



# WAVE Partners: Office Buildings

**W**ater Alliances for Voluntary Efficiency (WAVE) is part of the U.S. Environmental Protection Agency's (EPA's) long-term effort to prevent pollution and reduce demands on the nation's water and energy resources. WAVE is a voluntary partnership that encourages commercial businesses and institutions to examine water usage and implement water efficiency programs. Since its inception in 1992, the WAVE program has helped the lodging industry increase water efficiency. WAVE is now seeking to promote these same principles in office buildings.

## How Can My Office Building Become More Water Efficient?

Many office buildings are taking a serious look at their water use and are finding significant opportunities to cut costs and improve services through water efficiency. There are many opportunities to reduce water use in office buildings — bathroom fixtures such as toilets, faucets, and showers; landscape irrigation; heating and cooling; and food service areas and cafeterias. By installing water-efficient equipment and integrating water efficiency practices into everyday operation, a 30 percent reduction in water consumption is possible. These cost-effective practices conserve energy and valuable natural resources and can significantly reduce your building's utility bills and chemical and maintenance costs.

In most cases, increasing water efficiency is simple to do and quick to pay off. Choose the water efficiency practices that are economically viable and offer the greatest rewards for your facilities.

## How Can I Determine Which Efficiency Measures Are Best for Me?

WAVE•Saver for Office Buildings, a windows-based software package available from EPA, enables building engineers and managers to survey and track water use and identify specific water-saving opportunities. The program includes full-motion video demonstrations, color photos and graphics, and online tutorials. WAVE•Saver allows you to track water use throughout your building, including laundry operations, irrigation, and cooling towers. You can then identify and evaluate

a variety of water efficiency measures to save water in those functions. WAVE•Saver has budgeting and forecasting features, and also includes an automated WAVE report feature to make completing and submitting efficiency measures reports as simple as printing. Operating instructions are included in the "help" feature on the CD-ROM, making a paper copy unnecessary.

**Office Restrooms**

Choose an office restroom  
4th floor restrooms

Occupancy Info ...  
Number of Similar Restrooms: 15

**Toilet/Urinal Information**

	Men's	Women's
Gallons per toilet flush:	5	5
# Toilets in this restroom:	3	4
Housekeeper flushes per day:	2	2
(T)ank or (V)alve type toilet:	<input checked="" type="radio"/> T <input type="radio"/> V	<input checked="" type="radio"/> T <input type="radio"/> V

Restroom has urinals

	Men's
Gallons per urinal flush:	2.5
# Urinals in this restroom:	2

**Lavatory Information**

	Men's	Women's
Faucet flow (GPM):	4	4
# Faucets in this restroom:	3	3
Avg faucet temperature:	105	105
Seconds per wash:	15	15
Housekeeper washes per day:	1	1
Secs per housekeeper wash:	30	30

Restroom has Shower

**Shower Information**

	Men's	Women's
Shower flow (GPM):	4.5	4.5
# Showers in this restroom:	1	1
Avg hot water temperature:	110	110
Minutes per shower:	5	7
Housekeeper washes per day:	1	1
Mins per housekeeper wash:	1	1

Done

Example WAVE•Saver Fixed Data Input Screen



FOB WMS Efficiency Report	
For Site: OFFICE Retrofit: Retrofit1	
Water Cost: \$1.66/KGal Sewer Cost: \$2.00/KGal	
Summary of All Efficiency Measures	
<u>All Measures - Total</u>	<u>Annual Savings</u>
Payback: 0.6 years	Water: \$18,215 (4976 KGal)
Annual Savings: \$69,040	Energy: \$52,120 (10424 therms)
Matl/Install Cost: \$40,239	Chemical: \$0
	O&M Cost: \$1,295
Faucets - Install aerators	
<u>Faucet</u>	<u>Annual Savings</u>
Payback: Immediate	Water: \$2,134 (583 KGal)
Annual Savings: \$16,723	Energy: \$14,589 (2918 therms)
Matl/Install Cost: \$583	Chemical: \$0
Qty: 108	O&M Cost: \$0
Faucet - Office Restroom: 4th floor restrooms (MF)	
<u>Faucet</u>	<u>Annual Savings</u>
Payback: Immediate	Water: \$1,839 (502 KGal)
Annual Savings: \$14,412	Energy: \$12,573 (2515 therms)
Matl/Install Cost: \$486	Chemical: \$0
Qty: 90	O&M Cost: \$0

Example WAVE•Saver Efficiency Report Screen

***“Water efficiency can help office building managers meet their goals to cut costs while still keeping their customers happy. Office building managers should take advantage of all of the water conservation opportunities in their buildings.”***

**Tony Gregg**

City of Austin Water Conservation Program

## Water Efficiency Success Story: The City of San Diego's Ridgehaven Office Building

In 1994, the City of San Diego purchased the vacant 73,000 square foot Ridgehaven office building for use by its Environmental Services Department (SDES). Through a myriad of water and energy efficiency retrofits, SDES transformed this aging structure into a model of water and energy efficiency.

Currently, Ridgehaven saves 678,800 gallons of water annually — a 58 percent reduction compared to the building's previous water consumption. Through reduced water usage, Ridgehaven also realizes approximately \$3,720 in avoided water costs annually. Associated reductions in energy demands and chemical use further contribute to Ridgehaven's savings. Ridgehaven's water efficiency accomplishments include the following:

- ◆ Saved 303,500 gallons of water annually by installing low-flow toilets — a 68 percent reduction.
- ◆ Saved 77,400 gallons of water annually by installing waterless and low-flow urinals — a 60 percent reduction.
- ◆ Saved 45,000 gallons of water annually by installing low-flow shower heads — a 29 percent reduction.
- ◆ Saved 216,000 gallons of water annually by replacing the original inefficient cooling towers with two new closed-loop cooling towers with adjustable conductivity settings allowing increased water reuse — a 45 percent reduction.

With future plans to install an air separator for its cooling towers, Ridgehaven is not standing still in its water efficiency efforts. The air separator will improve water flow within the system and further reduce water consumption as well as the need for corresponding chemical treatments. Ridgehaven also plans to convert all the building's landscaping to Xeriscape landscaping (e.g., using indigenous plants, minimizing turf areas, instituting efficient irrigation practices, using mulches to minimize evaporation) to further reduce water use.

Information provided by Tom Arnold  
City of San Diego Environmental Services Department.

## How Can I Join?

For more information on how WAVE can help you identify water efficiency measures to meet your needs, call 202 260-7288. You also can write to the WAVE Program at U.S. EPA (4204), Ariel Rios Building, 1200 Pennsylvania Avenue, NW, Washington, DC 20460; or visit our Web site at <[www.epa.gov/owm/genwave.htm](http://www.epa.gov/owm/genwave.htm)>. Join WAVE today and make the commitment to take a leading role in conserving our vital water resources while saving money.



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