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The Next BOOM

Getting Ready for A New Development Cycle

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Improve Your Water Management

With shortages and rising costs, this resource should be top-of-mind for building managers

By Erika Schnitzer, Managing Editor

By the year 2013, 36 states are expected to face a water shortage. Consequently, the price of water—and sewage—is on the rise in many markets throughout the country.

These costs are predicted to increase "far faster than the cost of energy; we can create renewable energy, but we can't create water from nothing. We have to do a much better job of managing that resource," cautions John Klein, principal of JDM Associates LLC, an energy management and sustainability consulting firm.

"People have had a tendency to believe that water is either free or almost free," Klein adds. In fact, most people don't even know how much water they use. "We are seeing a trend that is going to require the benchmarking of water, in part because there are areas of the country that are becoming non-developable because of a lack of available potable water," Klein predicts.

In certain areas of the country, Klein has started to see a trend in developers looking to offset the water they are going to use in new communities by offering to retrofit existing communities with low-flow devices so there is a zero net gain in water usage in a given area.

Understanding the difference between consumption and cost is also crucial to conserving water. "If you don't know the difference between consumption and cost, and all you're looking at is cost, then you [can't] know if you're doing better" in terms of conserving, Klein notes, also pointing out that rates may fluctuate.

"You're going to get to the point where water is going to become much more expensive because municipal water systems will have to invest more money to get water to new spots or upgrade infrastructure," adds Don Shields, vice president and director of technical services at the Applied Water Management Group of American Water.

Because of these concerns, many states have passed water conservation legislation.

According to the Alliance for Water Efficiency, California, which was the first state to adopt more stringent standards for toilets and urinals and is the only state to have a statewide Memorandum of Understanding on urban water conservation, was considering, at press time, a proposal that would reduce per capita water consumption by 20 percent by 2020. Meanwhile, Texas was the first state to pass legislation requiring water utilities to submit water audits, and Georgia recently enacted the Water Stewardship Bill, which, among other things, requires higher efficiency water fixtures as well as metering in multi-housing communities.

Relating it to multifamily

"For a property owner, water is not top-of-mind until it becomes a problem," notes Ben Slick, vice president of business development at HydroPoint Data Systems, whose WeatherTRAK Smart Water Management solution applies weather data and site-specific attributes to create irrigation schedules attuned to the landscape's true water needs.

Controlling irrigation is a critical part of water conservation, as between 30 percent and 40 percent of the water used at a typical garden-style community may be used for landscaping, notes Klein. At the same time, studies have shown that most landscaping is over-watered by 50 percent or more.

Even more bewildering is that nearly 75 percent

Gerber's 1.28-gpf Avalanche features an extra-large dual-fed siphon jet, and its two-inch trapway maximizes drain-line carry.

Potential Cost and Savings

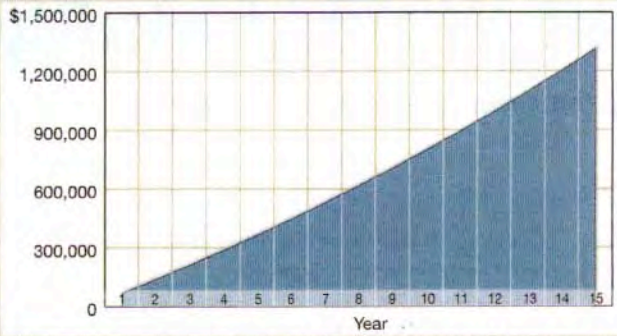
(Based on retrofit using Gerber 1.28-gpf Avalanche*)

Existing Fixture:	3.5 gallon-per-flush (gpf) (gravity fed tank)
Replacement Fixture:	1.28 gpf (gravity fed tank)
Number of Toilets:	800
Purchase Price of Toilet:	$200
Installation Cost Per Toilet:	$100
Investment Growth (Rate %):	3.5
Number of Flushes Per Occupant Per Day:	7
Cost of Water/Sewer Per 1,000 Gallons:	$15
Expected Life of Toilet (Years):	15

	Existing Toilet	New Toilet
Cost		
Total Cost of Fixtures:		$160,000
Installation Cost:		$80,000
Total Investment Made:		$240,000
Water Usage		
Gallon Per Flush:	3.5	1.28
Water Usage Yearly in 1,000 Gallons:	7,154	2,616
Total Cost of Water Yearly:	$107,310	$39,240
Savings		
Savings (Per Year)		$68,070
Payback Period (Years)		3.5

** using Gerber's Water Calculator, which allows users to figure costs, water usage and savings resulting from a toilet retrofit*

Net Savings on Toilet Retrofit



Gerber's Water Calculator shows the payback of an 800-toilet retrofit would be 3.5 years, with a savings of $68,070 per year. This analysis is based on Boston water and sewer rates.

of the potable water in the United States is being used for irrigation, points out Klein.

What's more, sewer rates are often two to three times the rate of water. According to Slick, "For every gallon you're pumping onto a sidewalk you're paying a sewer charge, so there is a huge opportunity to, at minimum, submeter your irrigation from the rest of the domestic use."

In addition to determining how much water is being used for a community's landscape needs, multi-housing owners can receive sewer exemption credits. "If you're paying for a certain amount of water and the corresponding sewage discharge fees that go along with it, you need to find out [whether] your provider will give you a credit for the water that does not go back into the sewage system. If they don't … you need to lobby these water providers to make the case for the inequity of charging you sewer discharge fees for water that never makes it into the sewer," Klein notes.

Of course, without appropriate metering, "you don't have a credible case to make with your water provider," he adds.

Many communities don't have individual water meters for their residents; as a result, they use RUBS as an allocation system for water charges. Klein is a huge proponent of separate meters for all residents, though, as it typically results in resident water bills decreasing by 15 percent to 25 percent. In either case, however, Klein points out, "property managers and owners need to know what they're paying and how much they're using … so you have a benchmark to begin measuring your progress."

Even though an owner or operator may not know what each individual resident consumes, they still need to know what's included in the benchmark, says Klein. Once that water consumption is benchmarked, he adds, "it's the key to begin an inventory of all the devices that are using water … to know where and how you are consuming it."

When consumption is measured, usage can be decreased with high-efficiency plumbing fixtures, for example. More and more multi-housing operators are embracing these, as jurisdictions have passed mandates that make it impossible to receive building permits without installing such fixtures.

While the industry expected it to take about five years for this trend to take off nationally, demand for high-efficiency water fixtures has occurred much faster, particularly since they can "provide some instant payback on net operating income," points out James Bauman, director of commercial sales, Gerber Plumbing Fixtures LLC.

The challenge is getting residents on board. However, many manufacturers have taken strides to ensure that consumers don't notice a discernible difference between traditional fixtures and their high-efficiency equivalents. Specifications for the EPA's WaterSense label include criteria not just for water efficiency but also for water coverage and spray intensity on showerheads, for example.

"If someone puts a new fixture in, if it performs as well as what they are used to seeing, it makes it that much more acceptable for people," Bauman points out. "If they are being green at the same time, that's an added benefit—but we have to look at the performance of the actual products themselves."

For example, because so many people don't know how to properly use dual-flush toilets, Gerber developed a 1.28-gallon-per-flush (gpf) variety, which provides a consistent flush. The challenge to developing low-flow toilets, though, says Bauman, is ensuring that enough of a siphon is created that drain-line carry doesn't become a problem.

"If you have an apartment complex built 40 years ago, the plumbing behind the walls was sized at a time when people were using 3.5-gallon, maybe five-gallon, toilets. Plumbing systems were designed to take waste out via a lot of water; when you start taking water out of the system … [there] can be some challenges."

In existing communities, retrofit opportunities may also include installing aerators on faucets and flush valve devices on toilets. Also planting only native and drought-resistant plants is critical, as is installing rain sensors. Lastly, lowering the temperature of a community's pool will not only save money on energy but will reduce evaporation.

"Be more holistic in your thinking about how [you] can reduce water use everywhere," advises Klein. "There are many off-the-shelf technologies to do this, but raising awareness through education and training will provide the foundation needed for a fundamental change in our thinking." MHN

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