

**DRAFT EXPRESS TERMS
FOR
2016 CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGreen),
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 11**

2015 Triennial Code Adoption Cycle - Agenda Item 5n

Plumbing Manufacturers International (PMI) proposes to amend the 2016 edition of the California Green Building Standards Code (CALGreen) during the 2015 Triennial Code Adoption Cycle. Amended text is as follows:

LEGEND FOR EXPRESS TERMS

1. New California amendments: All such language appears underlined.
2. Repealed text: All such language appears in ~~strikeout~~.
3. *[Information for the reader is bracketed and in red italics]*

**CHAPTER 8
COMPLIANCE FORMS AND WORKSHEETS**

**~~WORKSHEET (WS-2)~~
~~WATER USE REDUCTION~~**

[Delete the table in its entirety]

**SECTION A5.303
INDOOR WATER USE**

A5.303.2.3.1 Kitchen faucets.

The maximum flow rate of kitchen faucets shall not exceed 1.5 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.5 gallons per minute at 60 psi.

Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

[Make changes accordingly to Table A5.303.2.2 Water Use Baseline]

A5.303.2.3.4 A5.303.2.3.2 Nonpotable water systems for indoor use.

Utilizing nonpotable water systems (such as captured rainwater, treated graywater and recycled water) intended to supply water closets, urinals, and other allowed uses, may be used ~~in the calculations demonstrating the 12, 20 or 25 percent reduction.~~ The nonpotable water systems shall comply with the current edition of the *California Plumbing Code*.

A5.303.2.3.3 Nonwater supplied urinals and waterless toilets.

Where nonwater supplied urinals or composting toilets are used for indoor potable water reduction, such fixtures shall be installed in accordance with the current edition of the California Plumbing Code.

A5.303.2.3.1 Tier 1 – 12 percent savings. [BSC]

~~A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 12 percent shall be provided. The reduction shall be based on the maximum allowable water use per plumbing fixture and fitting as required by the *California Building Standards Code*. The 12-percent reduction in potable water use shall be demonstrated by one of the following methods:~~

- ~~1. Prescriptive method. Each plumbing fixture and fitting shall not exceed the maximum flow rate at greater than or equal to 12-percent reduction as specified in Table A5.303.2.3.1; or~~
- ~~2. Performance method. A calculation demonstrating a 12-percent reduction in the building "water use baseline" as established in Table A5.303.2.2 shall be provided.~~

~~A5.303.2.3.2 Tier 2 – 20 percent savings.~~

~~A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 20 percent shall be provided. A calculation demonstrating a 20-percent reduction in the building "water use baseline" as established in Table A.5.303.2.2 shall be provided.~~

~~A5.303.2.3.3 25 percent savings.~~

~~A schedule of plumbing fixtures and fixture fittings that will reduce the overall use of potable water within the building by 25 percent shall be provided. A calculation demonstrating a 25-percent reduction in the building "water use baseline" as stabled in Table A5.303.2.2 shall be provided.~~

**TABLE A5.303.2.3.1
FIXTURE FLOW RATES**

[Delete the table in its entirety]

**SECTION A5.601
CALGREEN TIER 1 AND TIER 2**

A5.601.2.4 Voluntary measures for CALGreen Tier 1.

2. From Division A5.3,
 - a. Comply with ~~the 12-percent reduction for indoor potable water use in Section A5.303.2.3.1 through A5.303.2.3.3.~~

[Remaining text unchanged]

A5.601.3.4 Voluntary measures for Tier 2.

2. From Division A5.3,
 - a. Comply with ~~the 20-percent reduction for indoor potable water use in Section A5.303.2.3.1 through A5.303.2.3.3 A5.303.2.3.2.~~

[Remaining text unchanged]

**TABLE A5.601 NONRESIDENTIAL BUILDINGS:
Green Building Standards Code Proposed Performance Approach**

CATEGORY	ENVIRONMENTAL PERFORMANCE GOAL	TIER 1	TIER 2
Water Efficiency and Conservation	Indoor Water Use	<u>See Section A5.303.2.3.1 through A5.303.2.3.3</u> 12% Savings	<u>See Section A5.303.2.3.1 through A5.303.2.3.3</u> 20% Savings

[Portions of table not shown remain unchanged]

SECTION A5.602 NONRESIDENTIAL OCCUPANCIES APPLICATION CHECKLISTS⁴

[Make changes accordingly to the checklists to remove references to Tier 1 and Tier 2 for indoor water use.]

- **Statement of specific purpose, problem, rationale and benefits:**

Appendix A4 of the adopted CALGreen does not have any identified Tier 1 or Tier 2 provisions for indoor water use and instead encourages the end user to achieve greater potable water reductions for indoor use through the use of nonpotable sources. The changes recommended above would remove Tier 1 and Tier 2 for indoor water use in order to be consistent with Appendix A4.

Additionally, in accordance with the “Nine-Point Criteria Analysis of Proposed Building Standards of the HCD,” the proposed changes are necessary in order to make the findings of criteria number 1 (removes conflict), number 3 (public interest is served by the nonresidential and residential requirements being the same), number 4 (consistency between Appendix A4 and Appendix A5 will remove the arbitrary and unreasonable conflict that now exists), and number 6 (consistency will remove the ambiguity and confusion that now exist).

Furthermore, manufacturers cannot produce every product model at four water usage rates – baseline plus the three percentage reductions, 12%, 20%, and 25%. The product offering for all fixture types at these multiple levels is simply not there and installers will have a difficult time finding sufficient products to meet any of the percentage reduction savings.

Finally, these multiple levels are problematic considering that such water efficiency levels may result in unintended consequences in consumer acceptance, health and safety, as well as plumbing system compatibility. For some product groups, the additional reductions are well below EPA WaterSense Specification thresholds, and therefore may result in the following issues:

- The inability of drain lines to carry waste with reduced flow rates and flush volumes.
- An increase in scald and thermal shock incidences due to shower automatic compensating valves not being designed or available for such low flow rates.
- An increase in sediment buildup within traps and drain lines, thereby resulting in an increase in clogged fixtures.
- An increase in struvite build-up in urinal drain lines resulting in clogged drain lines and odor problems.
- Longer wait times for hot water delivery and additional rinsing resulting in more water usage.
- Reduced scouring action within water supply lines, due to lower lavatory faucet flow rates, that many researchers and forensic engineers cite as a contributing factor to the alarming increase in legionellosis outbreaks throughout the world.
- An insufficient number of plumbing products to meet market demand and provide consumer choice.

Please refer to the attachments for further information on such “unintended consequences”:

- **“Green Building Design: Water Quality and Utility Management Considerations,” by the Water Research Foundation.**
- **“State of the Science and Research Needs for Opportunistic Pathogens in Premise Plumbing,” by the Water Research Foundation.**

- **“The Unintended Consequences of Lowering Residential Lavatory Faucet Flow Rates: An Analysis Informed by Measurement,” by Gary Klein.**
- **PMI Letter to the California Building Standards Commission, June 6, 2014**