

What Appliances Are Covered?

A plumbing fitting controls and guides the flow of water in a supply system, such as showerheads, lavatory faucets and replacement aerators, and kitchen faucets and replacement aerators. Under the scope of the regulations, lavatory faucets include residential and commercial faucets, and kitchen faucets are those sold or offered for sale to the general public. Plumbing fixtures, such as toilets and urinals, connect to a plumbing system to deliver and drain away water and waste.

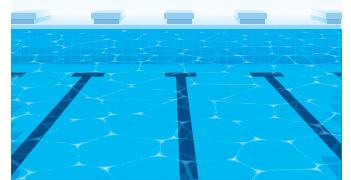
In California, plumbing fittings and plumbing fixtures are regulated by recently updated standards that are more stringent than federal standards.

Why?

Significant electricity is required to acquire and process water and water is needed to produce electricity. The California Energy Commission estimates that two-thirds of the population receives water that must travel thousands of miles. In many cases, energy-intensive pumps are required to move that water over mountains. California's drought and the state's energy goals led policy makers to take bold steps by adopting innovative standards.



*After full stock turnover, these measures annually save enough electricity and natural gas to power **1,978,502** new California homes and enough water to fill **227,361** Olympic-size swimming pools.*



Relevant Code Sections

- 1601(h) – Scope: Plumbing Fittings
- 1601(i) – Scope: Plumbing Fixtures
- 1602(h) – Definitions: Plumbing Fittings
- 1602(i) – Definitions: Plumbing Fixtures
- 1604(h) – Test Methods: Plumbing Fittings
- 1604(i) – Test Methods: Plumbing Fixtures
- 1605.3(h) – Efficiency and Design Standards: Plumbing Fittings
- 1605.3(i) – Efficiency and Design Standards: Plumbing Fixtures
- 1608(a) – General Requirements for the Sale or Installation of All Appliances

California's Bold Steps:

Title 20 Goes Above and Beyond Federal Standard

In 2010, the U.S. Department of Energy (DOE) waived federal preemption for any state regulation concerning faucet and showerhead efficiency (75 Fed. Reg.245, 22 December 2010). This means states can set their own standards for these products that are at least as stringent as the federal standards.

In 2015, California's Title 20 established more stringent standards for lavatory faucets and replacement aerators, kitchen faucets and replacement aerators, showerheads, toilets, and urinals.



Highlights of Recent Changes

- Lavatory faucets and aerators have a tiered standard with the more stringent 1.2 gpm requirement in effect July 2016. Public lavatory faucets have a more stringent maximum flow rate of 0.5 gpm.
- As of January 1, 2016, sell-through is prohibited for public lavatory faucets and aerators, kitchen faucets and aerators, toilets, and urinals.
- Showerheads have a tiered standard and now have minimum flow rate requirements. Body sprayers and handheld showerheads are included in the definition of a showerhead.
- The total flow rate of showerheads with multiple nozzles must be less than or equal to the maximum flow rate when any or all nozzles are in use at the same time.

Noncompliant kitchen and public lavatory faucets and aerators may not be sold or offered for sale on or after January 1, 2016, regardless of manufacture date.

Appliance	Maximum Flow Rate	
Lavatory faucets and aerators (including residential and commercial)	Manufactured prior to 9/1/2015	2.2 gpm at 60 psi ^{1,2}
	Manufactured on or after 9/1/2015 and prior to 7/1/2016	1.5 gpm at 60 psi ^{1,2}
	Manufactured on or after 7/1/2016	1.2 gpm at 60 psi ^{1,2}
Public lavatory faucets and aerators	Sold or offered for sale on or after 1/1/2016	0.5 gpm at 60 psi
Kitchen faucets and aerators	Sold or offered for sale on or after 1/1/2016	1.8 gpm with optional temporary flow of 2.2 gpm at 60 psi
Showerheads	Manufactured on or after 1/1/1994 and prior to 7/1/2016	2.5 gpm at 80 psi
	Manufactured on or after 7/1/2016 and prior to 7/1/2018	2.0 gpm at 80 psi ³
	Manufactured on or after 7/1/2018	1.8 gpm at 80 psi ³

¹ **Sprayheads with independently-controlled orifices and manual controls.** The maximum flow rate of each orifice that manually turns on or off shall not exceed the maximum flow rate for a lavatory faucet.

² **Sprayheads with collectively-controlled orifices and manual controls.** The maximum flow rate of a sprayhead that manually turns on or off shall be the product of (a) the maximum flow rate for a lavatory faucet and (b) the number of component lavatories (rim space of the lavatory in inches (millimeters) divided by 20 inches (508 millimeters).

³ **Maximum flow rate.** The maximum flow rate shall be the highest value obtained through testing at a flowing pressure of 80 ± 1 psi and shall not exceed the maximum flow rate in Title 20, Table H-5.

Minimum flow rate. The minimum flow rate, determined through testing at a flowing pressure of 20 ± 1 psi, shall not be less than 60 percent of the flow rate reported by the manufacturer pursuant to Section 1606(a). The minimum flow rate determined through testing at flowing pressures of 45 and 80 ± 1 psi shall not be less than 75 percent of the flow rate reported by the manufacturer pursuant to Section 1606(a).

Showerheads with multiple nozzles. The total flow rate of showerheads with multiple nozzles must be less than or equal to the maximum flow rate in Title 20, Table H-5 when any or all nozzles are in use at the same time.

Table 1: Title 20 Standards for Plumbing Fittings

Noncompliant toilets and urinals may not be sold or offered for sale on or after January 1, 2016, regardless of manufacture date.

Appliance	Maximum Gallons per Flush or Dual-flush Effective Flush Volume
	Sold or offered for sale on or after January 1, 2016
All water closets (toilets)	1.28 ¹
Trough-type urinals	Trough length (inches) 16
Wall mounted urinals	0.125
Other urinals	0.5

¹ Water closets sold or offered for sale after January 1, 2016 shall pass the Waste Extraction Test (Section 7.10) of ASME A112.19.2.

Table 2: Title 20 Standards for Plumbing Fixtures

Watt's the Connection?

The Water-Energy Nexus

Research performed by the Energy Commission found that water and energy resources are inextricably connected. Transportation and treatment of water, treatment and disposal of wastewater, and the energy used to heat and consume water account for nearly 20% of the total electricity and 30% of non-power plant related natural gas consumed in California. Demand for water resources is expected to rise due to population growth and as a result of climate change and stricter regulatory rules protecting water quality.

Water-related electricity use is 48 terawatt-hours (TWh) per year.



Source: energy.ca.gov/research/iaw/water.html

The Energy Commission Staff Report on the Water-Energy Relationship states that:

As water demand grows, so grows energy demand. Since population growth drives demand for both resources, water and energy demand are growing at about the same rates and, importantly, in many of the same geographic areas. This dynamic is exacerbated by the fact that Northern California has two-thirds of the state's precipitation while two-thirds of the population resides in Southern California. Water demand and electricity demand are growing rapidly in many of the same parts of the state stressing already constrained electricity delivery systems. When electric infrastructure fails, water system reliability quickly plummets and threatens the public health and safety. The state water plan concludes that the largest single new supply available for meeting this expected growth in water demand over the next 25 years is water use efficiency.

"The sustainability of water and energy depends on advancements in energy and water efficiency technologies and integrated water/energy resource planning and policy development."

– Water Research Foundation



How to Comply with Title 20

Compliance with Title 20 entails:

- Designing, marking, and labeling products according to the regulations
- Testing regulated products using the required test methods and
- Certifying the product to the Energy Commission.

Note that even if a plumbing fixture or fitting meets all performance requirements outlined in Title 20, it is illegal to sell a regulated product in California if the model number is not listed in the Energy Commission's Modernized Appliance Efficiency Database System (MAEDBS).

Everyone in the sales chain – including manufacturers, distributors, retailers, contractors and importers – is responsible for ensuring regulated products are listed in the MAEDBS.





For More Information

Title 20 Primary Documents

- Title 20 Appliance Efficiency Regulations:
[govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I8F8F3BC0D44E11DEA95CA4428EC25FA0&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](http://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I8F8F3BC0D44E11DEA95CA4428EC25FA0&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default))
 - Section 1602 (Definitions) provides clear, relevant definitions for regulated products. Some examples include showerheads and body sprayers; lavatory and kitchen faucets; and replacement aerators.

California Energy Commission Information & Services

- Appliances Hotline – (888) 838-1467 or outside California (916) 651-7100
- Questions may also be emailed to Appliances@energy.ca.gov
- California Appliance Efficiency Standards Site:
energy.ca.gov/appliances
- Modernized Appliance Efficiency Database (MAEDBS):
<https://cacertappliances.energy.ca.gov/Login.aspx>
- Excerpt of the Amended Water Appliance Regulations:
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=207358&DocumentContentId=15920>
- Industrial, Agriculture and Water Research: Water-Energy Nexus Focus Area:
energy.gov/sites/prod/files/2014/07/f17/Water%20Energy%20Nexus%20Full%20Report%20July%202014.pdf
- California's Water-Energy Relationship – CEC Staff Final Report:
large.stanford.edu/courses/2012/ph240/spearrin1/docs/CEC-700-2005-011-SF.PDF

U.S. Department of Energy (DOE) Information & Services

- Appliance and Equipment Standards Program:
energy.gov/eere/buildings/appliance-and-equipment-standards-program

Additional Resources

- Water Research Foundation:
waterrf.org
 - Resources and a knowledge portal on multiple areas of research focus, including water-energy management
- Energy Code Ace:
EnergyCodeAce.com
 - An online “one-stop-shop” providing free resources and training to help appliance and building industry professionals decode and comply with Title 20 and Title 24, Part 6. The site is administered by California’s investor-owned utilities. Of special interest: Energy Code Ace offers a free Title 20 On-Demand Video Training curriculum focused on the compliance and certification essentials industry professionals need to know and understand.
energycodeace.com/content/title-20-training
Please register with the site and select a Title 20 industry role for your profile in order to receive messages about additions to our Title 20 offerings!



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