

Green Building Practice Summary

3/21/2011

Sector: Residential

Category/component: Water Efficiency / Water-Efficient Fixtures

Proposed GB practice

Description

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

- Lavatory faucets: 1.5 gpm at 60 psi
- Shower heads: 2.0 gpm at 80 psi
- Sink faucets: 1.8 gpm at 60 psi
- Toilets: 1.28 gallons per flushing cycle, with minimum MaP threshold of 350 grams

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

Applicability

New Construction: Applies

Existing Buildings/Additions: Applies only to the addition portion

Existing Buildings/Alterations: Applies to fixtures being replaced

Intent

Save water and energy

Benefits and Costs

Triple Bottom Line Benefits

People: None

Economic: The proposed standards compared to the current water-efficiency standards are intended to reduce water use by approximately 20%. Lower water, wastewater and energy bills for the homeowner. Estimated annual savings of approximately \$50, split approximately equally between the three components.

Environment: Environmental benefits associated with lower water and energy use

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® labeled fixtures. Approximate starting price points are:

- Lavatory faucets: under \$30
- Toilets: \$100

- Showerheads: \$10

Information from the EPA WaterSense web site: WaterSense® labeled toilets are not more expensive than regular toilets. MaP testing results have shown no correlation between price and performance. Prices for toilets can range from less than \$100 to more than \$1,000. Much of the variability in price is due to style, not functional design. Toilets that could potentially bear the WaterSense® label are currently in the low to middle range of about \$200. There is a lot of competitive pressure on manufacturers to lower prices; therefore, it can be expected that as more toilets become certified, the average price should fall.

The incremental cost associated with the proposed amendment, assuming 2 bathrooms and a kitchen, is estimated to be “very low” (\$0 to \$50) to “low” (\$50 to \$200).

Lost Opportunity

These fixtures last for 20 years or more. Although replacement is relatively easy, fixtures are rarely replaced until they fail.

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.

Practicality

No practical obstacles have been identified. WaterSense® labeled fixtures require essentially the same basic installation procedures as conventional plumbing fixtures.

Certification Issues

Products are labeled through the national EPA WaterSense® process. There are no local certification issues.

Enforcement Procedures

Permit application/plan review: Application specifies that WaterSense® labeled fixtures or fixtures with equivalent maximum flow rates will be installed.

Field inspection: Building inspectors verify that specified products are installed. WaterSense® labels are found on fixtures.

Certificate of Occupancy: Nothing additional.

Support Materials Needs

None.

Training Needs-Industry

No special skills are required to install WaterSense® fixtures. Requirement will be covered as part of mandatory training for all contractors on the recently adopted Fort Collins building codes and green amendments.

Training Needs-Staff

Minor.

Background

Current Practice

Fixtures typically installed meet the federal Energy Policy Act of 1992 standards:

- Toilets = maximum 1.6 gallons per flush (gpf), no performance requirement
- Showerheads = maximum 2.5 gallons per minute at 80 psi
- Lavatory faucets = maximum 2.2 gallons per minute at 60 psi

This mandate was lifted by the Department of Energy (DOE) and is no longer applicable as of December 22, 2010.

Context

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

Toilets are by far the main source of water use in the home, accounting on average for nearly 30 percent of indoor consumption.

Reducing showerhead flow rates reduces both water and energy use for water heating.

WaterSense® labeled fixtures are the next step in the evolution toward water-efficient fixtures. Lessons learned in previous steps have been brought to bear so that earlier performance problems are avoided. For example, the move in the 1990s from 3.5 gpf to 1.6 gpf toilets was not well conceived. Manufacturers didn't have time to redesign models to provide acceptable performance. This resulted in many dissatisfied users. Since then, a Maximum Performance test (MaP test) protocol has been developed that provides a useful metric for toilet performance. The WaterSense® criteria include a MaP requirement.

According to the EPA:

- WaterSense® specifications include performance criteria to ensure that consumers won't need to sacrifice a good shower in order to achieve water savings.
- Unlike some first-generation, 'low-flow' toilets, WaterSense® labeled toilets combine high efficiency with high performance. Design advances enable WaterSense® labeled toilets to save water with no trade-off in flushing power. In fact, many perform better than standard toilets in consumer testing.

The City currently offers City water customers rebates of \$35 for the purchase of WaterSense® labeled toilets and \$15 for recycling the old toilet. These rebates are available for toilets replaced in conjunction with existing home alterations, not for new construction.

WaterSense® fixtures are encouraged in voluntary green building rating systems, including LEED/Homes and the National Association for Home Builders National Green Building Standard™.

Related Green Building Practices

None

Known objections

- Concerns about flush performance for WaterSense® toilets.

Sources

WaterSense water savings calculator:

http://www.epa.gov/WaterSense/calculate_your_water_savings.html

DOE - Federal Energy Management Program

<http://www1.eere.energy.gov/calculators/buildings.html>

Faucets/Showerheads calculator

http://www1.eere.energy.gov/femp/technologies/eep_faucets_showerheads_calc.html