Alternative Toilets

Toilet Options: Ultra-Low-Flow

NESC WRITER/EDITOR
Michelle Moore

This ultra-low-flow toilet from Microphor in Willits, California, uses 0.5 gallons of water per flush.

Ultra-Low-Flow Toilets

Water conservation awareness prompted manufacturers to begin making more efficient toilets in the early 1980s. The federal government established a national manufacturing standard in 1994 mandating that new toilets sold in the U.S. use a maximum of 1.6 gallons of water for flushing.

Studies across the country show that these low-flow toilets reduce water use by 23 to 46 percent, saving an average 10.5 gallons of water per person daily. According to the U.S. Environmental Protection Agency's Office of Water, through the use of water-efficient toilets in new construction and normal replacement, the U.S. is expected to save 7.6 billion gallons of water per day by 2020.

Some toilet manufacturers have taken water reduction further with ultra-low-flow models. These toilets can use as little as 0.25 gallons per flush. Products vary in that they may have narrower bowls with a smaller water surface, manually controlled water flow (via a foot pedal) into the bowl, or water pumps to assist in bowl emptying and cleaning.

One model eliminates the "S" trap of a conventional toilet design, enabling waste to be washed down using less water. Another product flushes by opening a hinged flap to let wastes and a small amount of water fall into a lower chamber. After several seconds the flap reseals, and a blast of compressed air forces the wastewater over the trap and out a discharge line from the toilet.

Public parks, restaurants, hotels, and other public facilities, such as roadside rest areas, are installing these ultra-low-flow toilets to help reduce water consumption and subsequent wastewater disposal. Ultra-low-flow toilets also enable business construction in areas where restrictions may limit sewage disposal capacity.

For example, many resort areas and municipalities place restrictions on sewage capacity flowing into publicly maintained systems. Ultra-low-flow toilets may make building in these areas possible. Similarly, facilities (like resort hotels) facing expansion difficulties due to the size of their existing onsite systems may install ultra-low-flow toilets, thus enabling their present onsite systems to adequately treat the reduced wastewater flow. (*Note: This reduction in wastewater quantity does not reduce the organic loading rate to the system.*)

Advantages:

- Ultra-low-flow toilets reduce water consumption and costs to the consumer.
- They contribute to preserving the environment by protecting ground water from depletion and possible contamination.

Disadvantages:

- Some ultra-low-flow models may require flushing more than once to adequately clean the toilet bowl.

Annual Total Water Usage by Toilets*

Number of People in Household	Water Consumption by Toilet (Gallons per Flush) 1.5	3.5	5.0	7.0
1	2,190	5,110	9,125	10,220
2	4,380	10,220	18,250	20,440
3	6,570	15,330	27,375	30,660
4	8,760	20,440	36,500	40,880
5	10,950	25,550	45,625	51,100

Water Consumption in Gallons per Year

* Assumes four flushes per day per person for 365 days.