

Building Owners Want Water That Never Leaves

By [JIM CARLTON](#)

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Building owners and managers are discovering a great untapped resource: the water that flows out of—and off—homes and commercial structures.

Some wastewater from buildings is reused after treatment at municipal plants, but much of it ends up flowing back into the environment. And buildings rarely are equipped to capture rainwater. A slew of technologies hitting the market, though, are enabling more homes and businesses to reuse much of their wastewater, without it ever leaving the site, and to put the rain to use as well.

That saves building owners money by allowing them to purchase less water from municipal sources. And it benefits communities by conserving water.

The techniques range from a simple sand filtration system for the home costing only a few hundred dollars to a mini water-treatment plant for commercial buildings that costs as much as \$1 million. What they have in common is a goal of recycling everything from sink water to rain runoff, and reusing it for nonpotable purposes such as toilet flushing and lawn watering.

"I think it is a growing market and we will see a lot more," especially with the recent droughts in many areas of the U.S. and elsewhere, says Bahman Sheikh, a water-conservation consultant in San Francisco.

Putting Nature to Work

One of the more elaborate products is the Next Generation Living Machine system designed by Worrell Water Technologies LLC, which collects a building's used water and rain runoff and cleans it in a process akin to the tidal action of a wetland. Up to 5,000 gallons of wastewater and runoff can be stored beneath the building in a container as big as a bus. The system pumps the water through gravel-filled planters in the sidewalk and lobby, where bacteria and plants remove pollutants.

San Francisco-based KMD Architects is designing a 13-story headquarters for the California Public Utilities Commission in San Francisco that includes the Living Machine as a signature green feature. The system is expected to cost about \$1 million, says David Hobstetter, a KMD principal. It will save about 1.7 million gallons of water a year, Worrell officials say, for cost savings of about \$21,000 annually.

But installing the system is less about money than it is about conserving water as part of the goal of making the building a model of sustainability, says Mr. Hobstetter.

Encouraging Others

Over time, the cost of the system should go down, making it more economical, says Eric Lohan, general manager of Worrell's Living Machine Systems unit. In the meantime, he says, early users of the system tend to be public agencies, like the utilities commission, putting in the technology to demonstrate to the public that it works and to encourage people to think green.

Worrell, based in Charlottesville, Va., began designing the system in 2005. Company officials say they are also rolling out systems in places including Oregon's Port of Portland and the Marine Corps Recruit Depot in San Diego.

But the systems aren't for everybody. Officials at the Las Vegas Regional Animal Campus, where hundreds of stray dogs and cats are sheltered, say they installed a Living Machine in 2008 for \$1 million, but have since disconnected it because it ended up providing no advantage over simply using municipal water, which in Las Vegas already is recycled. "It did what it was supposed to do, but we just ended up not needing it," says Michael Green, director of administrative services for the campus.

Mr. Carlton is a staff reporter in The Wall Street Journal's San Francisco bureau. He can be reached at jim.carlton@wsj.com.