

## Performance Goals for Water-Efficient Equipment

## in New or Renovated Stanford University Buildings

Note: gal = gallons, gpm = gallons per minute, gpf = gallons per flush, gpc = gallons per cycle, FSTC = Food Service Technology Center The term "Food Service Establishments" includes: cafes, cafeterias, dining halls, and large and small kitchens

suwater.stanford.edu

Additional Resources: Stanford Water Resources, FSTC list of Energy Star food service equipment, Cardinal Green Labs

Fixture or Equipment Type	Examples of Applicable Campus Building Types	Typical Practice or Other Standard	Best Practice Goal at Stanford University
Toilet	Student Dorms, Residential, Academic, Athletic	$1.28~{ m gpf^1}$	< 1.28 gpf Use <u>Ultra High Efficiency Toilets</u> . Dual-plumb new buildings for non-potable water.
Urinal	Student Dorms, Residential, Academic, Athletic	0.125 gpf <sup>1,2</sup>	<b>0.125 gpf</b> Use <u>High Efficiency Urinals</u> . Dual-plumb new buildings for non-potable water
Public bathroom faucet	Non-residential, (Academic, Athletic, etc.)	Manual or Sensor Faucets: 0.5 gpm <sup>1</sup> Metering Faucets: 0.20 gpc <sup>1</sup>	Manual or Sensor Faucets: ≤ 0.5 gpm Metering Faucets: set at 10 sec. max. per cycle (or < 0.20 gpc).
Residential bathroom faucet	Student Dorms, Residential	1.2 gpm <sup>1,2</sup>	< 1.0 gpm
Showerhead	Student Dorms, Residential, Academic, Athletic	1.8 gpm <sup>1</sup>	<b>1.5 gpm</b> Need to specify building water pressure before ordering. Tamper-resistant for dorms, academic, and athletic areas.
Clothes washing machine	Student Dorms, Residential, Academic, Athletic	Front-load <u>Energy Star clothes washers</u> : ≤ 3.2 gal/ft <sup>3</sup> Water Factor	Use <u>Energy Star Qualified clothes washers</u> (front-load only).
Dishwasher	Student Dorms, Residential, Academic, Athletic	Energy Star dish washers: ≤ 3.5 gal/load (standard) ≤ 3.1 gal/load (compact)	Use Energy Star Qualified dish washers.
Kitchen faucet	Food Service Establishments, Student Dorms, Academic, Research, Athletic	1.8 gpm <sup>1</sup>	< 1.5 gpm
Pre-rinse spray valve	Food Service Establishments, Large Kitchens	<u>Dept. of Energy Pre-rinse spray valves</u> : ≤ 1.28 gpm	< 1.15 gpm Use <u>FSTC-tested nozzles</u> .
Food steamer	Food Service Establishments, Large Kitchens	Use once-through tap water (continuously added, about 30 gal/hour) to cook	Use recirculating steam to connectionless heat steamers, also called "boilerless steamers": < 1.5 gal/hour Must by tested by FSTC. Once-through domestic water cooling prohibited. See information on <u>Energy Star Qualified steamers</u> .
Ice machine	Food Service Establishments, Large Kitchens, Athletic	Energy Star air-cooled ice machines: <u>Batch</u> : ≤ 20 or ≤ 25 gal/100 lb ice <u>Continuous</u> : ≤ 15 gal/100 lb ice	Use recirculating closed-loop chilled water or <u>Energy Star</u> <u>Qualified air-cooled ice machines</u> . Once-through domestic water cooling prohibited.
Commercial (conveyor) dish washer	Food Service Establishments, Large Kitchens		Use <u>Energy Star Qualified commercial dishwashers</u> . Retrofit nozzles to be efficient - use Opti-Rinse (Hobart) or comparable.
House vacuum system	Academic, Research	Liquid ring (domestic water continuously added)	Use dry vacuum pumps
Glassware washer	Academic, Research	No current efficiency standards specified	Purchase efficient units. An example is the HAMO brand.
Lasers, electron microscopes, or other research equipment needing cooling	Academic, Research	Once-through water-cooled	Use recirculating closed-loop chilled water for cooling. Once-through domestic or chilled water cooling is prohibited.
Autoclave, sterilizer	Academic, Research	Domestic water runs continuously at ≥ 2.2 gpm (24/7, 365 days)	Install water mizers. Quench water runs only when > 140°F wastewater is detected (typically < 6 hours/day). If available, use recycled water for quenching. If water used for vacuum for drying cycle, use recirculating systems only, not once- through domestic water. <u>Autoclave/Sterilizer Fact Sheet</u>
Reverse Osmosis (RO) water treatment system	Academic, Research	RO reject wastewater to sewer, no re-use	Capture RO reject water for non-potable reuse, such as quenching, toilet flushing, and sewer trap priming. <u>Medical School RO Reuse Project</u>

<sup>1</sup> 2019 CALGreen Code

<sup>2</sup> 2015 California Energy Commission appliance efficiency regulations