



2022 Indoor and Outdoor Water Requirements

Requirements for indoor and outdoor water fixtures can be difficult to navigate between CALGreen, plumbing code, and voluntary rating systems. Minimum thresholds are mandatory for residential and nonresidential projects, and within the scope of an alteration or addition.

Compliance with CALGreen includes low-flow and low-flush fixtures, WaterSense labeling, and is verified prescriptively for Mandatory measures. These measures continue to reduce water use in buildings during ongoing drought conditions in California.

Inside:

Fixture Compliance Minimums

Find your compliant indoor water use fixture! This matrix is a quick reference of water use by fixture type and regulation.

Additional Requirements

Kitchen Fixtures, Appliances, and Submetering: Find out if your project needs to comply with additional mandatory or voluntary measures.

Meeting MWELO for Outdoor Water Use

Understand the requirements for meeting the Model Water Efficiency Landscape Ordinance via prescriptive and performance pathways.

Water Use Calculators

Verify compliance with CALGreen water measures using these free online and downloadable tools.

Getting Started

CALGreen applies to all new construction buildings, including alterations and additions. CALGreen is not applicable to repairs and like-for-like plumbing fixture changes that do not require a permit.

There are two project categories, residential and nonresidential. Residential includes low-rise and high-rise residential including single family homes, duplexes, ADUs, multifamily buildings, hotels, dormitories, etc. The nonresidential category includes commercial, retail, industrial, office and other nonresidential uses. Nonresidential additions and alterations trigger CALGreen if they are adding 1,000 SF or more as an addition and/or are a building alteration with a permit valuation of \$200,000 or more.

If you have a mixed-use project, each portion of the building should comply with the respective residential and nonresidential requirements. For a tenant improvement project, only the code measures relevant to the building components and systems to be newly constructed apply. There are special categories for public schools, community colleges, health care facilities, state-owned buildings, and historical buildings.

In all jurisdictions, CALGreen mandatory requirements must be met if the project meets the requirements for complying with CALGreen. Some cities, counties, or

jurisdictions have adopted local ordinances or reach codes that require projects meet voluntary measures above and beyond the mandatory minimum. These voluntary levels in CALGreen are called Tiers. There are Tier 1 and Tier 2 compliance thresholds for water use, which can be met through the prescriptive or performance compliance options. More information about voluntary measures are detailed starting on page 4.

Mandatory Indoor Water Use Requirements—Nonresidential (Division 5.3) and Residential (Division 4.3)

Projects required to meet CALGreen must meet the prescriptive flush and flow water consumption requirements in the table below. These limits are the same as the 2022 California Plumbing Code. Additionally, water closets and shower heads must be US EPA WaterSense labeled. See the database of eligible fixtures: <https://www.epa.gov/watersense/watersense-products>

Residential/ Nonresidential	Fixture Type	Mandatory	Tier 1 Residential Prescriptive	Tier 1 Residential Performance
		MAX REQUIRED FLOW/FLUSH RATE	MAX REQUIRED FLOW/FLUSH RATE	TARGET FLOW/FLUSH RATE
Both	Water Closet*	1.28 GPF		1.12 GPF
Both	Dual Flush Water Closet*	Calc		1.12 GPF
Both	Wall Mounted Urinal	0.125 GPF	Nonwater urinal	0.11 GPF
Both	Floor Mounted/ Other Urinals	0.5 GPF	Nonwater urinal	0.44 GPF
Both	Single Showerhead*	1.8 GPM @ 80 psi		1.6 GPM @80 psi
Both	Multiple Showerheads	Combined 1.8 GPM @ 80 psi or one shower outlet at a time		
Residential Only	Lavatory Faucet <i>(typically used in bathrooms, wet bars, laundry rooms, and garages)</i>	1.2 GPM 2 60 psi Max and 0.8 GPM @ 20 psi min		

continued

Residential/ Nonresidential	Fixture Type	Mandatory	Tier 1 Residential Prescriptive	Tier 1 Residential Performance
		MAX REQUIRED FLOW/FLUSH RATE	MAX REQUIRED FLOW/FLUSH RATE	TARGET FLOW/FLUSH RATE
Both	Common Area or Public Bathroom Faucet	0.5 GPM @ 60 psi		0.35 GPM @ 60 psi
Both	Metering Faucet	0.2 gallons per cycle		0.35 GPM @ 60 psi
Both	Kitchen Faucet <i>(see note below)</i>	1.8 GPM at 60 psi Max, temporarily increase to 2.2 GPM at 60psi**	1.5 GPM at 60 psi Max, temporarily increase to 2.2 GPM	
Both	Pre-Rinse Spray Valve	Meet Title 20 and be equipped with an integrated automatic shutoff		
Nonresidential Only	Wash Fountains	1.8 GPM/20 inches rim space @60 psi		
	Metering faucets at wash fountains	0.2 gallons per cycle/20 inches rim space at 60 psi**		

* Must be WaterSense Labeled

** Aerators may be used to achieve reduction where compliant faucets are unavailable.

Commercial Kitchen Fixtures

Commercial kitchens have additional fixture types associated with water use reduction thresholds.

Pre-Rinse Spray Valves (Mandatory): Meet Title 20 (Appliance Efficiency Regulations) maximum flow rates listed below. Recently manufactured (on or after Jan 1, 2006) commercial pre-rinse spray valves must also have a minimum spray force of ≥ 4.0 ozf.

- » Class 1 (≤ 5.0 ozf) = 1 GPM max
- » Class 2 (> 5 & ≤ 8 ozf) = 1.2 GPM max
- » Class 3 (> 8.0 ozf) = 1.28 GPM max

Food Waste Disposers in Commercial Kitchens: Max of 8 GPM. Additionally, may not use >1 GPM when not actively grinding food waste and must automatically shut off after 10 mins of inactivity. Local jurisdiction may prohibit use altogether.

Reminder: Plumbing fixtures and fittings are required to be installed in accordance with the CA Plumbing Code and all applicable standards.

LEED Equivalency

A project pursuing LEED would achieve approximately 27% water use reduction using CALGreen mandatory requirements including public lavatories, water closets, urinals, kitchen faucets, and showers (using default duration values) and about 30% reduction using only restroom fixtures (without showers or kitchen faucets).



Nonresidential Voluntary Water Use Requirements

As mentioned above, Voluntary measures including Tier 1 and Tier 2 are applicable when adopted by a local jurisdiction. If your project is in one of those California's cities or counties, the project must meet the threshold requirements below.

Baseline

Mandatory flush and flow requirements. Duration, daily uses, and number of occupants impact the overall reduction calculations. Use Worksheet WS-1 to calculate compliance. See Tools and Resources for a link to the calculator.

Tier 1

Prescriptive or Performance method equivalent to a 12% reduction of maximum flow/flush rate over mandatory water use baseline PLUS at least one elective measure is required from Division A5.3.

Tier 2

20% reduction over mandatory water use baseline PLUS at least three elective measures are required from Division A5.3.

Residential Voluntary Water Use Requirements

Tier 1: At least two elective measures from Division A4.3 including Indoor Water Use, Outdoor Water Use, and Water Reuse Systems are required.

Tier 2: At least three electives are required for Tier 2 between Indoor Water Use, Outdoor Water Use, and Water Reuse Systems.

Tier 1 and 2 Indoor Water Use Voluntary Measures

- (R A4.303.1) Kitchen Faucet: Max 1.5 GPM at 60 psi.
- (R A4.303.2 / NR A5.303.2.3.4) Alternate sources of water (such as captured rainwater, treated graywater, and recycled water) for nonpotable application (such as toilet and urinal flushing and other permitted uses).
- (R A4.303.3) At least one ENERGY STAR dishwasher or clothes washer.

- (R A4.303.5) One- and two-family dwellings have a demand hot water recirculation system.
- (R A4.303.4/NR A5.303.4.1) Waterless urinal (including nonwater urinals with drain cleansing action, formerly considered hybrid urinals) or composting toilet.
- (NR A5.303.3) Commercial appliances and fixtures.
- (NR A5.303.5) Dual plumbing for potable and recycled water for toilet flushing.

Commercial Appliances: Applies to Voluntary Measures for Nonresidential

Clothes Washers: Max water factor (WF) to reduce by 10% below the WF standards for commercial clothes washers in Title 20.

Dishwashers:

- RESIDENTIAL: ENERGY STAR rated, 4.25 gallons per cycle for standard size dishwashers and 3.5 gallons per cycle for compact dishwashers.
- COMMERCIAL: Refer to Table A5.303.3 Commercial Dishwasher Water Use for maximum gallons per rack at high and low temperatures.

Ice makers: Shall be air cooled.

Food Steamers: Connectionless or boilerless AND

- » BATCH TYPE: Consume ≤ 2 gallons per pan per hour including condensate water.

- » COOK TO ORDER: Consume ≤ 5 gallons per pan per hour including condensate water.

Water Softeners: Check with your local jurisdiction or agency about use if they discharge to municipal sewer.

Combination Ovens: Max 1.5 gallons per hour per pan including condensate water.

Food Waste Pulping Systems: Max 2 GPM potable water (excludes dishwasher discharge water considered on-site graywater).

Submetering: Where is it required?

Residential submetering of individual dwelling units are required by the CA Plumbing Code.

New commercial or multifamily buildings and additions larger than 50,000 SF must submeter water end uses.

- Each individual leased, rented, or other tenant space projected to consume more than 100 gal/day. Think laundry/cleaners, restaurant/ food service, medical or dental office, laboratory, hair/ beauty salon/ barber shop.
- If tenant submeters are not feasible, submeter at the source for makeup water at cooling towers (≥ 500 GPM flow through), makeup water at evaporative coolers (≥ 6 GPM) and steam and hot water boilers (energy output $\geq 500,000$ Btu/h).
- Submeter or metering device for tenant or addition that is projected to consume $\geq 1,000$ gal/day.



Mandatory Outdoor Water Use Requirements— Nonresidential (Division 5.3) and Residential (Division 4.3)

- Meet local landscaping ordinance or Model Water Efficiency Landscape Ordinance (MWELO), whichever is more stringent.
 - » MWELO: Statewide Department of Water Resources program addressing landscaping, irrigation.
 - » Check if your local jurisdiction has a Local WELOs here: https://wuedata.water.ca.gov/mwelo_plans.
- Applicable to all nonresidential and residential projects requiring permit with new total (aggregate) landscape area ≥ 500 SF or rehabilitated landscapes $\geq 1,200$ SF. Landscaping areas include planting areas, turf areas, water features like pools, spas, ponds, waterfalls, fountains, and artificial streams. Projects must comply through performance calculations or prescriptive compliance if meeting the following requirement:
 - » Aggregate landscape areas of $\leq 2,500$ can comply prescriptively using Appendix D or performance based.
 - » Projects using greywater or captured rainwater to meet all irrigation demands with a total landscape area $\leq 2,500$ SF only need to comply with Section 5 of Appendix D.

Performance Method: Calculating Outdoor Water Use

There are three calculators provided: two for Residential and one for Nonresidential projects. You will complete the information below on the tab (shown above) within the spreadsheet and the results will be posted on the first tab, which is the summary.

- Reference the Water Efficiency Landscape Worksheet in Appendix B and use the Water Budget Calculator excel tool to calculate compliance. See Tools and Resources Section for link.
 - » Data inputs include plant factor, irrigation method, irrigation efficiency, and areas within each hydrozone. The worksheet calculates the Maximum Applied Water Allowance (MAWA) based upon evapotranspiration adjustment factor (ETAF), in gallons per year. The Estimated Total Water Use (ETWU) is calculated based on the plants used and irrigation method selected for the landscape design. $ETWU < MAWA$ for compliance.
 - » The evapotranspiration adjustment factor (ETAF) limits are: 0.55 for residential areas and 0.45 for non-residential areas, exclusive of Special Landscape Areas.

Estimated Total Water Use

Equation: $ETWU = ET_0 \times 0.62 \times [((PF \times HA)/IE) + SLA]$; Considering precipitation $ETWA = (ET_0 - Eppt) \times 0.62 \times [((PF \times HA)/IE) + SLA]$

Enter values in Pale Blue Cells

Tan Cells Show Results

Messages and Warnings



Irrigation Efficiency Default Value for overhead 0.75 and drip 0.81.	
Plant Water Use Type	Plant Factor
Very Low	0 - 0.1
Low	0.2 - 0.3
Medium	0.4 - 0.6
High	0.7 - 1.0
SLA	1.0

Hydrozone	Select System From the Dropdown List click on cell below	Plant Water Use Type (s) (low, medium, high)	Plant Factor (PF)	Hydrozone Area (HA) (ft ²) Without SLA	Irrigation Efficiency (IE)	(PF x HA (ft ²))/IE
Zone 1	Overhead Spray	High	0.70	5,000	0.75	4,667
Zone 2	Overhead Spray	Medium	0.50	4,000	0.75	2,667
Zone 3	Overhead Spray	Medium	0.40	3,000	0.75	1,600
Zone 4	Drip	Low	0.30	7,000	0.81	2,593
Zone 5	Drip	Low	0.30	15,000	0.81	5,556
Zone 6	Drip	Low	0.20	16,000	0.81	3,951
Zone 7						
Zone 8						
Zone 9						

- › The ETAF for a landscape project is based on the plant factors and irrigation methods selected.

Note: Public Schools and Community Colleges are to use evaporation adjustment factor (ETAF) of 0.65 with an additional water allowance for special landscape areas (SLA) of 0.35. Areas of 2,500 SF or less may comply prescriptively through Appendix D.

Prescriptive Method: Appendix D

- Different limits for residential and nonresidential projects.
- Includes requirements for plant materials, mulch depth, turf restrictions, irrigation systems and controllers, shut-offs, overspray restrictions, and private submeters for nonresidential project \geq 1,000 SF in aggregate landscape area.
- Section 5 is specifically related to irrigation systems requirements.

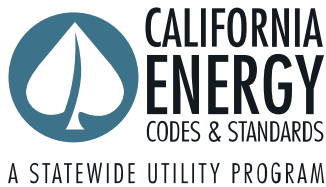
Tier 1 and 2 Outdoor Water Use Voluntary Measures

- (R A4.304.1) Rainwater catchment systems designed to capture 65% or more of the rainwater from available roof area.
- (R A4.304.2/NR A5.304.2) Use nonpotable water for all irrigation.
 - » Can include captured rainwater, recycled water, municipal recycled water, graywater, drought tolerant plants not requiring irrigation.
- (R A4.304.3) Submeters for irrigation for landscaped areas < 5,000 SF.
- (R) Water Reuse Systems:
 - » (R A4.305.1) Piping for graywater reuse from clothes washer or other fixture to provide water for irrigation.
 - » (R A4.305.2) Install recycled water piping or dual plumbing to serve all water closets, urinals, and floor drains, plus piping from point of connection to structure.
 - » (R A4.305.3) Recycled water used for landscape irrigation.



Tools and Resources:

- Mandatory and Tiered Checklists are located in Division A5.602 in Appendix A5 for nonresidential projects and A4.602 in Appendix A4 for residential projects.
 - » https://codes.iccsafe.org/content/CAGBC2022P1/appendix-a4-residential-voluntary-measures#CAGBC2022P1_AppxA4_SecA4.6.
 - » https://codes.iccsafe.org/content/CAGBC2022P1/appendix-a5-nonresidential-voluntary-measures#CAGBC2022P1_AppxA4_SecA5.6.
- Residential and Nonresidential Indoor Water Budget Calculators: WS-1 Worksheet for Baseline and WS-2 Worksheet for Water Use Reduction are located in Chapter 8 Compliance Forms, Worksheets and Reference Material: <https://codes.iccsafe.org/content/CAGBC2022P1/chapter-8-compliance-forms-worksheets-and-reference-material>.
 - » Compliance can also be calculated using the LEED Indoor Water Use Calculator: <https://www.usgbc.org/resources/leed-v4-indoor-water-use-reduction-calculator>.
- Residential and Nonresidential Outdoor Water Budget Calculators: <https://data.cnra.ca.gov/dataset/water-budget-calculators>.



The Codes & Standards program is designed to improve compliance with the state’s building and appliance energy codes and standards. The program aims to advance the adoption and effective implementation of energy efficiency measures and building practices to lock in long-term energy and GHG savings to meet California’s ZNE, decarbonization and climate goals. The program recognizes that codes and standards are one of the most effective pathways to ensuring sustained market transformation—and that key to making them work well are well-informed industry professionals and consumers.



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