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January 20, 2022

Flow Rates or Quantity for Plumbing Fixtures

Senate Natural Resources,
Agriculture, and Environment
Standing Committee



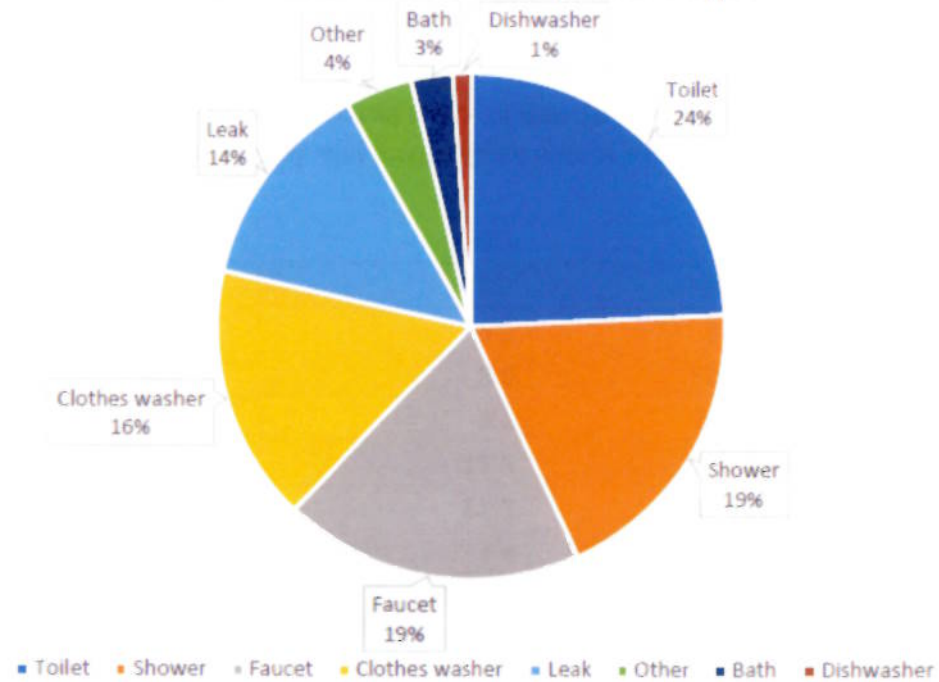
Water efficiency standards for indoor fixtures could:

- Provide significant water savings for Utah communities
- Improve drought resiliency
- Allow for a more balanced approach to managing the competing demands of water and population growth



Indoor Consumption Estimates for Utah

Residential Indoor Use by Fixture Type



Based on GPCD estimates in DEOREO, W.B., P.W. Mayer, B. Dziegielwski, J.C. Kiefer, 2016. *Residential Uses of Water Version 2*. Water Research Foundation. Denver, CO.



Estimated 2018 Statewide Residential Annual Usage

Fixture	GPCD	Annual Use (Acre Feet)	Annual Use (Million Gallons)
Toilet	14.4	50,941.55	16,599.36
Shower	11.2	39,820.51	12,975.55
Faucet	11.2	39,820.51	12,975.55
Clothes washer	9.7	34,439.36	11,222.10
Leak	8.0	28,340.72	9,234.85
Other	2.5	8,968.58	2,922.42
Bath	1.5	5,381.15	1,753.45
Dishwasher	0.7	2,511.20	818.28

Source data for commercial, industrial, and institutional indoor use by fixture type is not readily available, but total statewide use is estimated to be 74,489.10 acre-feet (24,272.35 million gallons).

WaterSense Program

- Sets requirements for water fixtures to be at least 20 percent more water efficient than state standards
- Must maintain comparable or better performance
- Testing and verification by independent, third-party agencies



Across the Western United States, several states including Texas, Nevada, Colorado, and California have already successfully adopted indoor water efficiency standards based on WaterSense program.



Indoor Fixtures

Recommendations on water use standards



Toilets: 1.28 gallons per flush (gpf) or less – 20% less water than the current federal standard maximum of 1.6 gpf



Urinals: Flushing urinals must use no more than 0.5 gpf, compared to the current federal standard of 1 gpf



Showerheads: Must demonstrate that they use no more than 2.0 gallons per minute (gpm), instead of the 2.5 gpm federal standard



Faucets: Must have a flow of no more than 1.5 gpm, compared to the federal of 2.2 gpm

Indoor Water Conservation

These proposed standards will impact new construction and retrofits of older homes

- According to the leading manufacturers of plumbing fixtures and fittings, the National Association of Home Builders (NAHB) and the International Association of Certified Home Inspectors (InterNACHI):
 - Bathroom sink faucets are replaced on average every 15 years
 - Showerheads are replaced every 12 years
 - Toilets are replaced every 30 years
 - Based on these averages, Utah could see a near 100% saturation of WaterSense labeled products by 2050
- The state's toilet replacement rebate will further expedite the saturation of efficient fixtures by incentivizing early replacement of less efficient toilets.
- Once saturation has occurred, the state could end its toilet replacement rebate program and shift conservation funding to other programs or needs.



Water Savings

How much water
can be saved?

16,000
acre-feet
per year
(4.5 billion gallons)

*Annual water savings starting by 2030 based on accelerating scenarios from Utah's Regional M&I Water Conservation Goals. This is roughly equivalent to a reduction of 4 gallons per person per day (gpcd), or **enough water to support the indoor and outdoor needs of 30,000 Utah households at current usage rates.**



Toilet Price Comparison

These are intended to be equivalent models. As with any product, there are a wide range of factors that influence price. The gallons per flush does not appear to be a major factor.

Brand	1.6 gpf equivalent model	1.28 gpf equivalent model
Toto	ULTIMATE® ONE-PIECE ELONGATED* MSRP: \$764.00 (EA) PRICE: \$464.13 (EA)	ECO ULTRAMAX® ONE-PIECE ELONGATED* MSRP: \$712.00 (EA) PRICE: \$432.54 (EA)
Kohler	K-3977-0 WELLWORTH ROUND-FRONT* MSRP: \$323.15 (EA) PRICE: \$242.36 (EA)	K-3577-0 WELLWORTH CLASSIC ROUND-FRONT* MSRP: \$323.15 (EA) PRICE: \$242.36 (EA)
Mansfield	BRENTWOOD WHITE ELONGATED COMFORT HEIGHT 2-PIECE** PRICE: \$99.00 (EA)	BRENTWOOD WHITE ELONGATED COMFORT HEIGHT 2-PIECE WATERSENSE ** PRICE: \$99.00 (EA)

*Standard Plumbing (9/2021)

**Lowe's (9/2021)



Discussion/Questions



Planning

Water Supply Planning and Trends

Over the next 40 years, Utah's water supply will face significant challenges

- **Increasing Water Demand**
 - Utah's population is expected to double by 2060, which will create a greater demand for water in the state.
- **Diminishing Water Availability**
 - Water supply shortages have been seen during the current drought and more are expected in the future.
 - Temperatures recorded at the Salt Lake International Airport have increased by an annual average of 4.7° F since 1948, which naturally increases the outdoor watering needs of existing plant life.
 - Climate trends indicate that future summers will be hotter and longer—further straining water supply.
 - Climate change may also make future droughts more extensive in both duration and intensity.
- **Changing Land Use**
 - Land use in many areas is predicted to become denser, changing the way water will be used in Utah.
 - Denser developments will have smaller landscaped areas and lower irrigation needs than historical development patterns. But even with a lower GPCD, denser populations will increase the total demand for water per acre.
 - Seasonal peak patterns will become more buffered and less pronounced as water use is shifted from outdoor irrigation to indoor water needs.



Statewide Water Use (2018)

- Population: 3,166,647
- Statewide Water Use: 241 GPCD
- Statewide Residential Indoor Use: 59 GPCD¹
- Statewide Commercial, Industrial, and Institutional Indoor Use: 21 GPCD²

¹ Extrapolated from JWCD's residential 2018 indoor use percentage (25%)

² Extrapolated from JWCD's 2018 commercial, industrial, and institutional indoor use percentage (9%)



Proposed Amendment

A statewide amendment to Table 604.4 of the International Plumbing Code and Table P2903.2 of the International Residential Code to use WaterSense standards would align Utah with other states, who have already adopted these standards.

Table 604.4 of IPC

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY ^b
Lavatory, private	2.2 <u>1.5</u> gpm at 60 psi
Lavatory, public (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head	2.5 <u>2</u> gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Urinal	1.0 <u>0.5</u> gallon per flushing cycle
Water closet	1.6 <u>1.28</u> gallons per flushing cycle

Table P2903.2 of IRC

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE OR QUANTITY
Lavatory faucet	2.2 <u>1.5</u> gpm at 60 psi
Shower head	2.5 <u>2</u> gpm at 80 psi
Sink faucet	2.2 gpm at 60 psi
Water closet	1.6 <u>1.28</u> gallons per flushing cycle

165 612.26 15936.96
137700 8537.46
2461.39
State 8197.92

