**REVISED EXPRESS TERMS**

**FOR**

**PROPOSED BUILDING STANDARDS**

**OF THE**

**DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT**

**REGARDING PROPOSED CHANGES TO THE**

**ADOPTION OF AMENDMENTS TO THE 2007 CALIFORNIA BUILDING STANDARDS CODE, TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR), PARTS 2, 3, 4, 5 AND 6 INTO TITLE 24, CCR, PART 11, CALIFORNIA GREEN BUILDING STANDARDS CODE**

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**Legend for Express Terms:**

1. **New California amendment (CA):** California language will appear underlined.
2. **Amended, adopted, or repealed language after 45-day public hearing:** Amended, adopted, or repealed language will appear in double underline and ~~double strikeout~~.
3. **Notation:** Authority and reference citations are provided at the end of each chapter.

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***Section* 102.3**

***Before Comment:***
**102.3 Verification**. Documentation of conformance for applicable green building measures shall be provided to the enforcing agency. Third-party verification or other special documentation shall be provided as specified in this code. Alternate methods of documentation shall be acceptable when the enforcing agency finds that the proposed alternate documentation is satisfactory to demonstrate substantial conformance with the intent of the proposed green building measure.

***After Comment:***
**102.3 Verification**. Documentation of conformance for applicable green building measures shall be provided to the enforcing agency. ~~Third-party verification or other special documentation shall be provided as specified in this code~~. Alternate methods of documentation shall be acceptable when the enforcing agency finds that the proposed alternate documentation is satisfactory to demonstrate substantial conformance with the intent of the proposed green building measure.

***Rationale:***
HCD received a comment during the 45 day comment period requesting a modification to clarify that local enforcing agencies have the authority to request third party inspection to verify compliance with the regulations proposed by HCD. Currently, local enforcing agencies are required to enforce regulations adopted by HCD and are entitled to recover costs associated with inspection and verification activities. The intent of this section was to draw attention to certain provisions that may require special expertise. Currently, HCD has not included any mandated third party inspection. In future rulemakings, HCD will address this issue with stakeholder review and review by the California Building Standards Commission Code Advisory Committee.

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***Section* 503.2**

***Before Comment:***
**503.2 Minimum energy performance for low-rise residential buildings.** Low-rise residential buildings shall meet or exceed the minimum standard design required by the California Energy Code currently in effect.

***After Comment:***
**503.2 Minimum energy performance for low-rise residential buildings.** Low-rise residential buildings shall meet or exceed the minimum performance or prescriptive standard design required by the California Energy Code currently in effect.

***Rationale:***
HCD received a comment during the 45 day comment period requesting a modification to this section to clarify that compliance with the California Energy Code may be accomplished by using either a performance approach or a prescriptive approach. Currently, the California Energy Code does allow both approaches to be used in order to demonstrate compliance.

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***Section* 504.6**

***Before Comment:***
**504.6 Minimum energy performance for low-rise residential buildings.** Low-rise residential buildings shall meet or exceed the minimum standard design required by the California Energy Code currently in effect.

***After Comment:***
**504.6 Minimum energy performance for low-rise residential buildings.** Low-rise residential buildings shall meet or exceed the minimum performance or prescriptive standard design required by the California Energy Code currently in effect.

***Rationale:***
HCD received a comment during the 45 day comment period requesting a modification to this section to clarify that compliance with the California Energy Code may be accomplished by using either a performance approach or a prescriptive approach. Currently, the California Energy Code does allow both approaches to be used in order to demonstrate compliance.

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***Section* 603.2.1**

***Before Comment:***
**None**

***After Comment:***
**603.2.1 Multiple shower heads serving one shower.** When single shower fixtures are served by more than one shower head, the combined flow rate of all the shower heads shall not exceed the maximum flow rates specified in the 20% reduction column contained in Table 603.2 or the shower shall be designed to only allow one shower head to be in operation at a time.

***Rationale:***
HCD received a comment during the 45 day comment period requesting a modification to this section to clarify that in some cases more than one shower head may be installed in a single shower. The comment expressed concern that multiple head showers would be allowed to exceed the required 20% indoor water use reduction HCD is proposing. To further clarify the original intent of reducing the indoor water use by specified fixtures within the dwelling unit, HCD is proposing the addition of a section which specifies that the flow of multiple shower heads must be combined and the sum of those combined flow rates cannot exceed the maximum shower head flow rate specified in Table 603.2.

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**Table 603.1**

***Before Comment:***

**TABLE 603.1**

**WATER USE BASELINE[5]**

| Fixture Type | Flow-rate[2] | Duration | Daily uses | Occupants[3,4] |
|---|---|---|---|---|
| Showerheads | 2.5 gpm @ 80 psi | 5 min. | 1 | X |
| Showerheads Residential | 2.5 gpm @ 80 psi | 8 min. | 1 | X |
| Lavatory Faucets Residential | 2.2 gpm @ 60 psi | .25 min. | 3 | X |
| Kitchen Faucets | 2.2 gpm @ 60 psi | 4 min. | 1 | X |
| Replacement Aerators | 2.2 gpm @ 60 psi | | | X |
| Wash Fountains | 2.2 [rim space(in.) / 20 gpm @ 60 psi] | | | X |
| Metering Faucets | 0.25 gallons/cycle | .25 min. | 3 | X |
| Metering Faucets for Wash Fountains | .25 [rim space(in.) / 20 gpm @ 60 psi] | .25 min. | | X |
| Gravity tank type Water Closets | 1.6 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| Flushometer Tank Water Closets | 1.6 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| Flushometer Valve Water Closets | 1.6 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| Electromechanical Hydraulic Water Closets | 1.6 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| Blowout Water Closets | 3.5 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| Urinals | 1.0 gallons/flush | 1 flush | 2 male | X |

**Fixture "Water Use" = Flow rate x Duration x Occupants x Daily uses**

[1] Except for low-rise residential occupancies the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.
[5] Use Worksheet WS-1 to calculate baseline water use.

***After Comment:***

**TABLE 603.1**

**WATER USE BASELINE[5]**

| Fixture Type | Flow-rate[2] | Duration | Daily uses | Occupants[3,4] |
|---|---|---|---|---|
| Showerheads | 2.5 gpm @ 80 psi | 5 min. | 1 | X |
| Showerheads Residential | 2.5 gpm @ 80 psi | 8 min. | 1 | X |
| Lavatory Faucets Residential | 2.2 gpm @ 60 psi | .25 min. | 3 | X |
| Kitchen Faucets | 2.2 gpm @ 60 psi | 4 min. | 1 | X |
| Replacement Aerators | 2.2 gpm @ 60 psi | | | X |
| Wash Fountains | 2.2 [rim space(in.) / 20 gpm @ 60 psi] | | | X |
| Metering Faucets | 0.25 gallons/cycle | .25 min. | 3 | X |
| Metering Faucets for Wash | .25 [rim space(in.) / 20 gpm @ | .25 min. | | X |

| | | | | |
|---|---|---|---|---|
| Fountains | 60 psi] | | | |
| Gravity tank type Water Closets | 1.6 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| Flushometer Tank Water Closets | 1.6 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| Flushometer Valve Water Closets | 1.6 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| Electromechanical Hydraulic Water Closets | 1.6 gallons/flush | 1 flush | 1 male[1] 3 female | X |
| ~~Blowout Water Closets~~ | ~~3.5 gallons/flush~~ | ~~1 flush~~ | ~~1 male[1] 3 female~~ | ~~X~~ |
| Urinals | 1.0 gallons/flush | 1 flush | 2 male | X |

**Fixture "Water Use" = Flow rate x Duration x Occupants x Daily uses**

[1] Except for low-rise residential occupancies, the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.
[5] Use Worksheet WS-1 to calculate baseline water use.

***Rationale:***
HCD received a comment during the 45 day comment period requesting blowout water closets be removed from the water use tables. Although these fixtures are not commonly used in low–rise residential buildings, HCD accepted the comment and is proposing to remove blowout water closets from the table. However, HCD does anticipate review of this removal for possible inclusion during the next code adoption cycle.

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**Table 603.2**

***Before Comment:***

**TABLE 603.2**
**FIXTURE FLOW RATES**

| Fixture Type | Flow-rate | Maximum flow rate at 20% Reduction |
|---|---|---|
| Showerheads | 2.5 gpm @ 80 psi | 2 gpm @ 80 psi |
| Lavatory Faucets Residential | 2.2 gpm @ 60 psi | 1.8 gpm @ 60 psi |
| Kitchen Faucets | 2.2 gpm @ 60 psi | 1.8 gpm @ 60 psi |
| Wash Fountains | 2.2 [rim space(in.) / 20 gpm @ 60 psi] | 1.8 (rim space(20 in.)) gpm @ 60 psi |
| Metering Faucets | 0.25 gallons/cycle | 0.2 gallons/cycle |
| Metering Faucets for Wash Fountains | .25 [rim space(in.) / 20 gpm @ 60 psi] | 1.8 (rim space(20 in.)) gpm @ 60 psi |
| Gravity tank type Water Closets | 1.6 gallons/flush | 1.28 gallons/flush |
| Flushometer Tank Water Closets | 1.6 gallons/flush | 1.28 gallons/flush |
| Flushometer Valve Water Closets | 1.6 gallons/flush | 1.28 gallons/flush |
| Electromechanical Hydraulic Water Closets | 1.6 gallons/flush | 1.28 gallons/flush |
| Blowout Water Closets | 3.5 gallons/flush | 2.8 gallons/flush |
| Urinals | 1.0 gallons/flush | .8 gallons/flush |

***After Comment:***

**TABLE 603.2**
**FIXTURE FLOW RATES**

| Fixture Type | Flow-rate | Maximum flow rate at 20% Reduction |
|---|---|---|
| Showerheads | 2.5 gpm @ 80 psi | 2 gpm @ 80 psi |
| Lavatory Faucets Residential | 2.2 gpm @ 60 psi | 1.8 gpm @ 60 psi |
| Kitchen Faucets | 2.2 gpm @ 60 psi | 1.8 gpm @ 60 psi |
| Wash Fountains | 2.2 [rim space(in.) / 20 gpm @ 60 psi] | 1.8 (rim space(20 in.)) gpm @ 60 psi |
| Metering Faucets | 0.25 gallons/cycle | 0.2 gallons/cycle |
| Metering Faucets for Wash Fountains | .25 [rim space(in.) / 20 gpm @ 60 psi] | 1.8 (rim space(20 in.)) gpm @ 60 psi |
| Gravity tank type Water Closets | 1.6 gallons/flush | 1.28 gallons/flush[!] |
| Flushometer Tank Water Closets | 1.6 gallons/flush | 1.28 gallons/flush[!] |
| Flushometer Valve Water Closets | 1.6 gallons/flush | 1.28 gallons/flush[!] |
| Electromechanical Hydraulic Water Closets | 1.6 gallons/flush | 1.28 gallons/flush[!] |
| ~~Blowout Water Closets~~ | ~~3.5 gallons/flush~~ | ~~2.8 gallons/flush~~ |
| Urinals | 1.0 gallons/flush | .8 gallons/flush |

[!] [!]Includes water closets with an effective flush rate of 1.28 gallons or less when tested per ASME A112.19.2 and ASME A112.19.14.

***Rationale:***
HCD received a comment stating dual flush toilets are not included within HCD's proposal. Dual flush water closets have two different flush volumes and are measure by "effective flush rate". Accepted test criteria for dual flush water closets use three flushes to establish the effective flush rate, typically (2) flushes at the lower volume and (1) at the higher volume which average to 1.28 gallons or less. To address the concern expressed in the comment, HCD has proposed a footnote to the table indicating the national standard a dual flush toilet must meet or exceed to be considered a 1.28 gallon flush toilet.

In addition, HCD received a comment during the 45 day comment period requesting blowout water closets be removed from the water use tables. Although these fixtures are not commonly used in low–rise residential buildings, HCD accepted the comment and is proposing to remove blowout water closets from the table. However, HCD does anticipate review of this removal for possible inclusion during the next code adoption cycle.

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***Section* 802, VOC definition**

***Before Comment:***
**None**

***After Comment:***

**SECTION 802**
**DEFINITIONS**

**VOC.** A volatile organic compound broadly defined as a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeters of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen and other elements. See CCR Title 17, Section 94508(a).

***Rationale:***
HCD received a comment to reference the VOC, Low Vapor Pressure-VOC, and Reactive Organic Compound definitions used by the California Air Resources Board (ARB) in Tile 17, Section 94508 (a). HCD agrees with a portion of the comment and is proposing to include a definition consistent with the ARB and proposals by other state agencies. HCD does not use the terms Low Vapor Pressure-VOC and Reactive Organic Compound in our proposed text and is not proposing to include a definition of those terms. However, in order to remain consistent with proposals by the California Building Standards Commission, the Division of the State Architect, and the Office of Statewide Health Planning and Development, HCD is proposing adoption of a common definition for VOC with those agencies.

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***Section* 804.3**

***Before Comment:***
**804.3 Covering of duct openings and protection of mechanical equipment during construction.** At the time of rough installation and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust or debris which may collect in the system.

***After Comment:***
**804.3 Covering of duct openings and protection of mechanical equipment during construction.** At the time of rough installation, or during storage on the construction site and until final startup of the heating and cooling equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust or debris which may collect in the system.

***Rationale:***
HCD received a comment suggesting mechanical equipment should not only be protected from contamination after installation but also during storage and transportation. While HCD tends to agree with the comment regarding protection during transportation, it is something not inspected or covered by enforcing agencies. However, HCD is proposing to include a requirement that mechanical equipment also be protected while it is stored on a construction site.

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***Section* 804.4**

***Before Comment:***
**804.4 Finish material pollutant control**. Finish materials shall comply with Sections 804.4.1 through 804.4.4.

**804.4.1 Adhesives and sealants.** Adhesives and sealants used on the project shall meet the requirements of the following standards.

1. Adhesives, adhesive bonding primers, adhesive primers, sealants and sealant primers shall comply with Table 804.4.1.

2. Aerosol adhesives shall meet the requirements of California Code of Regulations, Title 17, commencing with Section 94507, http://ccr.oal.ca.gov/.

***After Comment:***
**804.4 Finish material pollutant control**. Finish materials shall comply with Sections 804.4.1 through 804.4.4.

**804.4.1 Adhesives ~~and sealants~~.** Adhesives ~~and sealants~~ used on the project shall meet the requirements of the following standards.

1. Adhesives, adhesive bonding primers, adhesive primers, ~~sealants and sealant primers~~ shall comply with Table 804.4.1.

2. Aerosol adhesives shall meet the requirements of California Code of Regulations, Title 17, commencing with Section 94507, http://ccr.oal.ca.gov/.

***Rationale:***
HCD received several comments from the California Air Resources Board (ARB) regarding VOC limitations for sealants. In review of these comments, HCD agreed with the ARB that the referenced Table 804.4.1 does not cover sealants. HCD also believes that to include a new table for sealants or include additional requirements would require an additional 45 day comment period and would not allow for review by the California Building Standards Commission Code Advisory Committee. In future rulemakings, HCD will work with the ARB and other stakeholders to include or reference VOC limits for sealants.

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***Section* 804.4.3.2**

***Before Comment:***
**804.4.3.2 Carpet adhesive.** All carpet adhesive shall meet the requirements of Section 804.1.1: VOC limit of 50 grams per liter (less water and less exempt compounds).

***After Comment:***
**804.4.3.2 Carpet adhesive.** All carpet adhesive shall meet the requirements of ~~Section 804.1.1: VOC limit of 50 grams per liter (less water and less exempt compounds)~~ Table 804.4.1.

***Rationale:***
HCD received a comment that suggested the reference to Section 804.1.1 was not correct and that a typographical error also appeared in this section. Upon review, HCD determined that the comment was correct and has proposed to remove the typographical error and correct the section reference.

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***Section* 804.4.4**

***Before Comment:***
**804.4.4 Composite wood products.** Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in Table 804.4.

**804.4.4.2 Agrifiber products.** Agrifiber products shall contain no added urea-formaldehyde resins.

**804.4.4.3 Adhesives.** Adhesives used to fabricate composite wood and agrifiber assemblies shall contain no urea-formaldehyde resins.

**804.4.4. 2 Documentation.** Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation shall include at least one of the following.

1. Mill certifications and specifications.
2. Chain of custody certifications.
3. Other methods acceptable to the enforcing agency.

***After Comment:***
**804.4.4 Composite wood products.** Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the building shall meet the requirements for formaldehyde as specified in Table 804.4.

~~**804.4.4.2 Agrifiber products.** Agrifiber products shall contain no added urea-formaldehyde resins.~~

~~**804.4.4.3 Adhesives.** Adhesives used to fabricate composite wood and agrifiber assemblies shall contain no urea-formaldehyde resins.~~

**804.4.4.4 2 Documentation.** Verification of compliance with this section shall be provided ~~at the~~ as requested by ~~of~~ the enforcing agency. Documentation shall include at least one of the following.

1. ~~Mill~~ Product certifications and specifications.
2. Chain of custody certifications.
3. Other methods acceptable to the enforcing agency.

***Rationale:***

HCD received a comment from the California Air Resources Board (ARB) stating the original proposal by HCD could put agrifiber products at a competitive disadvantage. The comment also stated recent innovations in resin technology will serve to lower formaldehyde levels and that these products will be covered by both the maximum levels set in Table 804.4.4 if they meet the definition of products covered by the table. In addition, HCD received comment that VOC limitations for composite wood products are accounted for in the limitation the entire product must meet and it is not necessary to include a specific limit for only one part of the composite product.

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**Table 804.4.4**

***Before Comment:***

**TABLE 804.4.4**

**FORMALDEHYDE LIMITS**

**Maximum formaldehyde emissions in parts per million.**

| Phase 1 | | | Phase 2 | | | |
|---|---|---|---|---|---|---|
| Product | Jan 1, 2009 | Jul 1, 2009 | Jan 1, 2010 | Jan 1, 2011 | Jan 1, 2012 | Jul 1, 2012 |
| Hardwood Plywood Veneer Core | 0.08 | | 0.05 | | | |
| Hardwood Plywood Composite Core | | 0.08 | | | | 0.05 |
| Particle Board | 0.18 | | | 0.09 | | |
| Medium Density Fiberboard | 0.21 | | | 0.11 | | |
| Thin Medium Density Fiberboard[1] | 0.21 | | | | 0.13 | |

[1]Thin medium density fiberboard has a maximum thickness of eight millimeters.

***After Comment:***

**TABLE 804.4.4**

**FORMALDEHYDE LIMITS[1]**

**Maximum formaldehyde emissions in parts per million.**

| Phase 1 | | | Phase 2 | | | |
|---|---|---|---|---|---|---|
| Product | Jan 1, 2009 | Jul 1, 2009 | Jan 1, 2010 | Jan 1, 2011 | Jan 1, 2012 | Jul 1, 2012 |
| Hardwood Plywood Veneer Core | 0.08 | | 0.05 | | | |
| Hardwood Plywood Composite Core | | 0.08 | | | | 0.05 |
| Particle Board | 0.18 | | | 0.09 | | |
| Medium Density Fiberboard | 0.21 | | | 0.11 | | |
| Thin Medium Density Fiberboard[2] | 0.21 | | | | 0.13 | |

~~[1]Thin medium density fiberboard has a maximum thickness of eight millimeters.~~

[1]Values in this table are consistent with those developed by the California Air Resources Board. For additional information, see California Code of Regulations, Title 17, Sections 93120 through 93120.12.

[2]Thin medium density fiberboard has a maximum thickness of eight millimeters.

***Rationale:***
HCD received a comment stating the Air Resources Board, Airborne Toxic Control Measure (ATCM) recently approved by the Office of Administrative Law should be included as a reference in Section 804.4.4 and cited as a reference in a footnote to Table 804.4.4. HCD has included a footnote to the table to ensure the code user is aware that the maximum limits in Table 804.4.4 are consistent with the maximum values developed by the ARB.

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**Worksheet (WS-1)**

***Before Comment:***

**WORKSHEET (WS-1)**
**BASELINE WATER USE**

| BASELINE WATER USE CALCULATION TABLE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fixture Type** | **Quantity** | | **Flow-rate (gpm)** | | **Duration** | | **Daily uses** | | **Occupants[3,4]** | | **Gallons per day** |
| Showerheads | | X | 2.5 | X | 5 min. | X | 1 | X | | = | |
| Showerheads Residential | | X | 2.5 | X | 8 min. | X | 1 | X | | = | |
| Lavatory Faucets Residential | | X | 2.2 | X | .25 min. | X | 3 | X | | = | |
| Kitchen Faucets | | X | 2.2 | X | 4 min. | X | 1 | X | | = | |
| Replacement Aerators | | X | 2.2 | X | | X | | X | | = | |
| Wash Fountains | | X | 2.2 | X | | X | | X | | = | |
| Metering Faucets | | X | 0.25 | X | .25 min. | X | 3 | X | | = | |
| Metering Faucets for Wash Fountains | | X | 2.2 | X | .25 min. | X | | X | | = | |
| Gravity tank type Water Closets | | X | 1.6 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Flushometer Tank Water Closets | | X | 1.6 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Flushometer Valve Water Closets | | X | 1.6 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Electromechanical Hydraulic Water Closets | | X | 1.6 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Blowout Water Closets | | X | 3.5 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Urinals | | X | 1.0 | X | 1 flush | X | 2 male | X | | | |
| Total daily baseline water use (BWU) | | | | | | | | | | = | |
| _____ (BWU) X .80 = _____ Allowable water use | | | | | | | | | | | |

[1] Except for low-rise residential occupancies the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low-rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.

***After Comment:***

**WORKSHEET (WS-1)**
**BASELINE WATER USE**

| BASELINE WATER USE CALCULATION TABLE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fixture Type** | **Quantity** | | **Flow-rate (gpm)** | | **Duration** | | **Daily uses** | | **Occupants[3,4]** | | **Gallons per day** |
| Showerheads | | X | 2.5 | X | 5 min. | X | 1 | X | | = | |
| Showerheads Residential | | X | 2.5 | X | 8 min. | X | 1 | X | | = | |
| Lavatory Faucets Residential | | X | 2.2 | X | .25 min. | X | 3 | X | | = | |
| Kitchen Faucets | | X | 2.2 | X | 4 min. | X | 1 | X | | = | |
| Replacement Aerators | | X | 2.2 | X | | X | | X | | = | |
| Wash Fountains | | X | 2.2 | X | | X | | X | | = | |
| Metering Faucets | | X | 0.25 | X | .25 min. | X | 3 | X | | = | |
| Metering Faucets for Wash Fountains | | X | 2.2 | X | .25 min. | X | | X | | = | |
| Gravity tank type Water Closets | | X | 1.6 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Flushometer Tank Water Closets | | X | 1.6 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Flushometer Valve Water Closets | | X | 1.6 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Electromechanical Hydraulic Water Closets | | X | 1.6 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| ~~Blowout Water Closets~~ | | ~~X~~ | ~~3.5~~ | ~~X~~ | ~~1 flush~~ | ~~X~~ | ~~1 male[1] 3 female~~ | ~~X~~ | | ~~=~~ | |
| Urinals | | X | 1.0 | X | 1 flush | X | 2 male | X | | | |
| Total daily baseline water use (BWU) | | | | | | | | | | = | |
| _____ (BWU) X .80 = _____ Allowable water use | | | | | | | | | | | |

[1] Except for low-rise residential occupancies, the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.

[3] For low-rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.

***Rationale:***
HCD received a comment during the 45 day comment period requesting blowout water closets be removed from the water use tables. Although these fixtures are not commonly used in low–rise residential buildings, HCD accepted the comment and is proposing to remove blowout water closets from the table. However, HCD does anticipate review of this removal for possible inclusion during the next code adoption cycle.

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**Worksheet (WS-2)**

***Before Comment:***

**WORKSHEET (WS-2)**
**20% REDUCTION WATER USE CALCULATION TABLE**

| 20% REDUCTION WATER USE CALCULATION TABLE | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fixture Type** | **Quantity** | | **Flow-rate (gpm)** | | **Duration** | | **Daily uses** | | **Occupants[3,4]** | | **Gallons per day** |
| Showerheads | | X | | X | 5 min. | X | 1 | X | | = | |
| Showerheads Residential | | X | | X | 8 min. | X | 1 | X | | = | |
| Lavatory Faucets Residential | | X | | X | 25 min. | X | 3 | X | | = | |
| Kitchen Faucets | | X | | X | 4 min. | X | 1 | X | | = | |
| Replacement Aerators | | X | | X | | X | | X | | = | |
| Wash Fountains | | X | | X | | X | | X | | = | |
| Metering Faucets | | X | | X | .25 min. | X | 3 | X | | = | |
| Metering Faucets for Wash Fountains | | X | | X | .25 min. | X | | X | | = | |
| Gravity tank type Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| HET [5] High Efficiency Toilet | | X | 1.28 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Flushometer Tank Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Flushometer Valve Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Electromechanical Hydraulic Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Blowout Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Urinals | | X | | X | 1 flush | X | 2 male | X | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Urinals Non-Water Supplied | | X | 0.0 | X | 1 flush | X | 2 male | X | | = | |
| Proposed water use | | | | | | | | | | = | |
| _____ (BWU from GW-1) X .80 = _____ Allowable water use | | | | | | | | | | | |

[1] Except for low-rise residential occupancies the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low-rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.
[5] Water closet with an effective flush rate of 1.28 gallons or less when tested per ASME A112.19.2 and ASME A112.19.14.

***After Comment:***

**WORKSHEET (WS-2)**
**20% REDUCTION WATER USE CALCULATION TABLE**

| **20% REDUCTION WATER USE CALCULATION TABLE** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Fixture Type** | **Quantity** | | **Flow-rate (gpm)** | | **Duration** | | **Daily uses** | | **Occupants[3,4]** | | **Gallons per day** |
| Showerheads | | X | | X | 5 min. | X | 1 | X | | = | |
| Showerheads Residential | | X | | X | 8 min. | X | 1 | X | | = | |
| Lavatory Faucets Residential | | X | | X | 25 min. | X | 3 | X | | = | |
| Kitchen Faucets | | X | | X | 4 min. | X | 1 | X | | = | |
| Replacement Aerators | | X | | X | | X | | X | | = | |
| Wash Fountains | | X | | X | | X | | X | | = | |
| Metering Faucets | | X | | X | .25 min. | X | 3 | X | | = | |
| Metering Faucets for Wash Fountains | | X | | X | .25 min. | X | | X | | = | |
| Gravity tank type Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| HET [5] High Efficiency Toilet | | X | 1.28 | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Flushometer Tank Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Flushometer Valve Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |
| Electromechanical Hydraulic Water Closets | | X | | X | 1 flush | X | 1 male[1] 3 female | X | | = | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ~~Blowout Water Closets~~ | | ~~X~~ | | ~~X~~ | ~~1 flush~~ | ~~X~~ | ~~1 male[3] 3 female~~ | ~~X~~ | | ~~=~~ | |
| Urinals | | X | | X | 1 flush | X | 2 male | X | | | |
| Urinals Non-Water Supplied | | X | 0.0 | X | 1 flush | X | 2 male | X | | = | |
| Proposed water use | | | | | | | | | | = | |
| _____ (BWU from GW-1) X .80 = _____ Allowable water use | | | | | | | | | | | |

[1] Except for low-rise residential occupancies, the daily use number shall be increased to three if urinals are not installed in the room.
[2] The Flow-rate is from the CEC Appliance Efficiency Standards, Title 20 California Code of Regulations; where a conflict occurs, the CEC standards shall apply.
[3] For low-rise residential occupancies, the number of occupants shall be based on two persons for the first bedroom, plus one additional person for each additional bedroom.
[4] For non-residential occupancies, refer to Table A, Chapter 4, 2007 California Plumbing Code, for occupant load factors.
[5] Water closet with an effective flush rate of 1.28 gallons or less when tested per ASME A112.19.2 and ASME A112.19.14.

***Rationale:***
HCD received a comment during the 45 day comment period requesting blowout water closets be removed from the water use tables. Although these fixtures are not commonly used in low–rise residential buildings, HCD accepted the comment and is proposing to remove blowout water closets from the table. However, HCD does anticipate review of this removal for possible inclusion during the next code adoption cycle.

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**Application Checklist (AC-HCD)**

***Before Comment:***

**CHAPTER 11**

**APPLICATION CHECKLISTS AND WORKSHEETS**

**APPLICATION CHECKLIST (AC-HCD)**

| **MATERIAL CONSERVATION AND RESOURCE EFFICIENCY** | | | |
|---|---|---|---|
| **Pollutant Control during Construction (705)** | | | |
| **705.3** HVAC returns, supplies, and other air handling equipment are covered during construction. | 2010 CBC[1] | | |

| **Construction Waste Reduction, Disposal and Recycling (709)** | | | |
|---|---|---|---|
| **709.2** A construction waste management plan is developed, implemented and posted at the jobsite for recycling or salvaging waste in compliance with one of the following methods. | 2010 CBC[1] | | |

| | | | |
|---|---|---|---|
| 1. A minimum of 50% of the construction waste generated at the site is diverted to recycle or salvage.<br><br>Exception: Alternate waste reduction methods are developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist. | | | |

| | | | |
|---|---|---|---|
| **Building Maintenance and Operation (711)** | | | |
| **711.2** An operation and maintenance manual shall be provided to the building occupant or owner. | 2010 CBC[1] | | |

| | | | |
|---|---|---|---|
| **INDOOR ENVIRONMENTAL QUALITY** | | | |
| **Pollutant Control (804)** | | | |
| **804.1.1** Sealants and adhesives shall be No- or Low-VOC. | 2010 CBC[1] | | |
| **804.1.2** Paints, stains and other coatings shall be No- or Low-VOC. | 2010 CBC[1] | | |
| **804.1.3** Carpet and carpet systems shall be Low-VOC. | 2010 CBC[1] | | |
| **804.1.4.1** Particleboard, medium density fiberboard (MDF), and plywood used in interior finish systems shall comply with low formaldehyde emission standards. | 2010 CBC[1] | | |
| **804.1.4.2** Plywood used in interior finish systems shall comply with low formaldehyde emission standards. | 2010 CBC[1] | | |
| **804.3** Duct openings and other related air distribution component openings shall be covered. | 2010 CBC[1] | | |

| | | | |
|---|---|---|---|
| **Interior Moisture Control (805)** | | | |
| **805.2.1** Vapor retarder and capillary break is installed at slab on grade foundations. | 2010 CBC[1] | | |
| **805.3** Moisture content of wood used in wall and floor framing is checked before enclosure. | 2010 CBC[1] | | |

***After Comment:***

**CHAPTER 11**

**APPLICATION CHECKLISTS AND WORKSHEETS**

**APPLICATION CHECKLIST (AC-HCD)**

| **MATERIAL CONSERVATION AND RESOURCE EFFICIENCY** | | | |
|---|---|---|---|
| ~~**Pollutant Control during Construction (705)**~~ | | | |
| ~~**705.3** HVAC returns, supplies, and other air-handling equipment are covered during construction.~~ | ~~2010 CBC[1]~~ | | |

| **Construction Waste Reduction, Disposal and Recycling ~~(709)~~ (708)** | | | |
|---|---|---|---|
| ~~**709.2**~~ **708.3** ~~A construction waste management plan is developed, implemented and posted at the jobsite for recycling or salvaging waste in compliance with one of the following methods.~~<br>~~**1.**~~ A minimum of 50% of the construction waste generated at the site is diverted to recycle or salvage.<br><br>Exception: Alternate waste reduction methods are developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist. | 2010 CBC[1] | | |

| | | | |
|---|---|---|---|
| **Building Maintenance and Operation ~~(711)~~ (710)** | | | |
| ~~**711.2**~~ **710.2** An operation and maintenance manual shall be provided to the building occupant or owner. | 2010 CBC[1] | | |

| | | | |
|---|---|---|---|
| **INDOOR ENVIRONMENTAL QUALITY** | | | |
| **Pollutant Control (804)** | | | |
| **804.3** Duct openings and other related air distribution component openings shall be covered. | 2010 CBC[1] | | |
| ~~**804.1.1**~~ **804.4.1** Sealants and adhesives shall be No- or Low-VOC. | 2010 CBC[1] | | |
| ~~**804.1.2**~~ **804.4.2** Paints, stains and other coatings shall be No- or Low-VOC. | 2010 CBC[1] | | |
| ~~**804.1.3**~~ **804.4.3** Carpet and carpet systems shall be Low-VOC. | 2010 CBC[1] | | |
| ~~**804.1.4.1**~~ **804.4.4**Particleboard, medium density fiberboard (MDF), and plywood used in interior finish systems shall comply with low formaldehyde emission standards. | 2010 CBC[1] | | |
| ~~**804.1.4.2** Plywood used in interior finish systems shall comply with low formaldehyde emission standards.~~ | ~~2010 CBC[1]~~ | | |
| ~~**804.3** Duct openings and other related air distribution component openings shall be covered.~~ | ~~2010 CBC[1]~~ | | |
| **Interior Moisture Control (805)** | | | |
| **805.2**~~**.1**~~ Vapor retarder and capillary break is installed at slab on grade foundations. | 2010 CBC[1] | | |

| | | | |
|---|---|---|---|
| **805.3** Moisture content of wood and insulation used in wall and floor framing is checked before enclosure. | 2010 CBC[1] | | |

***Rationale:***
HCD received comments and had discussions with representatives form the California Building Officials organization which pointed out several section reference errors in the application checklist. HCD agreed with the comment and has proposed revisions to address the sections that have previously been renumbered or relocated during the development of this code. HCD has also included some grammatical changes to more closely mirror the text used in the body of the code. The changes do not have a change in regulatory effect and are sufficiently related to HCD's original proposal.