by Phil Sprague

Time to get serious about water conservation – Here are several steps to get started

Most people do not believe there is a serious shortage of potable domestic water in the United States. Because of our massive natural resource of fresh water, to some degree they are correct. While the problem may not be a shortage of water overall, the more serious problem is that much of the water is not in the major metropolitan areas where most of it is consumed. For example, you will never convince hotel operators in Florida, Southern California and Arizona that there is a sufficient supply of water, because they are already experiencing droughts and shortages. When these droughts and shortages occur, only two things can happen. Water conservation must be implemented, or fresh water must be transferred from other portions of the country to the more arid areas. An example of this is Southern California, which draws much of its fresh water via river systems from the Rocky Mountains and other Midwestern aquifers, making this a very dynamic problem. As with energy conservation, there are countless ways hotel operators can conserve water in their property without adversely effecting guest comfort whatsoever.

Hot tip

In an effort to conserve water and to convey concern about the environment's dwindling resources, many restaurants only serve drinking water to guests upon request. This saves both on the water not served but also on the need to wash glassware that may not have been used.

Consumption indexes

When we conduct an energy audit, the first things we look at are consumption indexes. We have learned that a limited-service hotel should consume about 3,500 cubic feet of water per guestroom, per year. A full-service hotel should consume about 6,500 cubic feet of water per guestroom, per year.

One can determine the annual consumption index for their hotel by simply adding up the consumption as indicated on twelve consecutive water bills and dividing that total consumption by the number of guestrooms. The net result will give you an idea whether your hotel is consuming an excessive amount of water.

To minimize water consumption, there are a number of actions that can be undertaken. Here are several, presented by specific areas of the hotel.

Guestrooms

The guestroom, obviously, is one of the highest water consuming areas of the hotel, primarily because of the bathrooms which have a shower, toilet and sink. It is hard to believe, but we still encounter hotels that use showerheads that consume up to 5 gallons of water per minute. National standards now require that all showerheads in hotels consume no more than 1.75 gallons per minute. This can be examined by placing a bucket under each showerhead and running the water for sixty seconds to determine the flow rate. Also, notice when the shower diverter is turned on if any water is also pouring out of the spigot into the tub. If this is occurring, this is an indication that the diverter needs to be repaired immediately. And it is a very wasteful use of water and the energy to heat it.

Older water closets or toilets consume as much as 3 to 4 gallons of water per flush. Water standards now require that toilets consume no more than 1.6 gallons per flush. This can be accomplished by installing new toilets, or by installing a new flapper valve kit that will actually reduce the water consumed by an older toilet. Frequently, these kits do not work effectively and it might be simply a good idea to start budgeting for toilet replacement, if you have the old style.

Flow rate at bathroom sinks should not exceed one gallon per minute. This can be reduced by installing an aerator that injects air into the water, causing an illusion of more water flowing. Aerators cost as little as one dollar each. Alternatively, the hand valves on the supply lines under the sink can also be adjusted downward to a minimum, but acceptable, flow. This will conserve water and the energy to heat it.

Landscape watering

Almost all types of hotels these days have landscaping around the property that needs to be irrigated on a regular basis. First, it is recommended that an automatic sprinkler system be installed that utilizes a time clock to automatically turn on and turn off the water, while measuring the amount consumed. This can be somewhat costly, but eliminates many labor problems. If you use the old-fashioned sprinkler systems instead of an in-ground irrigation system, you may want to consider switching to a soaker hose, which provides much more adequate watering without evaporation.

Remember that all water used for irrigation of any type is eligible for a sewer credit. About half the cost of domestic water includes the cost of sewer to dispose of it. Since the water evaporates, it does not enter the sewer system. Install an inexpensive water meter and make arrangements with your water utility to obtain this credit. It could save as much as $1,000 per year. Typically, water costs up to $10 per hundred cubic feet.

Kitchens

The single largest user and waster of water in hotel kitchens is the dishwashing machine. The most serious problem occurs when the fill valve is not functioning properly and the machine is constantly trying to fill itself. The easiest way to inspect for this is to listen for a continuous sound of running water. When possible, be sure to run nothing but full loads in commercial dishwashing machines. If the need exists for continuous use of small loads, consider purchasing a residential style dishwasher for the kitchen.

Another big waste of water in the kitchen is continuously running faucets or dripping faucets. One dripping faucet can cost up to $150 per year in lost water, and will cost less than $5 to repair. Be sure not to thaw frozen foods with continuously running hot water. Also, train employees to conserve water by turning off faucets when sinks are not being directly used.

Pictured left: Equipping urinals and toilets in public restrooms with ultrasonic motion sensors will ensure that they are automatically flushed with the proper amount of water each time they are used. It will also keep the facilities more sanitary and easier to maintain.

Laundry

Undoubtedly, the largest consumers of water in an on-premise hotel laundry are the wash wheels (extractors). Here, again, it is extremely important that employees only wash full loads, and if smaller loads are necessary, consider buying a residential style washer for rags and small loads.

The wash wheels also have automatic fill valves that have a propensity to stick and waste a considerable amount of water. Here, again, listen for the continuous sound of water running and request that Engineering repair the valve immediately.

In the future, when a major remodel is about to occur, consider converting the hotel's laundry to an Ozone type system, which uses less than half the amount of water of a traditional wash wheel.

Water usage can also be drastically curtailed by decreasing the number of daily loads that are washed. This will require either the implementation of a voluntary linen reuse program in guestrooms or a change in standard operating procedures where traditionally, bed and bath linens were changed out everyday. Many hotels have already adopted these types of voluntary programs and have encouraged guests to reuse linens. Other hotels only change bed and bath linens specifically upon request, after every three days occupancy by a guest, or after a guest checks out.

Swimming pools and spas

Obviously, a swimming pool requires an immense amount of water to fill it. But it also consumes water on an ongoing basis to replace surface water that has evaporated. This is also true for hot tubs/spas. The single most cost-effective thing a hotel can do for both indoor and outdoor swimming pools or spas is to install an insulating cover over them when they are closed to use. This will conserve a significant amount of energy needed to heat the pool or spa and reduce water evaporation by about 50%, which means that the amount of chemical used to treat the water can be reduced by that same corresponding amount.

Public restrooms

Most public restrooms utilize a different type of flushing system, referred to as a flush valve. These toilets and urinals do not have water tanks, but flush by simply releasing water into the appliance to allow thorough flushing. It has now become almost standard procedure to install ultrasonic motion sensors on these appliances that will automatically flush them with the proper amount of water each time they are used. While these devices do not necessarily save a lot of water, they do ensure that your facilities are flushed every time they are used and, therefore, eliminate plugged lines.

Air conditioning system

Some larger hotels utilize a cooling tower as a means of transferring heat from inside the building to the exterior. The cooling tower works on the principle of evaporation, which provides about 15 degrees of free cooling. In other words, the cooling tower evaporates a very large amount of water to the atmosphere.

This water is also eligible for a sewer credit. This action requires installing a water meter on the make-up line to the cooling tower to obtain a sewer credit from the water utility. Since this is a major loss of water, the credit can reach thousands of dollars per year for the hotel.

Conclusion

Water is our most precious resource on earth and it is the foundation of life itself. It is time to get serious about using water intelligently and conservingly. These suggestions will have substantially no detrimental effect on the delivery of guest service and may help provide fresh water for generations to come. ✧

(TRC's resident energy expert, Phil Sprague is a member of the AHLA Executive Engineers Committee and president of PSA Hotel Energy Consultants. Based in Minneapolis, PSA Hotel Energy Consultants assists lodging companies and individual properties to develop effective, cost-saving energy strategies by auditing and assessing all energy consuming devices and appliances, and delivering comprehensive, customized recommendations in an actionable format. They can be reached at 952-472-6900.)