For those reasons alone, it's worth suggesting one or all of the following three options when replacing a customer's hot water system.

Manifold Plumbing: The manifold plumbing system is a control center for hot and cold water that feeds flexible supply lines to individual fixtures. Used with cross-linked polyethylene (PEX) piping, the plastic plumbing manifold and piping system takes less time to install and uses smaller diameter piping than a conventional copper system. That smaller diameter makes the wait for hot water shorter than with rigid copper piping.

A foot of $\frac{3}{8}$ -inch-diameter PEX holds half the water of a $\frac{1}{2}$ -inch rigid



American Standard's 1.28 gpf FloWise toilet qualifies as a high-efficiency toilet, making it eligible for rebates in some states. A 3-inch flush valve and 2 $\frac{1}{8}$ -inch trapway provide a strong flush despite using less water.

pipe. (Using $\frac{3}{8}$ -inch supply lines for individual fixtures is possible because fewer fittings are required.) Flow is not affected because each fixture has its own supply line.

Flexible supply lines are helpful in a remodeling project where conditions may limit the route that conventional rigid pipe would take. Flexible piping can be routed around and through obstacles much easier, and in one piece.

Online Resources

► **Water Smart Home**, a program developed by the Southern Nevada Water Authority with the Southern Nevada Home Builders Association and builder KB Home. Although the program is targeted to builders, remodelers can use many of the same principles, says Doug Bennett, SNWA's conservation manager. A single-family home that meets Water Smart Home's voluntary standards uses about 75,000 less gallons of water a year than a home built 10 years ago, and about 10,000-20,000 less gallons than a conventional home built today. Details at www.snwa.com/html/ws_index.html.

► **Tech Set No. 1**, "Resource-Efficient Plumbing," is a set of technologies recommended by PATH that result in efficient and speedy delivery of hot and cold water. The Tech Set provides in-depth information on three technologies of particular relevance to remodelers: manifold plumbing systems, tankless water heaters, and low-flow fixtures. Available at www.pathnet.org.

Hot Water Recirculators: Hot water recirculators use a pump to deliver hot water quickly, returning water to the water heater through the cold water line. A fixture that demands hot water only receives it when a thermal sensor detects a temperature drop. Recirculators are especially water-efficient when the fixture is a long distance from the water heater.

"Hot water recirculation is a really simple retrofit project. You just plumb in behind the master bedroom sink, and you can do it without having a return line," says Bennett.

Thermostatically controlled systems draw hot water when the water at the recirculator drops below a set point temperature. On-demand systems recirculate water only when turned on, typically with a push button at the counter. While thermostatic systems save water, the added energy costs from constantly filling uninsulated pipes with hot water could be significant. Demand systems do not use additional energy because they only circulate water that would otherwise be drained.

Tankless Water Heaters: Although tankless water heaters are best known for their energy savings, they also can deliver hot water more quickly – but only if they are installed close to the point of use, warns PATH research engineer Dana Bres.

"If they are placed far from the kitchen or bath, there is still cooled water sitting in the line that requires flushing before the water warms up," says Bres.

The key to water savings, therefore, is proximity to the water source. This is easy to achieve because tankless water heaters are small enough to fit in a utility closet or even under the kitchen sink. And that means significant space savings. **PR**

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