

Cheap Water
No More



The Rising Cost of Water

Accelerating rate increases will put extreme pressure on commercial facilities to conserve more water. But additional savings with attractive paybacks are near at hand.

Rising water and sewer rates will be among the biggest challenges facing facility owners and managers in coming years. Those owners and managers will need to invest as much in water conservation as they have in energy efficiency over the past several years, and will need to find savings in places they previously ignored.

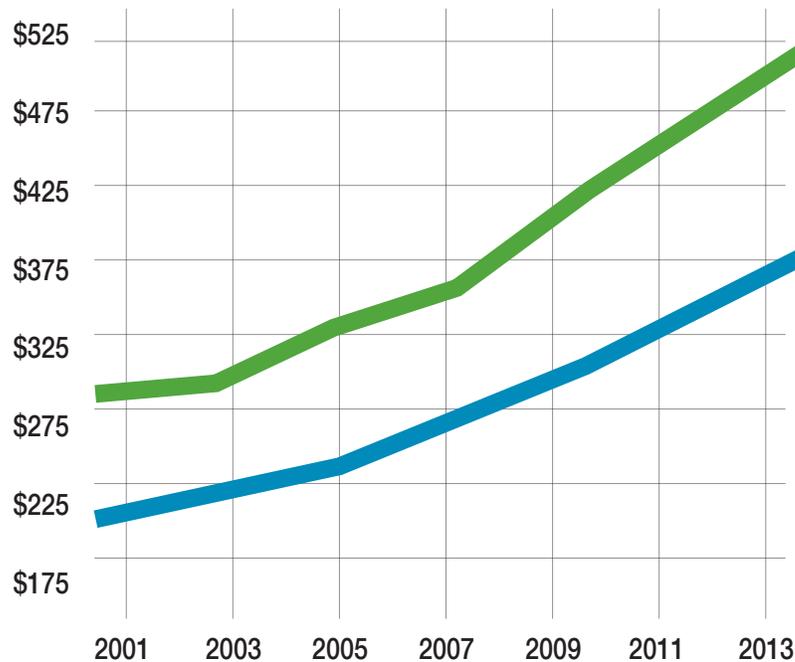
Of course rising costs are nothing new. A study by consulting firm Black and Veatch found that average water and sewer rates across the top 50 U.S. cities doubled between 2000 and 2013. Annual increases were two-and-a-half times those in the consumer price index (Figure 1). But as steep as those increases have been, **the rate of increase is poised to accelerate.**

Projected Water and Sewer Rate Increases

Figure 1

Average Dollars
Per Month

Water
Sewer



Compound annual increase in commercial water and sewer bills, 2001 – 2013. The graph shows an average increase of \$468/month or \$5,600/year increase for a typical commercial building with 100,000 gallons per month usage.

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The driver behind this acceleration won't be increased water use – that's actually declining in a lot of areas – but the costs of upgrading aging water and sewer systems, costs many states and municipalities have put off for years. They include the costs of replacing “thousands of miles of pipes and tens of thousands of treatment plants, storage tanks and water distribution systems,” according to the Black and Veatch report. The Environmental Protection Agency (EPA) estimates a total national cost of around \$384 billion over the next 20 years.

Upgrades will be needed for water systems in every state. The American Society of Civil Engineers estimates that California alone will have to spend \$39 billion on water systems and nearly \$30 billion upgrading its wastewater systems between now and 2030. A study by Sustainable Water, a Maryland-based firm that engineers water reclamation and reuse systems, projected a \$13 billion cost for upgrading that state's water and sewer systems during the same period.

Municipal bonds used to be the preferred way to finance such work – that is, until credit rating agencies began downgrading municipal water systems. Now, ratepayers will have to bear a greater share of the burden. For example, Seattle is projecting rate increases of 30 percent over the next six years,

while Baltimore officials voted in 2013 to raise water rates by 42 percent over three years.

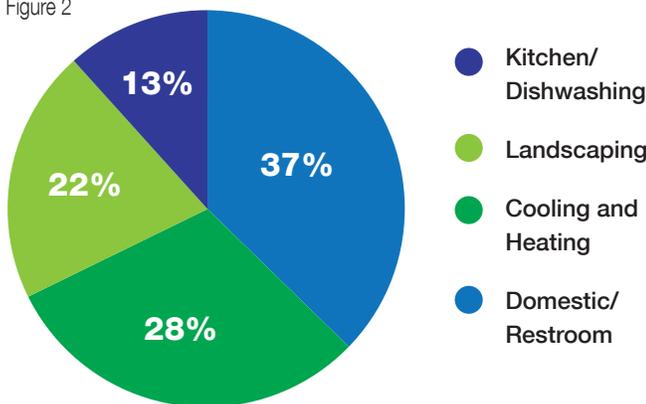
Big increases are already materializing in some areas, and not just in the big 50. Just look at a sampling of news stories from smaller cities during the first half of 2014:

- **Businesses in LeMoyne, Pennsylvania, near Harrisburg, saw their sewer bills triple, a cost increase the borough says is needed to fund sewer plant upgrades.**
- **Polson, Montana, proposed a 300 percent increase in water and sewer rates to fund EPA-mandated upgrades to its wastewater and sewage treatment systems.**
- **Officials in Port Orange, Florida, near Daytona Beach, are projecting a 30 percent increase in water and sewer rates over the next five years to cover infrastructure upgrades.**
- **Heavy water users in Marblehead, Massachusetts, were hit with a 40 percent rate increase to help pay the cost of replacing corroded sewage pipes under nearby Salem Harbor.**

How likely is it that water and sewer bills are now a top-of-mind concern for businesses in those areas?

End Uses of Water in Office Buildings

Figure 2



End uses of water in office buildings, according to the U.S. EPA in 2012. Estimate is that domestic/restroom use accounts for 37 percent.

The Conservation Challenge

This, of course, raises the question of what a facility owner or manager can do to bring those costs down. The response should begin with a thorough water conservation plan, which will include making the water system more efficient by inventorying and replacing older, less-efficient equipment where practical.

An obvious place to find savings is in restrooms, which account for an average of 37 percent of water use in office buildings, according to the EPA (Figure 2). Most facilities have already addressed the big water users, such as replacing older toilets with

The Conservation Challenge *(continued)*

newer low-flow models. While most public restrooms have already installed water-saving 0.5 GPM (gallons per minute) electronic metering faucets (and some cities mandate them), a lot of office buildings still have older manual faucets with flow rates as high as 2.2 GPM. Owners of those buildings have been reluctant to budget money to replace those fittings, and have been skeptical of the payback. The good news is that today's electronic metering faucets are more affordable and easier to install than ever. And the newest models have upfront costs on a par with manual faucets.

Electronic metering faucets are activated by hand motion: they turn on when hands are in view of the electronic sensor and turn off when motion ceases, reducing average run time by 20 seconds compared with manual faucets. With flow rates less than one-fourth that of older manual models, and no worry that the faucet will be left running unintentionally, electronic metering faucets easily provide short-term water savings.

But it's over the long term where savings really add up. Figure 3 shows the example of a 10-story office building with a monthly water usage of 100,000 gallons. An average of 50 people work on each floor. Each floor has men's and women's restrooms (four fixtures each); for a total of eight fixtures per level x 10 levels or a total of 80 faucets. Each worker uses a faucet an average of four times per day.

The existing faucets are older manual models with 2.2 GPM outlets. The chart shows how much water this building will save by replacing those faucets with electronic metering faucets and 0.5 GPM outlets. By saving 2,000 gallons per day and 500,000 gallons per year, the building owners enjoy reduced water and sewer bills of \$65,000 over a 10-year period.

How do these savings compare with the upfront cost of the faucets? Advances in technology and manufacturing have brought list prices for some of the more advanced electronic metering models

down to as low as \$400 – comparable to the price of some manual faucets. Yes, the owners would need to budget \$32,000 to replace the above building's 80 restroom faucets, but they would fully recoup that cost by the middle of year six. The cost of the faucets would be only half the 10-year savings.

Note that the 10-year calculations in the chart assume a six percent annual increase in water/sewer costs – equal to the average annual increase during the past 10 years. If rates accelerate the way many predict, the savings from installing water-saving faucets will obviously be a lot higher – as will the cost of continued inaction.

Add to the cost savings the improved reliability and low maintenance costs of today's electronic metering faucets, and it's not hard to make a business case for the upgrade.

Potential Water Savings

Figure 3

| | Existing Faucets | New Faucets | SAVINGS |
|--------------------------------------|------------------|-------------|--------------------|
| Gallons/Day | 2,200 | 166 | 2,034 |
| Gallons/Year | 550,000 | 41,500 | 508,500 |
| Cost/Year | \$5,280.00 | \$398.40 | \$4,881.60 |
| Compounded Cost Over 10 Years | \$69,594.60 | \$5,251.23 | \$64,343.37 |

Water saved by replacing manual faucets with electronic metering faucets in a 10-story office building. Existing faucets are older 2-handle manual with 2.2 GPM outlets.

Learn about these state-of-the-art solutions and how to implement them in new and existing buildings in your city. Contact Chicago Faucets by email at marketing.info@chicagofaucets.com or by calling 847-803-5000.