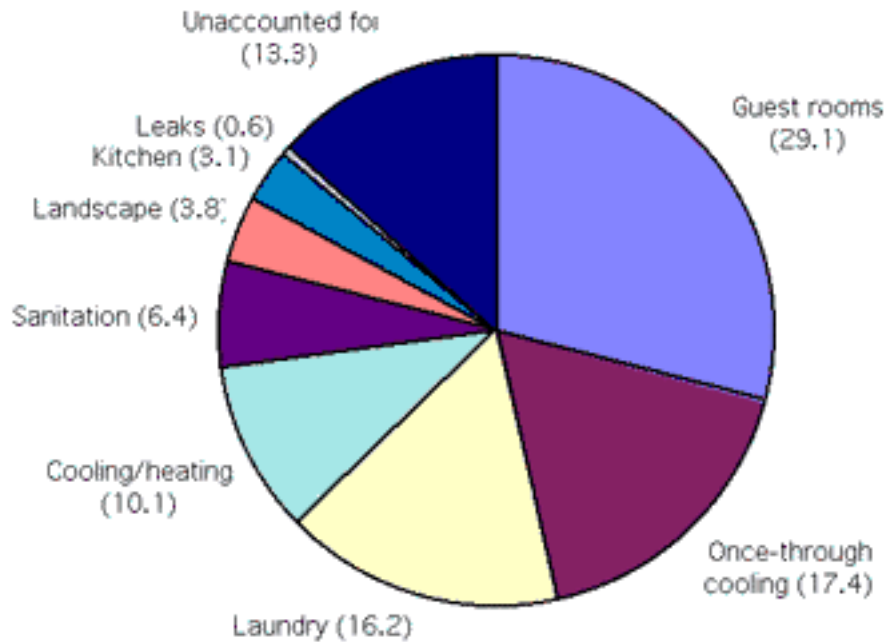


Data courtesy of Texas Water Development Board

TWRI graph by Shelley Nemec

Water use: hotels and motels (percentages)



Hotels strive for water use efficiency

by Jan Gerston

Texas Water Resources Institute

"Choose to Reuse" is the new rallying cry in environmentally conscious hotels and motels. Guests at "green" establishments are now able to play an active part in conserving water when they are on the road. Towel rack hangers and night table cards offer guests the option of reusing fresh linens each day for the sake of conserving water as well as decreasing the amount of wastewater and detergent use.

According to commercial laundry equipment manufacturers, institutional washing machines use about 2.5 gallons per pound of linen laundered. Industry estimates peg linen use at 8 to 12 pounds per day per double occupancy room, depending on type of lodging and other factors, such as proximity to the beach. Foregoing fresh towels and bed linens, therefore, can result in saving as

much as 30 gallons per room per day.

Since its initiation in May by the American Hotel and Motel Association, the "Good Earthkeeping" program has distributed more than a half million towel and bed linen cards. "More and more Americans are aware of dwindling earth resources. At the same time, hoteliers are more aware of the impact of their hotels on communities," said association spokeswoman Kathryn Potter.

In fact, interest in environment-friendly lodging is so great that in 1993, Patricia Griffin founded an organization focused solely on promoting earth-friendly housekeeping and maintenance. The first promotion of the Houston-based Green Hotels Association was the towel rack cards encouraging linen reuse. Griffin looks forward to the day "green" rooms are an industry standard, as no smoking rooms are now. Since then Green Hotels has extended its water conservation hints to the use of low-flow showerheads and sink faucet aerators, both rated at about 2.5 gallons per minute. Griffin estimates implementation of the linen cards, low-flow showerheads and aerating faucets can save about 25 gallons per double occupancy room daily. The organization has a catalog with the retrofit devices, towel rack hangers, and other "green" in-room amenities and conservation items, such as a recycling basket. The La Quinta chain set the goal of leak detection in each of its 30,000 guest rooms. San Antonio-based La Quinta Inns oversees an aggressive water management program in its 230 facilities nationwide. Monthly water use statistics for each motel in the chain are analyzed for anomalies, and each facility's use is compared with the company average and the company goal, said Jim Ackles, Director of Energy Management. Water use above the norm is investigated. For example, last summer, one San Antonio La Quinta showed high water use, which was traced to the irrigation systems. San Antonio Water Systems technicians were called in for an irrigation audit to track down the high water use culprit.

The chain tracks water use in terms of gallons per guest during each billing period. Through September, La Quinta motels have used an average of 110 gallons per guest per billing period. Water use for the entire chain totaled more than a billion gallons in the first nine months of 1996.

Ackles' goal is to cut that figure by 10 percent. "We're not focusing on dollars; we're really interested in how we are using that water. If we control leaks or maintenance waste, then the dollars will fall in line," Ackles said.

La Quinta installs low-flow showerheads and aerating faucets in each guest room. At replacement time, toilets are changed out with power-assisted 1.6 gallons-per-flush (gpf) toilets. Although early-closure flappers were tried, experiments found them unacceptable for use in guest rooms, Ackles said. New construction, of course, requires 1.6-gpf toilets.

An ambitious program slated for completion by the end of the year sets a goal of leak detection for each and every one of the chain's 30,000 guest rooms. Using the five-second calibrated bags and toilet tank color dyes, facility technicians at each motel will check for leaks, then fix them. The next stage of the water conservation effort will be underground leak detection, Ackles said.

In Texas, the hospitality industry is especially fortunate. The Texas Water Development Board (TWDB) developed an industry-specific Institutional, Commercial, Industrial water conservation workshop.

TWDB offers a Hotel and Motel Water Conservation workshop to train site managers and chief engineers to audit facility water

use and to find water conservation and reuse opportunities.

To develop a curriculum for these workshops, the TWDB staff started by surveying water use efficiency at two Texas hotels and at a state school. From these initial surveys arose a range of possible conservation measures ranging from the simple--educating staff to report leaks, then fix them--to the more complex--rerouting once-through refrigeration system chill water to cooling towers for make-up water, according to John Sutton, leader of the TWDB workshops.

The TWDB surveys found about 13 percent of water use was unaccounted for. "We compare the actual water use and the accountable water use and try to bring the numbers closer together," Sutton said. "When we surveyed these hotels, whenever we found water draining, we analyzed whether that water could be used somewhere else effectively. The goal is to use water as many times as possible before disposing of it." TWDB surveys found about 13 percent of water use unaccounted for. For instance, ice machines with water-cooled condensers employing once-through cooling water use about 149 gallons of cooling water per hundred pounds of ice. Machines produce almost 400 pounds of ice daily, for a daily total of almost 60,000 gallons of water per day, according to Rick Fischer of Manitowoc Equipment Works. Recycling that water would not harm the machine nor impact performance, Fischer said.

Conserving and reusing water delivers a rapid return on investment. The combined cost of water and wastewater is estimated at \$6 per thousand gallons. If the cost of energy to heat and pump water is factored in, the cost can be as high as \$9 per thousand gallons.

Air-cooled ice machines, as their name suggests, use air rather than water as a heat sink, saving from \$50 to \$100 per month, according to Green Hotels Association. Installing low-flow showerheads and faucet aerators represents a savings of \$1.50 per room per month.

In its initial surveys, TWDB calculated estimated return on investment for several conservation schemes. For instance, at a conference hotel in San Antonio, replacing all toilets in public areas with ultra-low flush toilets at a cost of \$3,250 would show a payback in 2.1 years and an annual water saving of 180,000 gallons per year. At another hotel, installing a \$200 solenoid valve on a 400-pound ice machine would render an immediate payback and an annual water savings of 1.9 million gallons per year. The solenoid valve would cut off once-through cooling water when the machine's compressor is not running. Of course, landscape irrigation audits and washing only full loads of laundry show immediate payback with no up-front cost.

The TWDB workshop curriculum trains managers to involve employees and guests, to perform water surveys, and to examine water use-intensive areas: sanitary fixtures, cooling equipment and boilers, food service, reverse osmosis units and water softeners. Participants then walk through a hotel for hands-on measurement of accessible flows and data collection.

La Quinta, as well as the Westin, ITT Sheraton, Outrigger, and Saunders, chains are partners of the Water Alliance for Energy Efficiency (WAVE), a non-regulatory partnership created by the Environmental Protection Agency to reduce water consumption in the private sector.

Started in 1993, WAVE is part of the EPA's long-term effort to reduce demands on the nation's water and energy infrastructure. WAVE encourages businesses and institutions to reduce water consumption while enhancing their competitiveness. Wave offers partners water-analysis modeling software. Ultimately, the WAVE program will be directed at the entire commercial sector, but the first phase targets the hospitality industry, said director John Flowers. The nature of the hotel and motel industry presents a double-barreled opportunity for improving water use efficiency. Hotel facilities present a myriad of opportunities for improving water use efficiency, and the number of guests served by the hospitality industry presents a ready platform for public education with in-room reminders.

WAVE partner hotels sign a memorandum of understanding obligating them to survey water use within their facilities and to install upgrades or retrofits to reduce consumption. They also agree to design new facilities to be water-efficient. In return, hotels and motels receive from WAVE free water-analysis modeling software and can use the WAVE designation in promotions.

"With information input by the user, the software allocates water use by functional area. The program then compares this model to the user's water bill, and through an iterative process, closes the gap between the two," Flowers said. "Once the model is balanced, the engineer has a detailed picture of where water is being used in the hotel, and can then play 'what if' games."

For example, hotel water managers can compute water use using as variables ultra-low flush toilets, higher cooling tower concentrations, or laundry rinse water recycling.

By nature of its high public profile, the hospitality industry is poised to carry the banner of water conservation into the public eye by setting a water-wise example, Green Hotels' Griffin looks forward to the day when "green" rooms are an industry standard, such as no smoking rooms are now.

For more information

The Texas Water Development Board offers a Water Use Efficiency Workshop for Hotels and Motels. Workshops train site managers and chief engineers to recognize opportunities for water efficiency with instruction and a site walk-through. To schedule a workshop, call John Sutton of TWDB at (512) 463-7988.

Green Hotels Association is committed to promoting environment-friendly practices in the hospitality industry. The organization claims more than 100 members world-wide, including Texas members ranging from a four-room bed-and-breakfast to the 1620-room Wyndham-Anatole Hotel in Dallas. For more information, contact Patricia Griffin at (713) 789-8889.

Water Alliance for Voluntary Efficiency is a non-regulatory partnership created by the Environmental Protection Agency. Contact John Flowers at (202) 260-1827.

IMPORTANT NOTE-- Since the time many of these articles were first published, area codes have changed. All area codes for people at Texas A&M University have been changed from 409 to 979. In addition, many other new area codes have been created.

If you suspect that an area code listed on these web pages is no longer correct, please visit the web site of the Texas Public Utilities Commission to view the latest area code information. That web site is <http://www.puc.state.tx.us/telecomm/areacodes/index.cfm>