

Sector: Commercial

Category/component: Water Conservation / Low-Water-Use Fixtures

Proposed GB practice

Description

Plumbing fixtures must meet these maximum water flow or consumption limits:

- Lavatory faucets, private: 1.5 gpm at 60 psi
- Lavatory faucets, public (metering): 0.25 gpm
- Lavatory, public (other than metering): 0.5 gpm at 60 psi
- Shower heads: 2.0 gpm at 80 psi
- Sink faucets: 1.8 gpm at 60 psi
- Toilets: 1.28 gpf with minimum MaP threshold of 350 grams
- Urinals: 0.5 gpf
- Pre-rinse spray valves (food service): Must meet federal requirements
- Bar sinks (food service): 2.2 gpm at 60 psi

Such fixtures shall be Environmental Protection Agency (EPA) WaterSense® labeled fixtures or fixtures which provide the equivalent maximum flow rates.

Applicability

New Construction: Applies throughout.

Existing Buildings/Additions: Applies to only those fixtures being replaced.

Existing Buildings/Alterations: Applies to only those fixtures being replaced.

Existing Buildings/Historic: Generally, same as alterations except when a qualifying historic building/structure is enlarged. In that case, the newly-constructed addition is subject to the “additions” criteria above.

Intent

To reduce water and energy consumption.

Benefits and Costs

Triple Bottom Line Benefits

People: Since these fixtures have been independently tested and must meet rigorous performance standards, they have high customer satisfaction. Using low-flow fixtures demonstrates a commitment to sustainability and a conservation ethic.

Economic:

- The proposed standards compared to the current water-efficiency standards are intended to reduce water use by approximately 20%.
- Reduced water use means less need for water distribution and treatment, and wastewater collection and treatment capacity.
- In addition to minimizing water consumption and wastewater collection and treatment capacity, water heating charges are also reduced.

- Customers use less water and save on their water bills and in foodservice applications can remain competitive with meal costs to their consumers.

Environment: Lower water demand lessens the amount of raw water supply needed. More water available to meet the potential increased needs with climate change. Lowers carbon emissions with lower energy use.

Lost Opportunity

These fixtures typically last for 5 to 20 years (spray-rinse valves to toilets/urinals). If maximum low flow models aren't installed at the time of new construction or renovation, the opportunity to reap water and energy savings won't come around until replacement. Although these fixtures can be replaced at any time, rarely are they replaced until they fail.

Costs Passed to Owner

Just as with conventional plumbing fixtures, depending on the style and quality selected there is a wide range of costs for WaterSense® fixtures, prices start as follows:

- Lavatory faucets for commercial start at \$60
- High-efficiency toilets for commercial use start at \$200
- Showerheads start at \$10

The costs for low-flow pre-rinse spray valves:

- 1.2 gpm are approximately \$70
- .65 gpm are approximately \$47

Implementation

Availability of Products and/or Services

WaterSense® labeled lavatory faucets and high efficiency toilets are widely available from major plumbing manufacturers, plumbing supply distributors and builder supply warehouses, in a wide variety of brands, styles and price points. Products are labeled and readily identified.

Showerheads began to be WaterSense® labeled in mid-2010 and aren't currently as available as the toilets and faucets.

WaterSense® labeled products are listed on the WaterSense website at www.epa.gov/WaterSense/product_search.html.

Low-flow pre-rinse spray valves are readily available through suppliers; 1.6 gpm models have been available since 2005. T & S Brass supplies low flow pre-rinse spray valves endorsed by the Green Restaurant Association www.dinegreen.com with flow rates as low as .64 gpm.

Practicality

No practical obstacles have been identified.

Certification Issues

None.

Enforcement Procedures

Permit application/plan review: Application specifies compliance with EPA Water Sense® labeled fixtures at specified flow rates or as otherwise noted for compliance.

Field inspection: Building inspectors verify that specified products are installed.

Enforcement resources: No additional resources required.

Support Material Needs

None.

Training Needs-Industry

Little to none needed. No special skills are required to install WaterSense or low-flow fixtures.

Training Needs-Staff

None, easily identifiable via WaterSense® labels on fixtures as specified in permit documents.

Background**Current Practice**

The Energy Policy Act of 1992 mandated that fixtures manufactured in the U.S. meet the following maximum flow-rates: showers – 2.5 gpm; lavatory faucets – 2.2 gpm; and toilets - 1.6 gpf. This mandate was lifted by the Department of Energy (DOE) and is no longer applicable as of December 22, 2010.

The Energy Policy Act of 2005 (EPAAct), in effect since January 1, 2006, states that all pre-rinse units and replacement spray valves used for ware washing must have a maximum flow of 1.6 gpm at 60 psi.

The Food Service Technology Center FSTC testing laboratory—the nation’s leading resource for commercial foodservice energy efficiency information—recommends a pre-rinse spray valve with a flow rate of 1.6 gallons per minute or less, and cleaning performance of 26 seconds per plate or less, based on the *ASTM Standard Test Method for Performance of Pre-Rinse Spray Valves*.

The EPA WaterSense® and ENERGY STAR Programs are currently collaborating with American Society of Mechanical Engineers ASME and ASTM International to develop performance and efficiency criteria that will inform an EPA specification for Pre-Rinse Spray Valves (PRSVs).

Context

The WaterSense® Program is a U.S. Environmental Protection Agency (EPA) sponsored partnership program launched in 2006. The WaterSense® Program promotes water efficiency and enhances the market for water-efficient products, programs, and practices. The WaterSense® label for products helps consumers identify water-efficient products and programs that meet WaterSense® water efficiency and performance criteria. WaterSense brings together local water utilities and governments, product manufacturers, retailers, consumers, and other stakeholders to:

- Decrease indoor and outdoor non-agricultural water use through the adoption of more efficient products and practices.
- Help consumers make water-efficient choices, including differentiating between products and services in the marketplace and adopting simple daily activities that reduce water use.
- Encourage innovation in manufacturing
- Establish and standardize rigorous certification criteria that ensure product efficiency, performance, and quality

Initially the WaterSense® Program focused on residential products and services, but currently the program is expanding its focus to include the commercial sector. For example the WaterSense® Program recently released its specifications for commercial urinals which require that water use not exceed 0.5 gpf. This is important because according to WaterSense research, nearly 65

percent of the urinals in use today—approximately 7.8 million fixtures—exceed the maximum allowable flush volume set by federal standards of 1.0 gpf.

Fixtures meeting these specifications are encouraged in voluntary Green Building rating systems such as LEED.

Indoor water use averages about half of total water consumption in Fort Collins commercial applications.

Water and energy conservation are a primary concern in the foodservice industry. An average restaurant uses 11 gallons of water per meal. A water-efficient restaurant uses six to nine gallons of water per meal. The bulk of a restaurant's water usage—at 47 percent—is in the kitchen (with 33 percent water usage in the bathrooms).

Pre-rinse spray valves are used in commercial kitchens to remove food from dishes before being loaded into the dishwasher. About one-third of all water used in restaurants is consumed by pre-rinse sprayers, and in large commercial kitchens some older models can use as much as five gallons per minute.

A low-flow pre-rinse spray valve is one of the easiest and most cost effective water and energy saving devices available to the foodservice operator.

To calculate water savings, see the pre-rinse spray valve calculator:
www.fishnick.com/equipment/sprayvalves/

Nearly 65 percent of the urinals in use today—approximately 7.8 million fixtures—exceed the maximum allowable flush volume set by federal standards. While the current federal standard for commercial urinals is 1.0 gallon per flush (gpf), some older urinals use as much as five times that amount!

Replacing these inefficient fixtures with WaterSense® labeled flushing urinals can save between 1.0 and 4.5 gallons per flush, without sacrificing performance. The WaterSense® label helps purchasers easily identify high-performance, water-efficient products. Installing WaterSense® labeled flushing urinals will help reduce water use in facilities and save money on water bills.

Related Green Building Practices

None

Known objections

- Contractor concerns about flush performance for 1.28 gpf toilets.