$AVING WATER (and money) at your indoor facilities

HOW'S THIS FOR A SAVINGS? A 19-story office building in Portland, Oregon retrofitted all of its restrooms with water-reducing toilets, urinals, and faucets. The retrofit was part of an upgrade not only to save water, but also to pursue LEED-EB (for existing buildings) certification—a personally desired goal of the building's sustainable-focused owner, John Russel.

Altogether, 114 toilets were replaced with low-flow systems and 37 urinals and 114 faucets were fitted with flush kits or aerators. During the first 9 months after the upgrade, the building saw a 21% reduction in water use. The reduction was far more than anticipated.

But, the cost savings were even more amazing. The total cost of the retrofit was $37,000. However, the building owner enjoyed a savings of $16,000 in related water and sewer costs in less than a year. The total retrofit will pay for itself in about 2 years or sooner if water costs continue to escalate—and thereafter, the savings will become a dividend, essentially putting money in the bank.

In addition to office buildings, all types of facilities, including sports, parks, and recreation centers as well as airports and schools, are now looking into these water and money saving upgrades to replicate this success. As water costs continue to escalate for years to come, all facility managers and owners must take any and all steps needed to reduce their buildings' water consumption. By doing so, they can help mitigate expensive water bills and, in some cases, quite significantly.

WHERE THE WATER GOES

Sports turf facilities have a unique challenge when it comes to water. The water necessary to nourish turf and related landscaping at these locations is typically a key concern as opposed to most facilities where the bulk of water is used in restrooms.* However, some golf courses, which in many ways are in the same water-intensive situations as sports turf facilities, have taken steps to help considerably reduce water consumption and related costs.

Some of these steps include:

- Plant native grass varieties and vegetation that are in harmony with the local climate. Typically, these require less water and can better tolerate dry periods and poorer quality water.
- If possible, reduce the amount of turf installed at the facility.
- Switch from overhead irrigation to drip irrigation where possible.
- Add more mulch to flower beds and shrub areas.
- Group vegetation with similar water needs.
- Install computerized irrigation systems that can evaluate climate conditions as well as turf soil dryness so irrigation is only performed when and as needed.
- Minimize water runoff.
- Begin collecting and using rain water and recycling clubhouse "graywater" for irrigation purposes.
- Conduct water audits to determine exactly where water is used throughout the facility and where it can be saved.
- Train staff to become water-conscious.

Sports turf facility managers and owners should consult with landscaping professionals who specialize in what is called xeriscape landscaping. The ultimate goal of xeriscape landscaping is to reduce water consumption via plant selection, landscape design, and other measures. In some of the driest areas of the country, this strategy has proven to be very successful.

IN-HOUSE SAVINGS

While the bulk of the water a sports turf

or recreation facility uses is likely for grass and vegetation, the rest is often used in restrooms, showers, etc. Facility managers and owners operating on a budget, but still looking for a good return on their investment, can initially install ultra-low flow aerators in all faucets and showerheads. Some older aerators reduce the flow to approximately 2.5 gallons per minute. Newer systems, taking this a giant step further, reduce water use to just 0.5 gallons per minute while still meeting acceptable performance standards.**

While a more costly retrofit, toilets are another big water user. But before installing new toilets, test the current equipment to determine flow rate, referred to as gallons per flush (GPF). If 2 GPF or higher, consider replacing the toilets. If 1.6 GPF, which is the flow rate now required by law in the US, it might be best to wait awhile. Although advanced systems such as dual-flush toilets that use approximately 1.28 GPF are available, water-saving toilet technology changes rapidly.

For instance, air-compressed toilets, also known as "vacuum assist" toilets, similar to those installed on airplanes, are now finding their way into commercial facilities. Some of these systems perform satisfactorily, using just 0.8 gallons per flush, half of what is legally required. Unlike water-reducing toilets that are still evolving, the GPF of urinals has been reduced significantly, even to zero, due to currently available technologies. Some older urinals installed before 1992 may use 2, 3, or more GPF; newer systems, however, use about one GPF or less. This amount can still be significant, especially in sports facilities and what are termed "high density" facilities used by many people. That is why some facilities, even high-end hotels in drier areas of the U.S., are taking this a step further by installing no-water urinal systems. With a no-water urinal, urine drains into a cylinder (or trap) at the urinal's base, eventually flowing into the drain pipe below similar to a conventional urinal. The cylinder/trap prevents sewer gasses from entering the restroom.

FIRST COMES THE AUDIT

While there are numerous ways sports turf facilities can minimize water consumption, both inside and outside the facility, the first step before implementing any water-reducing strategies is conducting a water audit. This audit can actually be a relatively simple procedure and is often best performed in-house by staff and building engineers. These employees likely know the facility better than anyone and, even more important, the process helps get everyone thinking about water conservation and steps to use water more efficiently and responsibly.

One required step when the audit begins is to collect water bills from typically the past several months, even years. The goal here is to look for trends. Has water use increased over the years? If so, try to find out why. Are there water spikes, where suddenly more water is being used for several months? Again, find out why. Water spikes, especially in a facility that has large amounts of vegetation such as a sports turf location, can be the result of burst pipes or significant leakages.

From here, the key audit steps are to locate where water is used, how much water is being used, and where it can be reduced or used more efficiently. Often, an architectural map that provides plumbing information can be helpful. Once areas are located where water consumption can be reduced, facility managers and owners are sometimes undecided whether to replace or retrofit all water-using fixtures or take smaller, more marginal, and less expensive steps. Either direction is fine as long as ideas are carried out. Over time, the costs involved will likely be offset by savings, helping to reduce future operating costs.

Sustainable-minded facility owners and managers, regardless of the building type, must continually monitor water usage and leaks. In addition to helping earn LEED certification, reducing water consumption is like putting money in the bank and not down the drain. ■

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* It is estimated that water use for restrooms in commercial office buildings as well as many other types of facilities accounts for roughly half of the total amount of water used in the entire property.

** Faucets installed before 1992 used as much as 5 gallons of water per minute. Not only was this a huge amount, but it also had a very significant impact on hot water demand and related costs.