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quick facts on...

# Indoor Plumbing Fixture Retrofitting

JANUARY 2009

**The South Florida Water Management District** is a regional, governmental agency that oversees the water resources in the southern half of the state. It is the oldest and largest of the state's five water management districts.

**Our Mission** is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems, and water supply.

Replacing old plumbing fixtures and water-using appliances with new, high-efficiency models can achieve significant water savings. The actual savings will vary depending on the age and/or efficiency level of the old and new items as well as the frequency of use.

## Water Savings: Residential

**Table 1** shows common plumbing fixtures and appliances and their respective water consumption rates. The water consumption shown is before and after industry standards were established by the 1992 Energy Policy Act (effective after 1994) and at two increasing levels of efficiency.



**Table 1: Water Consumption of Common Plumbing Fixtures**

	Pre-1980	1980-1994	Post 1994	High-Efficiency	Ultra High-Efficiency	Dual Flush (Average)
<b>Toilets</b> (gallons per flush)	5.5	3.5	1.6	1.28	1.0	1.2
<b>Showerheads</b> (gallons per minute)	4.0	2.75	2.5	2.25	1.2	-
<b>Faucets</b> (gallons per minute)	3.0 - 5.0	2.75	2.5	1.0 to 1.5	0.5	-
<b>Dishwasher</b> (gallons per load)	56	10 to 14	7	6.5	4.5	-
<b>Clothes Washer</b> (gallons per load)	-	39	27	22	-	-

Table 2 shows estimated water use of less expensive plumbing fixtures in a household of 2.64 people in gallons per day. Retrofit programs involving these fixtures are usually highly cost-effective.

Water Appliance/ Fixture	Pre-1994	Post-1994	High- Efficiency	Ultra High-Efficiency
Toilet	47 to 74	22	17	13
Showerhead	26 to 38	23	21	11
Faucets	43 to 21	29	27	25
<b>Total</b>	<b>116 to 133</b>	<b>73</b>	<b>65</b>	<b>50</b>

Retrofitting 1,000 houses built to pre-1994 standards with high-efficiency devices would save about 68,000 gallons per day, or 24.8 million gallons per year. Retrofitting 1,000 houses built to post-1994 standards with high-efficiency devices would save about 8,000 gallons per day, or 2.9 million gallons per year. Greater savings still can be expected using ultra high-efficiency devices.

## Water Savings: Commercial Office Building

Table 3 shows restroom water use in three office buildings (of 25 male and 25 female worker) at varying levels of efficiency. Retrofitting the restrooms with high-efficiency fixtures would result in savings between 196 and 426 gallons per day, or 59,960 and 110,760 gallons per work year (260 days).

	Pre-1994 Fixtures	Post-1994 Fixtures	High- Efficiency Fixtures
<b>Males</b>			
Toilet*	3.5	1.6	1.2
Urinal*	1.5	1	0.125
<b>Females</b>			
Toilet*	3.5	1.6	1.2
<b>Both - Faucet*</b>	2.2	2	0.5
<b>Total Water in Gallons Per Day</b>	<b>590</b>	<b>360</b>	<b>164</b>

\*Water Use for restroom fixtures in gallons per flush for toilets and urinals and gallons per minute for faucets.

## Installation and Maintenance Costs

Retrofit programs for certain appliances such as dishwashers and clothes washers are often cost-effective only in commercial facilities. However, the cost-effectiveness of replacing showerheads, faucet aerators and toilets make these items good buys in both residential and commercial programs. Costs of executing a retrofit program will vary depending on the design of the individual program. Program designs can be based on several different platforms including giveaways, free or subsidized exchanges and rebates or vouchers.

## How the South Florida Water Management District Can Help

Through the Water Savings Incentive Program (WaterSIP), the South Florida Water Management District provides matching funds up to \$75,000 to water providers and users for installing water-saving technologies, such as high-efficiency plumbing fixtures, rain and soil moisture sensors and fire hydrant flushing devices. Potential applicants include cities, public utilities and water providers, homeowners associations, schools, hospitals and industrial/commercial facilities. Individual residences are not eligible.

Since its inception in 2003, WaterSIP has allocated more than \$3.4 million to dozens of public and private entities across the District's 16 counties, resulting in an estimated water savings of more than 2.1 billion gallons per year. The program is based on cost-sharing. Entities seeking funding must be able to match at least 50 percent of the total costs for the project, either with matching funds or in-kind services. Up to 100 percent funding is available to Rural Economic Development Initiative communities.

In addition, to those mentioned above, other indoor water conservation items will be considered for funding support under the WaterSIP program. Indoor water use assessments conducted by a professional auditor may also be considered for support under WaterSIP if part of a retrofit program.

Applications for WaterSIP are posted annually in February. Check the WaterSIP Web site for details on the program and application process. To learn more about WaterSIP, please contact Robert Wanvestraut, SFWMD Senior Conservation Officer, at rwanvest@sfwmd.gov or 561-682-2054. You may also visit us online at www.sfwmd.gov. Choose Water Conservation at the left of the screen, next click "What We're Doing" and then select **WaterSIP Program – Find out more.**



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